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Appendix A. Literature Review

A.1 Matric suction measurement and prediction

Introduction

The unsaturated soil potential and its influence on fluid flow problems has been investigated and utilized in soil science for many years. For geotechnical engineering, unsaturated soil properties have only more recently begun to be used in engineering practice, such as in the design of capillary barriers. But still, most engineers tend to consider the in-situ soil in its saturated condition for design purposes, as it is generally safe and more conservative.

Often times in engineering practice, some relatively steep cut and natural slopes in residual soil profiles are observed to be stable. This means that for those temporary slopes (and retaining walls), matric suction plays an important role in improving the shear strength of soil. So, it is reasonable to conclude that with knowledge of the existing in-situ matric suction, combined with a model for predicting unsaturated soil strength properties, one could more economically design temporary geotechnical structures.

To address the overall goals of this research project, a literature review has been performed to explore a number of significant issues. The literature review is presented in several sections, which address, chronologically: matric suction measurement and prediction, determination of unsaturated soil shear strength, lateral earth pressured to be used in the design of temporary retaining structures and application of unsaturated soil strength to slope stability analyses. The references reviewed for each of the following sections are presented immediately after the relevant discussion.

Matric suction measurement and prediction

If matric suction is to be considered as affecting the effective stress and shear strength within a soil profile, then reliable and consistent suction measurement is crucial, as matric suction is a very important stress variable involved in the unsaturated shear strength and stress-strain relationship.

There are many ways to quantify soil suction: the pressure plate test is used for obtaining the Soil Water Characteristic Curve (SWCC), and tensiometers can be used to

measure matric suction directly. A psychrometer (chilled-mirror device) is used for total suction measurement, mainly in the high suction range. Filter paper testing technique is used for both matric suction and total suction measurement, but it is an indirect measurement obtained by utilizing the calibration curve based on ASTM 5298. Thermal conductivity sensor is also provides an indirect matric suction measurement by applying the calibration curve of the sensor. Each sensor has to be calibrated before installation or use.

Residual soil is widely spread throughout the world and the United States, but it has not received adequate study from soil engineering professionals (Wang and Borden, 1996). Agus, et al. (2001) characterized residual soils in Singapore by performing pressure plate tests. They observed that the parent rock type has a significant influence on the resulting SWCCs.

For characterizing the unsaturated properties of local Piedmont residual soil (North Carolina area), several different suction measurement methods could be used, including pressure plate, tensiometer, chilled-mirror, filter paper method and FTC suction sensors, as have been discussed here. So, the basic theory and limitation of each method investigated by other researchers are presented in this literature review section. Also, existing models for predicting matric suction are described.

Suction measurement tools and methods

The pressure plate is the most common way to measure the soil water characteristics curve (SWCC). Research has been done to investigate the potential inaccuracy existing in this method. It was observed that low plate and soil conductance, lack of plate-soil contact, and soil dispersion make this method often unreliable at “low water potentials” which means at high values of suction. Marco et al. (2009) performed pressure plate testing on a silty loam soil and compared the results with those obtained from a dew point meter. They showed pronounced differences between pressure plate and dew point meter measurements at potential less than -10m H2O (larger than 100kPa), with the pressure plate apparatus providing greater water contents than the dew point meter at the same water potential.

There are many factors influencing the SWCC of soil, such as soil type, stress history, hysteresis, natural condition (dry density and overburden pressure). Pressure plate tests on compacted soil were investigated by Vanapalli, et al. (1999). The stress history and initial

molding water content seemingly have the most influence on the soil structure (and aggregation), which in turn dominates the nature of the soil-water characteristic for fine-grained soils. Specimens of a particular soil, in spite of having the same texture and mineralogy, can exhibit different soil-water characteristics if they are prepared at different initial molding water contents and possess different stress histories. Tarantino (2008) found that for the same void ratio and degree of saturation, the matric suction will be changed after unloading and reloading because the redistribution of water between micro-and macro-pores. And suction will increase when the soil is compressed at post –compaction stage compared to its non-compaction state. The Fredlund and Xing (1995) model is often used for SWCC curve fitting.

$$\theta_w = C(h) \times \frac{\theta_s}{\left[\ln\left[\exp(1) + \left(\frac{h_s}{a}\right)^b\right]\right]^c}$$

$$c(h) = \left[1 - \frac{\ln(1 + \frac{h_s}{h_r})}{\ln(1 + \frac{10^6}{h_r})}\right]$$

Where h_r is the residual matric suction (kPa), h_s is the matric suction of the soil (kPa), θ_s is the saturated volumetric water content, θ_w is the volumetric water content of soil and the terms a, b and c are curve fitting parameters.

The classification of the soil can provide an indication of the air-entry value and the residual suction conditions. The air-entry value and the residual suction provide an indication of the most likely suction range to be encountered in the field. (D. G. Fredlund, H. Rahardjo, M. D. Fredlund 2012)

Conclusions: the pressure plate is the most common way to obtain a soil water characteristic curve (SWCC). But because it can be only developed in the lab, and it is time-consuming, more tools have been used for more rapid determinations and for field suction measurements.

A tensiometer is the most common and convenient tool to measure matric suction. Simply by inserting the tensiometer into soil, the matric suction can be obtained after the water within the ceramic tip reaches equilibrium with that in the surround soil. But the disadvantage of this device is the low-suction range measurement capability and the required refilling of de-aired water due to cavitation phenomenon.

Bolton (2003) indicated that the initial saturation of a tensiometer is crucial for accurate suction measurement. The stepwise pressurization process shows that poor saturation of a tensiometer will limit the measurable suction and cause pressure hysteresis. It has been shown that a high degree of saturation is required to give a reliable suction measurement (Bolton, 2003; Standing, 2012) Cavitation usually occurs when the free water pressure is at about zero absolute pressure (i.e. -100kPa gauge pressure).

Field monitoring by tensiometer shows the varying of the suction values with the changing of air temperature and soil water content. It is applicable in low suction range (20-160kPa) and no cavitation was observed during the two or three weeks before the tensiometer was resaturated. But in high suction range, the duration would be shorter because of probably more significant air diffusion. (Yu-Jun Cui et al. 2008)

Mahler and Mendes (2005) used high suction range tensiometer (EQ2, Delta-T Devices, Cambridge, UK) to measure soil suction in conjunction with filter paper method. This tensiometer uses electronic humidity sensors to obtain higher suction ranges. A good similarity between the results presented by the filter paper method and by the equivalent tensiometer could be observed.

Conclusions: Tensiometer is used for low suction measurement and easy to perform. But its limitation is requiring the refilling of de-aired water. It can be used in the lab and field to obtain suction in a relatively short time.

Filter paper method is one of the indirect methods to measure soil matric suction. By placing the filer paper between two soil samples in a desiccated glass jar, the water content of the filter paper is measured after seven days equilibrium. By using a calibration equation, the matric suction can be determined. Its advantages are simple and low cost. But its result is very sensitive to the mass of filter paper, so high precision balance (0.0001g) is used to

ensure the accuracy of the results. Whatman #42 filter paper is used following ASTM D5298. The testing results by filter paper technique is highly dependent on operators.

The limitation of filter paper have been investigated by different researchers. Chandler and Gutierrez (1986) observed that the filter paper technique leads to better results when applied in clayey soils. Houston, et al. (1994) indicated that filter paper measurement is fairly reliable and confidence in a given measurement of suction. It can be enhanced by obtaining replicate measurements due to the simplicity and low cost of the method.

Rainwater et al. (2001) found that one primary limitations of the filer paper test method is the difficulty of measuring very small changes in the filter paper mass as water is absorbed that correlate with large changes in soil suction.

Leong et al. (2002) investigates different factors affecting the measurements by filter paper methods: different calibration curves, quality of filter paper, suction source used in calibration, hysteresis and equilibration time. The soil suction measurements have shown that the Whatman #42 filter paper can be used with the ASTM D5298 equation to obtain matric suction of the soil via the contact method reliably.

Vanapalli et al. (2008) found that applied pressure on filter paper might alter the measured suction and 1kPa pressure is applicable to ensure a good contact without altering the measured suction.

Marinho et al. (2012) studies the effect of contact on the filter paper method. The lack of contact great than 20% will lead to an inadequate matric suction measurement. The matric suction by filter paper method is compared with traditional pressure plate test. It turns out the results by filter paper are larger than in magnitude. It suggests that the measured suction by filter paper is a mixture of the total and matrix suction and doesn’t represent the actual pressure plate test value.

Conclusions: filter paper method is easy to perform, but it requires high level lab performance. Lack of contact area, not enough equilibrium time and difference calibration curve are all factors influencing the accuracy of results. In this research, it is used in conjunction with tensiometer to obtain suction values in the natural state of soil.

Chilled mirror device (dewpoint potentiometer) is used for total suction measurement. As known, total suction is equal to the sum of matric and osmotic suction. At high suction range, osmotic suction can be neglected. Total suction is approximately equal to matric suction. The dewpoint potentiometer is a closed chamber device with a small mirror inside. When sample is placed into the device, the thermal-dynamic equilibrium condition will be caught by the dew point on the mirror. The relative humidity at that time will be recorded and the total suction will be calculated based on Richards' equation.

The chilled mirror device is simple to use. But the limitation of the chilled mirror for low suction levels is widely recognized. Bulut and Leong (2008) suggested the measured difference between dew point and sample temperature must be kept small. Bulut et al. (2002) observed that the degree of error associated with the WP4 psychrometer is higher than with the filter paper method at low suction levels, but very good correlation between the two methods at high total suction levels. Leong et al. (2003) found out that total suctions obtained using the chilled mirror were always great than the sum of the matric and osmotic suctions measured independently. Rafaela et al. (2006) suggested that hydraulic path in the WP chilled mirror is drying path. Single point calibration for chilled mirror device is not good enough and different suction range should be considered.

Conclusion: Chilled mirror device is used for high suction range laboratory measurements. In this research, it can be used for determining the soil water characteristic curve points at high suction range.

Fredlund Thermal Conductivity (FTC) sensor

Principle of thermal conductivity sensor:

The thermal diffusivity of the ceramic tip in the thermal conductivity sensor is mostly driven by its water content. There is a heater and temperature senor in the sensor. A constant heat will apply to the ceramic tip and heat will be either dissipated or undissipated. The thermal diffusivity of water is much higher than air. The ceramic tip having higher water content will lead to more dissipated heat and vice versa. The undissipated heat will be reflected by the temperature senor. When the sensor is working, the actual result is a

relationship between sensor temperature (or converted into voltage) and water content of the ceramic tip. The water content absorbed by the ceramic tip is relevant to the matric suction in the soil. (Perera, Fredlund 2004)

The temperature rise of the sensor is a function of the water content of the ceramic, which, in turn is a function of the matric suction of the soil. A calibration curve (temperature and matric suction relationship) is predetermined in the lab. So, this is being called indirect matric suction measurement. Before the thermal conductivity sensors are commercialized, the effects, calibration, hysteresis, temperature, etc. are investigated.

The calibration of thermal conductivity sensor is explicitly introduced by Sattler and Fredlund (1989). And thermal conductivity sensor can measure reasonable matric suction values under laboratory conditions. Feng (1999) focused on assessing the capillary hysteresis of the thermal conductivity sensor. Based on Feng's research, the capillary hysteresis of the thermal conductivity sensor is very crucial. When a sensor is installed in the field, it experiences drying and wetting cycle. The drying and wetting processes may begin or end at any suction value following a primary or secondary scanning curve, or a main wetting or drying curve, depending upon the direction of water movement in the surrounding soils.

Feng and Fredlund (2002) observed the effect of capillary hysteresis on the measurement of matric suction, when using thermal conductivity suction sensors, is significant. And an analytical model is given to adjust the measured suction by considering the capillary hysteresis. Hysteresis and temperature correction is applied in the data analysis. And the difference is obvious. (Feng, Fredlund 2003) Based on the laboratory testing results, a revised calibration procedure was proposed that takes into consideration the capillary hysteretic effects. (Shuai, Clements et al. 2002) Matric suction readings from the sensors are subjected to environmental influences, including temperature change and wetting-drying cycles

Another thermal conductivity sensor is investigated by (Leong, Zhang et al. 2012). It is believed that heat transfer in the ceramic tip is highly pressure dependent, as it is due to latent heat transfer.

The installation of thermal conductivity sensor is discussed by (Tan, Fredlund et al. 2007). An auger having a slight bigger diameter than the sensor is used to drill a hole. And then another auger having the same diameter as the sensor is inserted again to provide good soil to sensor contact for the entire circumference of the sensor. Once the sensor is installed (it is still dry), the reading is taken and compared with the dry calibration curve. Field installation and monitoring is performed by Nichol et al. (2003). He found out that correction for hysteresis and the changing of the ambient temperature is important before installation of thermal conductivity sensor.

Conclusion: FTC suction sensors are used for long-term field suction measurement. Once installed, it is stable. But it requires temperature, hysteresis and input voltage correction. It is installed to monitor the suction change due to the moisture movement in the soil profile.

Soil water properties parameters and curve fitting models

Researchers are trying to correlate basic soil index (GSD, Atterberg limit, specific gravity) to SWCC fitting parameters. Once the SWCC parameters are known, matric suction can be predicted by simply applying in-situ volumetric water content.

Different procedures for estimating SWCC are explicitly summarized by Fredlund, et al (2012).

Figure A-1 Procedures for estimation of the SWCC (Fredlund, et al, 2012)

In Saxton (1982), the Brooks and Corey water retention parameters, soil water retention volumes at 0.33 bar and 15 bar, total porosity, and saturated conductivities for the major USDA soil textures classes were developed. Also, relationships for predicting tensions and saturated hydraulic conductivities based on soil properties are presented. Vanapalli and Fredlund (1996) proposed a model based on SWCC to predict unsaturated shear strength. 3000kPa is a reasonable value for residual suction in the prediction shear strength using the model. Confining pressure should be also considered in the measurement of SWCC. (Vanapallis, et al 1998) Residual water content is important when establishing SWCC. The engineering definition of residual matric suction can be considered as water is present as thin films surrounding the soil particles. Estimation of θr and θs by construction by plotting is proposed and proved to be a very simple and reliable method.

Zapata (1999) proposed Enhanced Integrated Climatic Model (EICM) to correlate the Fredlun-Xing parameter to the basic soil index, such as grain size distribution and atterberg limits. The correlation parameter af, bf, cf, hrf is respectively corresponding to a, b, c, residual matric suction in Fredlun-Xing model. The following equation is for plastic soil by EICM model.

For plastic soils,

$$a_f = 32.835\{\ln(wPI)\} + 32.438$$

$$b_f = 1.421(wPI)^{-0.3185}$$

$$c_f = -0.2154\{\ln(wPI)\} + 0.7145$$

$$h_{rf} = 500$$

Where:

wPI= weighted Plasticity index equal to the product of P200 (expressed as a decimal) and the PI

Constraints:

If $a_f < 5$, then $a_f = 5$

If $c_f < 0.01$, then $a_f = 0.03$

<u>Suction prediction model study</u>

The performance of EICM model for the local residual soil has been investigated by applying local residual soil parameters: percentage passing #200 and Plasticity Index. Also, Rahardjo (2012) investigated residual soil unsaturated properties in Singapore. The soil properties profile and unsaturated characterization has been developed for three locations: Jurong Formation, Bukit Timah Granite and Old Alluvium. EICM is applied to both North Carolina residual soil and Singapore residual soil at Jurong Formation (Rahardjo, 2012). The comparison between actual measured and predicted SWCC parameters is shown in Table A-1.

Table A-1 Predicted SWCC parameters (a, n, m) of two types of residual soils

	Local residual soil (ST34)		Rahardjo (2012) Jurong formation soil	
	Pressure plate	EICM	Pressure plate	EICM
a	6.22	94.2	915	128.9
n	1.28	0.78	0.43	0.56
m	1.34	0.3	3.31	0.1
%#200	59.7		40	
PI	10		21	

Figure A-2 Applying EICM to North Carolina residual soil and Singapore soil (Rahardjo, 2012)

A.2 Determination of unsaturated soil shear strength

The determination and modelling of unsaturated soil shear strength has been studied for many years. This portion of the literature review focuses on two parts, the performance of unsaturated triaxial tests and the resulting strength data and its modelling. Thus, this review begins with a discussion of procedures used in unsaturated triaxial testing and continues with a review of resulting strength data.

Test device and procedure of unsaturated shear strength

<u>Device setting for unsaturated condition</u>

Axis translation technique is the basic concept of the setting of the unsaturated triaxial test. Based on the concept, matric suction can be applied by connecting an air pressure supply line and a water supply line to the specimen and the magnitude of matric suction is equal to the air pressure minus water pressure (Fredlund, 1977).

The character of ceramic disks is used in the test. When the ceramic disk is saturated, it has the ability to prevent air from passing through if the air pressure is lower than the air-entry value of the ceramic disk. The usage of ceramic disk enhances the testing system to totally separate the control of air pressure and water pressure.

Although the property of ceramic stone is to prevent air from passing through, the air would diffuse in the water, and becomes air bubble in the line. The air bubbles result in some reading errors of the measurement of water flow. Fredlund (1975) described an air volume indicator to capture the volume of air in the water lines. The flushing process needs to be done period to prevent the influence of the air in the water tube to the readings (Fredlund, 1977).

The measurement of volume change of the specimen is a challenge in unsaturated triaxial test. Several methods have been design to capture the change of specimen volume (Aversa et al., 2002). A series of approaches to monitor the volume change of the specimen includes measuring from both water and air exchange (Bishop, 1962), level measurement (Bishop, 1961), and double-wall triaxial cell (Wheeler, 1986). Burrage et al., (2012) demonstrated a calibration method to obtain volume change by single wall device. This method provides the simplest way to modify a normal triaxial system to an unsaturated triaxial system.

Device setting for strength test

The methods which were most widely used in testing unsaturated soil properties are modified triaxial test (Ho and Fredlund, 1982; Gan et al., 1996; Vanapalli, 1998; Miao et al., 2002; Lee, et al. 2005; Thu et al., 2006; Kayadelen et al., 2007; Houston et al., 2008; Burrage et al., 2012; Handoko et al., 2013) and modified direct shear test (Oloo and Fredlund, 1996; Schnellman et al., 2013).

Besides, several different testing approaches have been evaluated and published in the past. Burrage et al. 2012 evaluated the application of a calibration process to obtain volume change by a single wall chamber. Vanapalli, et al. (2000) performed several unconfined compression tests for specimens with different matric suction levels with some of matric suctions higher than 1000 kpa.

Testing procedure

The process of unsaturated triaxial test can be split into three parts: specimen preparation, equalization, and shearing. Both remolded specimens and undisturbed specimens were tested in the past. The ratio of diameter to height was determined as 2 to 1 to prevent the effects of end plate and also buckling (ASTM-7181).

The equalization stage is the process which the soil specimen approaching the equilibrium between its water content and matric suction applied. Normally, the specimen starts from lower matric suction condition, higher water content, and the water starts to release from the specimen after the design matric suction being applied. The time to reach equilibrium depends on the soil type, and gradient of applied matric suction. Thu et al. (2006) and Burrage et al. (2012) stated the equalization time in their test of sandy silt was around 5 to 7 days, but the period of time highly depends on the permeability of soil, the size of soil and the magnitude of additional matric suction applied.

Two type of unsaturated triaxial test were commonly performed, constant water content test and constant matric suction test. The constant water content test is to keep the water content of the specimen constant during shearing and measure the increase of pore water pressure. The constant matric suction test is to keep both pore air and water pressure constant, and measure the water releasing during shearing.

Wulfsohn et al. (1998) sheared several specimens by using constant water content test. In his experimental result, the increase of pore water pressure during shearing was not significantly when the net confining pressure was low, but it was significant when high net confining pressure was applied.

The process of multistage test

Ho and Frelund (1982) described a testing process of unsaturated triaxial test which is called multistage test. In his paper, the same specimen was sheared three times by applying different matric suctions but the same net confining pressure. The tests started from the lowest matric suction applied, which means the highest water content, and increased air pressure after shearing each time. The testing result shown in the paper indicates the test process is capable to obtain the shear strengths of the specimen at different stages of matric suction.

The multistage test has also been performed by Handoko (2013). Handoko (2013) sheared the specimen four times with the same net confining pressure but different matric suctions. The matric suction of the fourth shearing is lower than the third time and equals to the second time, which means that the shear strength was tested both in the drying curve and wetting curve. This test result successfully indicated the difference of shear strength between drying process and wetting process.

Models of unsaturated shear strength

Independent variable concept

In the other aspect, Fredlund described the effect of matric suction on the shear stress based on the concept, independent stress variables. The concept indicates that the effective friction angle remains constant regardless the value of matric suction, so the failure envelope with the same angle can be drawn at every stage of matric suction. Therefore, the increasing value of the intercept on the axis of net normal stress equal to zero, which called total cohesion, represents the contribution of matric suction on shear stress. (Fredlund, 1978)

Figure A-3 is a 3-axis plot showing the concept. The most front surface is the saturated condition which matric suction equals to zero, and the intercept is effective cohesion. As matric suction increases, the intercept, total cohesion, increases, and the additional portion to the effective cohesion is called apparent cohesion.

Figure A-3 Extended Mohr-Coulomb failure envelope for soils with matric suction (Fredlund, et al. 1987)

Equation A-1 is from the plot, and the parameter, φb, represents the relationship between total cohesion and matric suction, and indicates the increase of shear strength as a function of matric suction.

$$\tau = c' + (\sigma - u_a)\tan\varphi' + (u_a - u_w)\tan\varphi_b \qquad \text{(A-1)}$$

Based on Figure A-3 and Equation A-1, two observations can be made. First, in this time, the increase of apparent cohesion, which represents the increase of strength, is a linear function of the increase of matric suction, and the slope is described with an angle of. Second, there was no prediction for yet, so experimental data were required to obtain the value of φb.

Figure A-4 shows a recent experimental result which supports the idea of independent stress variable. In the paper, five different values of matric suction were tested, and three different values of net normal stress were applied at each value of matric suction. It can be seen that the inclinations of the five slopes are very close, and it concluded that the effective friction angle is constant.

Figure A-4 Failure envelopes corresponding to different matric suction values (Schnellmann, et al. 2013)

The concept of independent variable stress is still being followed by most of recent studies. However, after 1996, experimental data present the increase of total cohesion as a function of matric suction is more likely a non-linear relationship, so researchers start to develop formulas instead of using a constant φb.

Besides, the models for describing the non-linear relationship were developed. Two categories of models were illustrated in Guan et al. 2012: fitting model and prediction model. Fitting model requires experimental data to obtain fitting parameters, and prediction model has the ability to predict the shear strength without running any unsaturated strength test. Four prediction models are listed and described in the following: Fredlund, et al. (1996), Vanapalli, et al. (1996), Khalili and Khabbaz (1998) and Houston, et al. (2008).

Fredlund et al. (1996) shows the equation with normalized volumetric water content and a κ parameter, which is a fitting number in the equation, as equation A-2 showed below.

$$\tau = c' + (\sigma - u_a)\tan\varphi' + (u_a - u_w)[(\Theta^{\kappa})\tan\varphi'] \qquad \text{(A-2)}$$

The κ parameter in the later research was being related to the plastic index as shown in Equation A-3. (Vanapalli and Fredlund, 2000)

$$\kappa = -0.0016\mathrm{Ip}^2 + 0.0975\mathrm{Ip} + 1 \qquad \text{(A-3)}$$

Equation A-4 was modified to equation A-2 by using parameters of volumetric water content from SWCC instead of κ. The basic concept of this approach is that the normalized volumetric water content is considered a parameter to represent the contact area of the soil particles, so multiplying that parameter might be able to find the strength value. Since the first part of the equation is the same as saturated condition, Vanapalli et al. (1996) also stated the unsaturated soil parameters can be predicted by only saturated properties and SWCC.

$$\tau = [c' + (\sigma - u_a)\tan\varphi'] + (u_a - u_w)[(\tan\varphi')(\frac{\theta-\theta_r}{\theta_s-\theta_r})] \qquad \text{(A-4)}$$

One concern which has been studied regarding to the Vanapalli et al. (1996) model is the input value of residual volumetric water content. Kim and Borden (2012) discussed that the significant influence of the value of residual volumetric water content on the prediction. Figure A-5 shows the predicted shear strength values by applying four different values of residual volumetric water content, and the four curves are not constant.

Figure A-5 Effect of different values of residual matric suction on shear strength prediction

Khalili and Khabbaz (1998) have published an equation also, and the equation is shown in equation A-5.

$$\tau = c' + (\sigma - u_a)tan\varphi' + (u_a - u_w)[(\lambda')tan\varphi'] \qquad \text{(A-5)}$$

Where $\lambda' = ((u_a - u_w)/(u_a - u_w)_b)^{-0.55}$

Equation 5 is close to an empirical prediction, and the unique part is that only air entry value of the soil is needed for predicting shear strength as a function of matric suction. The value appearing in the index, -0.55, is applicable for every type of soil, regardless properties of the soil.

Vanapalli et al. (2000) performed several unconfined compression tests for specimens with different matric suction levels with some of matric suctions higher than 1000 kpa, and the result indicates the predicted curve fits the measured data well even if the matric suction is extremely high, up to 100000 kpa.

Houston, et al. (2008) is the most recent model. The prediction of shear strength is based on the equation with φ^b, as shown in equation A-1, and the value of φ^b is considered changing as a function of matric suction.

The model assumes the relationship between Ψ^* and $(\varphi' - \varphi_b)$ is a hyperbolic shape, which is shown in Equation A-6. Then, the parameters for determining the hyperbolic shape can be approached by effective friction angle and soil properties from grain size distribution.

$$\varphi' - \varphi^b = \frac{\Psi^*}{a + b\Psi^*} \tag{A-6}$$

where $\Psi^* = \Psi - \text{air entry value of soil}$,

$a = 2.23 - 71.8 \cdot D_{30} - 5.33 \cdot D_{60} + 0.168 \cdot (\%\text{sand})$

$b = 1/\varphi'$

Instead of applying parameters from soil water characteristic curve as other models, the model is controlled by the two parameters, a and b, to predict the values of apparent cohesion as a function of matric suction. The parameter, b, is the ratio of one to the effective friction angle, and the parameter, a, is from an empirical equation which is related to the grain size distribution of soil.

The four equations for predicting a non-linear relationship indicate that the increase of the shear strength is higher when the matric suction is low, and as matric suction getting higher, the increase of shear strength becomes less significant.

The soil tested in Vanapalli (1996) was Indian head till, classified as CL. The soil was compacted, and the test process was modified direct shear test. The soil tested in Fredlund (1996) was medium and fine sand and also tested by modified direct shear test. Gan (1996) used completely decomposed fine ash tuff and run a modified triaxial test to support Fredlund (1996). The four types of soil tested in Houston (2008) were also compacted samples.

Sheng et al. (2011) plotted the experimental results with different kinds of empirical equations. The paper presented two different kinds of clay, and indicated that the nonlinear function exits at lower suction condition, and becomes flat when the matric suction is close to residual condition.

Effective stress concept

Different from independent variable concept, effective stress concept is the other way to incorporate matric suction in expression of stress. Bishop in 1959 discussed the contribution of matric suction to the effective stress, as shown in Equation A-7.

$$\sigma' = (\sigma - u_a) + \chi(u_a - u_w) \tag{A-7}$$

Equation A-7 is conceptually valid both in saturated condition and unsaturated condition. Several approaches for getting good estimation of χ have been published, including accessing air entry values and effective saturation (Khalili and Khabbaz, 1998; Lu, 2010).

The utilization of air entry value in effective stress is shown in Equation A-8, and the approach has been applied to an unsaturated calibration chamber test program to represent effective mean stress. (Pournaghiazar et al., 2013)

$$\sigma' = \sigma + (\mathrm{u_a} - \mathrm{u_w})\left(\frac{\mathrm{u_a} - \mathrm{u_w}}{\mathrm{AEV}}\right)^{-0.55} \tag{A − 8}$$

It has been published of accessing effective degree of saturation to estimate the effective stress in the unsaturated condition, as shown in Equation A-9. (Lu and Liko, 2006; Lu, et al. 2010)

$$\sigma' = (\sigma - \mathrm{u_a}) + \frac{\mathrm{S} - \mathrm{S_r}}{1 - \mathrm{S_r}}(\mathrm{u_a} - \mathrm{u_w}) \tag{A − 9}$$

The equation is verified by the thermal conductivity theory, and tested data. A series as non-failure Ko tests and failure test results were published and indicate that by accessing Equation A-9, the same values of Ko and Kf can be determined either from test results of saturated tests or unsaturated tests (Lu and Liko, 2006; Lu, 2010; Oh, et al., 2012).

A.3 Lateral earth pressured used in the design of temporary retaining structures

One of objective of the proposed research project is the determination of lateral earth pressure diagrams required for the design of temporary excavation support systems in unsaturated residual soils. However, little research has been published in which measurement of actual lateral pressure acting on a temporary retaining structure has been reported. One

such study was performed by Anderson and Ogunro (2008) at UNC Charlotte. They performed field and lab tests for estimating lateral earth pressure on a sheet pile wall at two Piedmont residual soil sites, one in Statesville and the other in Monroe, North Carolina. Their interpretation of measured field data suggested that the retained soils exerted little or no pressure on the structure during excavation in front of the walls. They compared the measured lateral displacements and back-calculated bending moments, obtained from strain gauges mounted to the sheet piles, with results from FEM modeling.

Figure A-6 Numerical prediction of bending moment and deflection at 16 foot excavation with field data superimposed (Anderson et. al., 2008)

By varying the shear strength parameters used as input to the model, they were able to reasonably predict the measured responses, as shown in Figure A-6, using a friction angle (φ') of 28° and total cohesion of 250 psf.

Based on these findings, they suggested that an apparent cohesion of 250 psf could be used for estimating the behavior of Piedmont Residual soil. As stated in their research, adding the cohesion term for the residual soil caused a reduction in the lateral pressure on the sheet pile wall based on Coulomb earth pressure theory, which produces the following expressions for the active and passive pressure, respectively:

(1) $$\sigma_a = \sigma'_v K_a - 2c\sqrt{K_a}$$

(2) $$\sigma_p = \sigma'_v K_p + 2c\sqrt{K_p}$$

Where, Ka is the active earth pressure coefficient and a function of the soil friction angle and any ground –surface slope angle that may exist behind the wall. In granular materials, or when conventional effective strength parameters are used, the second term in the above equations is essentially zero.

Although the authors suggested the use of shear strength parameter including an apparent cohesion of 250 psf, no specific mention was made as to the degree of saturation of the soil in question or of the existing matric suction. Furthermore, no reference was made to how one should expect the value to change as a function of the degree of saturation due to water infiltration or drying.

Conclusions

Very little published data have been found that show the actual lateral pressure acting on a temporary retaining structure in unsaturated residual soils. The one published research report that presents data was interpreted to suggest very low lateral pressures against two different sheet pile walls in residual soils. The authors suggested that these low pressure are the result of an apparent cohesion. However, no detailed analysis showing the relationship between the existing degree of saturation and matric suction producing the apparent cohesion was reported.

References related to lateral earth pressured to be used in the design of temporary retaining structures

Application of Unsaturated Soil Strength to Slope Stability Analyses

Slope stability analysis for residual soil has carried out by several researchers. For considering matric suction for the strength, an increase in the input cohesion parameter in a stability analysis is used to analyze slope stability and it significantly increases the computed factor of safety. Fredlund (1979) suggested the unsaturated soil shear-strength theory, in the form of an extended Mohr-Coulomb envelope which is used as a basis for the interpretation of the data and Researcher adopted this theory to analyze slope stability problem in unsaturated soil (Ho and Fredlund 1982; Rahardjo et al. 1995; Sweeney and Robertson 1982; Coutinho et al. 2000; Krahn, Fredlund, and Klassen 1989).The proposed equation is as follows:

$$\tau_{ff} = c' + (u_a - u_w)_f \tan\phi^b + (\sigma_f - u_a)_f \tan\phi'$$

Where,

c’ is intercept of the “extended” Mohr-Coulomb failure envelope on the shear-stress axis where the net normal stress and the matric suction at failure are equal to zero(it is also referred to as effective cohesion); $(u_a - u_w)_f$ is matric suction on the failure plane at failure, where u_a is pore-air pressure and u_w pore-water pressure; $(\sigma_f - u_a)_f$ is net normal stress state variable on the failure plane at failure; ϕ' is angle of internal friction associated with the net normal stress state variable $(\sigma_f - u_a)_f$; and ϕ^b is angle indicating the rate of increase in shear strength relative to matric suction, $(u_a - u_w)_f$.

The above equation, which is an extended form of the Mohr-Coulomb equation, defines a planar surface. The Mohr circles corresponding to failure conditions can be plotted on a three-dimensional graph. The three-dimensional plot has the shear stress, τ as the ordinate and the two stress-state variables, $(\sigma_f - u_a)$ and $(u_a - u_w)$,as shown in Figure A-6.

The failure envelope intersects the shear stress versus matric suction plane along a line of intercepts as shown in fig 1. The equation for the line of intercept is as follows:

$$c = c' + (u_a - u_w)_f \tan \phi^b$$

Where c is ordinate intercept of the extended Mohr-Coulomb failure envelope on the shear stress versus matric suction plane (it is also referred to as apparent cohesion)

This is a convenient method for expressing the shear strength of soils with matric suction, since it is easily used in conventional stability analysis. The strength contributed by matric suction can be accounted for by the value specified for cohesion (Krahn, Fredlund, and Klassen, 1989).

For obtaining effective strength parameter (φ' and c'), traditional triaxial or directed shear tests can be performed on saturated specimen. To gain φ', which is an angle indicating the rate of increase in shear strength with respect to changes in (u_a-u_w), multistage triaxial or direct shear tests can be carried out on unsaturated samples with controlled or known matric suction.

The shear strength parameters of several residual soils which were used for analysis in four of the published papers described previously are summarized in Table A-2. As shown, they got φb that was close to half of φ' in three papers, except for one published paper in which researcher found φb is equal to φ', based on their tests.

Damiano et al. (2012) suggested another way to consider matric suction for shear strength comparing Lu and Likos (2006) method based on Bishop's stress. Bishop (1959) proposed a shear strength equation for unsaturated soils by extending Terzaghi's principle of effective stress for saturated soils, as shown below equatioin (N Lu and WJ Likos, 2004):

Table A-2 Summarized shear strength parameter

Identification	Description	Lacustrine soil Predominantly of non plastic silt	Jurong Formation in Singapore	Granite Residual soil	Decomposed granite residual soil In Hong Kong
Soil type and Properties	Clay(%)	12-40	n/a	n/a	n/a
	Silt(%)	34-84	n/a	n/a	n/a
	Fine sand(%)	2-20	n/a	n/a	n/a
	Fine contet (%)	n/a	48-85	n/a	n/a
	LL (%)	n/a	30-60	n/a	n/a
	PI (%)	n/a	10-35	n/a	n/a
Strength parameter	c' (kPa)	0	30	13.37	7.35
	ϕ' (°)	35	26	15.61	35.3
	ϕ^b (°)	16	26	9.4	15.3 ± 5.7
Suction range (kPa)		0-300	0-400	0-300	0-482
Unsaturated soil testing		MTD	MTD	MDS	MTD
Reference		Krahn et al. (1989)	Rahardjo et al. (1994)	(Lin, Chen, and Wang 2011)	(Ho and Fredlund 1982)

Note: MTD, modified triaxial device; MDS, modified direct shear device; n/a, not available data

Bishop method is also one of the approaches to figure out shear strength considering matric suction. This method can be used for explaining the nonlinear shear strength as function of matric suction.

Damiano et al. (2012)'s research range of matric suction is from 0 kPa to 100kPa, which is similar to our field measured matric suction range (0 to 100kPa). In this small suction range, non-linear shear strength versus suction relationship is dominant so based the test results they derive own equation using the curve fitting, as shown in Figure A-7 (Damiano et al., 2012). Our interesting range of matric suction exactly match this paper and we can expect the tendency of non-linear shear strength as function of matric suction from Figure A-7.

Figure A-7 Apparent cohesion as function of suction (Damiano et al., 2012)

Results show the shear strength of a soil with negative pore-water pressure can play an important role in the stability of a slope. The stability of the near-surface portion of a slope has been shown to be extremely sensitive to changes in cohesion (Krahn, Fredlund, and Klassen 1989). A-8 is developed for a slope at an angle equal to the friction angle of the material having effective shear strength parameters of ϕ' =35°and c'=0 and ϕ^b equal to 16°. The factor of safety against failure along a slip surface as shown in A-6 is close to unity. This figure illustrates the dramatic influence of negative pore pressure on the stability of a slope. As shown in Figure A-8, the factor of safety increases with an increase in apparent cohesion, which is assumed to result from increasing matric suction.

Figure A-8 Effect of cohesion and suction on factor of safety for a near-surface slip surface

Conclusion

Relatively few studies of stability analyses in unsaturated soils have been published. Those published papers herein, have accounted the influence of matric suction on shear strength by

1. Taking account for matric suction as apparent cohesion term in extended Mohr-coulomb failure envelope.

2. Using the curve fitting for shear strength as function of matric suction.

For more detailed analyses involving such issue as surface water infiltration or evaporation, authors have shown that coupled analyses may be performed, for example, SEEP/W and SLOPE/W program, or PLAXIS program. Several researchers have performed modeling for behavior of unsaturated soil condition. In many cases, the instability of slope is caused by the loss in the contribution of matric suction due to rail-fall which infiltrates into soil and reduces the negative pore pressure. The reasonable slope stability analysis requires distribution of matric suction within the slope and taking account for infiltration of rainfall

into unsaturated slope. Oh and Vanapalli (2010) carried out unsaturated slope stability and infiltration analysis using the SEEP/W and SLOPE/W (GEO-LSOPE International Ltd.). SEEP/W can simulate steady and transient-state flow in saturated and unsaturated soils as function of time. From this program, migration of wetting and the dissipation of excess pore-water pressure can be estimated with time. The initial matirc suction distribution and infiltration induced pore-water pressure profile can be simulated by SEEP/W. This pore water pressure profile can be used for shear strength parameter in SLOPE/W as apparent cohesion term using below equation;

$$c = c' + (u_a - u_w)\tan\phi^b$$

Where, c' is effective cohesion; $(u_a - u_w)$ is matric suction as function of infiltration from SEEP/W; ϕ^b is angle indicating the rate of increase in shear strength relative to matric suction.

Another way to model for unsaturated slope is using the PLAXIS program. Hossain,2013 carried out slope stability analysis for unsaturated earth slope on expansive clay with PLAXIS. (Oh and Vanapalli, 2010) A fully coupled flow deformation analysis was performed using the finite element-based software PLAXIS which is based on Bishop's effective stress concept. The change in shear strength due to change in matric suction can be considered during infiltration. This program can model unsaturated flow that is function of degree of saturation of soil or matric suction and get not only stability analysis but deformation of unsaturated slope during the rain-fall.

Appendix B. Test site and field test program

B.1 Description of test site

Location of test site

In order to accomplish the stated objectives of developing a residual soil database of suction parameters, an experimental program was undertaken using a North Carolina Department of Transportation (NCDOT) construction site in Greensboro, North Carolina as shown in Figure **B-1**. The Project No. 39406.1.1 highway construction site is located at Alamance Road, Greensboro, Guilford County, North Carolina. Three slopes and one sheet pile wall were constructed in the field.

Figure B-1 Location of test site in this research

The site located in the south of Guilford County which is in the Piedmont physiographic province. The main rock type at the site is sheared granite reported by Mundorff (1948). The feature of this sheared granite has also been explicitly described by Mundorff (1948):

"The granite is generally a moderately coarse pink schistose and gneissic rock consisting chiefly of quartz, biotite, and feldspar. The granite has been considerably metamorphosed and intensely sheared. The outstanding feature of the granite is the schistose and slaty dikes, which are green in color and greatly resemble the greenstone schists."

Piedmont residual province

Piedmont residual soils are part of a geologic formation that underlies a region along the eastern portion of North America, extending from southwest Pennsylvania into Alabama, as shown in Figure B-2. These residual soils were formed from the weathering of igneous and metamorphic rock. Variable weathering, temperatures, drainage conditions, and topography have changed the parent rock into residual soil, which varies in type from clayey topsoil to sandy silts and silty sand (Martin, 1977).

Due to various and irregular weathering conditions, it is difficult to characterize residual soil (Wang and Borden 1996, Mayne and Brown 2003). Nonetheless, typically residual soil can be characterized by examining mineral segregation and structural defects in the parent rock, which results in nonhomogenous and anisotropic engineering properties (Sowers and Richardson, 1983). Typically, the portion of the residual soil that is closest to the ground surface consists of fine-grained clay, which is a red-tan color due to complete weathering processes (Mayne and Brown, 2003).

Figure B-2 Location of piedmont province (Wang and Borden, 1997)

Due to the complicated engineering characteristics of Piedmont residual soils, several researchers have investigated their engineering properties. Sowers and Richardson (1983) investigated the geologic formation of residual soils and identified the classifications of the soils while also studying their compressibility and settlement behavior. Martin (1977) found a correlation between the SPT N-values and modulus values obtained from pressuremeter tests (PMTs). Wang and Borden (1996) studied and summarized the characteristic properties and deformation characteristics of residual soils based on extensive laboratory and in situ test results in an attempt to understand the engineering behavior of these types of soil. Mayne and Brown (2003) summarized the engineering soil property profiles obtained from various in situ and laboratory tests for Piedmont residual soils.

B.2 Field test program

A full-scale field testing program was conducted to investigate the effects of matric suction on the behavior of unsaturated Piedmont residual soil. The test site was proposed to build three slope of varying steepness (0.25:1, 0.5:1, and 1:1) on one side, and one cantilever sheet pile wall was installed on the other side, as shown in **Figure B-3**. The soil between the intended slopes and the sheet pile wall was excavated via stage excavation to a depth of 22 feet. **Figure B-3** shows a plan view of the entire test site, in which the locations of three slopes with their inclination and sheet pile wall are marked.

The field test program is to excavate the soil between slope crest and sheet pile wall step by step, and build water ponds on top of slopes and sheet pile area for infiltration. **Figure B-5** shows the view of area between slopes and sheet pile wall after 22-ft excavation and **Figure B-6** shows the water ponds on top of slopes. The summary of test schedule is shown in Figure **B-4**.

Figure B-3 Plan view of the test site

Figure B-4 Excavation depths over time

Figure B-5 View of site after 22-ft excavation

Figure B-6 Infiltration on top of slopes

B.3 SPT, CPT and PMT data

SPT, CPT and PMT are performed in this test site prior to excavation, and the locations of those tests are shown in **Figure B-3**.

Comprehensive profile of the six location of SPT boring holes are shown from Figure **B-7** to Figure **B-13**, the parameters shown as a function of depth, including SPT N value, natural gravimetric water content (w, %), liquid limit (LL), plastic limit (PL), void ratio (e), degree of saturation (S, %), percentage passing the #No. 200 sieve (< = 0.075 mm, %), suction readings by tensiometer (ψ_t, kPa) and suction measured by filter paper method (ψ_f, kPa).

Tip resistance and sleeve friction measured from CPT test are presented from Figure B-14 to Figure B-17, for 0.5:1 slope, 0.25:1 slope, 1:1 slope and sheet pile, respectively. PMT data are presented from Figure **B-18** to Figure **B-31**, for each depth at two locations, 404+50 and 405+70.

Figure B-7 Profiles of SPT N-value, moisture content, void ratio, degree of saturation, fines, and suction for 405+70 3'LT

Figure B-8 Profile of SPT N-value, moisture content, void ratio, degree of saturation, fines, and suction for 405+70 9'RT

Figure B-9 Profiles of SPT N-value, moisture content, void ratio, degree of saturation, fines, and suction for 404+50 3'LT

Figure B-10 Profiles of SPT N-value, moisture content, void ratio, degree of saturation, fines, and suction for 403+45 3'LT

Figure B-11 Profiles of SPT N-value, moisture content, void ratio, degree of saturation, fines, and suction for 404+50 86'RT

Figure B-12 Profiles of SPT n-value, moisture content, void ratio, degree of saturation, fines, and suction for 404+50 94'RT

Figure B-13 Profiles of SPT N-value, moisture content, void ratio, degree of saturation, fines, and suction for 404+50 102'RT

Figure B-14 Sleeve stress, tip stress, ratio from CPT (0.5:1 slope)

Figure B-15 Sleeve stress, tip stress, ratio from CPT (0.5:1 slope)

Figure B-16 Sleeve stress, tip stress, ratio from CPT (1:1 slope)

Figure B-17 Sleeve stress, tip stress, ratio from CPT (Sheet pile)

Geoscience Group, Inc.
Project: NCDOT U2412B
Boring: B-404+50
Test Depth: 2.5 Feet - 4.5 Feet
Test Performed: Jason Smith
Test Date: April 10, 2013
Probe: Probe #1
Air/Water Differential: 1.0 Tons/Square Foot
Pilot Hole Performed By Pushing 2.5 Inch Outer Diameter Reverse Bevel Split-Spoon Sampler

Test Data

Pressure (tons/sq foot)	60 Second Volume Reading (cc)	Creep (cc)
0	0	
0.5	187.5	15
1	192.5	0
1.5	197.5	0
2	202.5	0
2.5	207.5	0
3	212.5	0
3.5	217.5	0
4	225	0
4.5	232.5	0
5	240	2.5
5.5	250	2.5
6	262.5	2.5
6.5	282.5	5
7	312.5	10
7.5	355	15
8	407.5	20
8.5	482.5	35
9	587.5	45

Figure B-18 PMT data at 404+50, 2.5-4.5 ft

Geoscience Group, Inc.
Project: NCDOT U2412B
Boring: B-404+50
Test Depth: 9.5 Feet - 11.5 Feet
Test Performed: Jason Smith
Test Date: April 10, 2013
Probe: Probe #1
Air/Water Differential: 1.0 Tons/Square Foot
Pilot Hole Performed By Pushing 2.5 Inch Outer Diameter Reverse Bevel Split-Spoon Sampler

Test Data

Pressure (tons/sq foot)	60 Second Volume Reading (cc)	Creep (cc)
0	0	
0.5	207.5	17.5
1	215	0
1.5	220	0
2	225	0
2.5	230	0
3	237.5	2.5
3.5	240	0
4	245	0
4.5	252.5	2.5
5	257.5	0
5.5	265	0
6	270	0
6.5	277.5	0
7	285	2.5
7.5	292.5	0
8	302.5	0
8.5	312.5	2.5
9	325	2.5
9.5	342.5	5
10	357.5	5
10.5	387.5	10
11	422.5	12.5
11.5	470	17.5
12	552.5	37.5
12.5	612.5	47.5

Figure B-19 PMT data at 404+50, 9.5-11.5 ft

Geoscience Group, Inc.
Project: NCDOT U2412B
Boring: B-404+50
Test Depth: 14.0 Feet - 16.0 Feet
Test Performed: Jason Smith
Test Date: April 10, 2013
Probe: Probe #1
Air/Water Differential: 0.75 Tons/Square Foot
Pilot Hole Performed By Pushing 2.5 Inch Outer Diameter Reverse Bevel Split-Spoon Sampler

Test Data

Pressure (tons/sq foot)	60 Second Volume Reading (cc)	Creep (cc)
0	0	
0.5	240	40
1	250	0
1.5	257.5	0
2	265	0
2.5	272.5	0
3	282.5	2.5
3.5	292.5	2.5
4	302.5	2.5
4.5	312.5	2.5
5	325	2.5
5.5	342.5	5
6	367.5	7.5
6.5	397.5	10
7	437.5	15
7.5	492.5	22.5
8	580	35
8.5	677.5	42.5

Figure B-20 PMT data at 404+50, 14.0-16.0 ft

Geoscience Group, Inc.
Project: NCDOT U2412B
Boring: B-404+50
Test Depth: 18.0 Feet - 20.0 Feet
Test Performed: Jason Smith
Test Date: April 10, 2013
Probe: Probe #1
Air/Water Differential: 0.5 Tons/Square Foot
Pilot Hole Performed By Pushing 2.5 Inch Outer Diameter Reverse Bevel Split-Spoon Sampler

Test Data

Pressure (tons/sq foot)	60 Second Volume Reading (cc)	Creep (cc)
0	0	
0.5	200	17.5
1	210	2.5
1.5	217.5	0
2	225	0
2.5	232.5	0
3	240	0
3.5	252.5	2.5
4	262.5	2.5
4.5	272.5	0
5	290	5
5.5	312.5	7.5
6	342.5	10
6.5	382.5	15
7	437.5	20
7.5	510	30
8	612.5	42.5

Figure B-21 PMT data at 404+50, 18.0-20.0 ft

Geoscience Group, Inc.
Project: NCDOT U2412B
Boring: B-404+50
Test Depth: 24.0 Feet - 26.0 Feet
Test Performed: Jason Smith
Test Date: April 10, 2013
Probe: Probe #1
Air/Water Differential: 0.5 Tons/Square Foot
Pilot Hole Performed By Pushing 2.5 Inch Outer Diameter Reverse Bevel Split-Spoon Sampler

Test Data

Pressure (tons/sq foot)	60 Second Volume Reading (cc)	Creep (cc)
0	0	
0.5	262.5	65
1	285	2.5
1.5	297.5	0
2	312.5	2.5
2.5	327.5	2.5
3	342.5	2.5
3.5	355	2.5
4	370	2.5
4.5	387.5	5
5	405	5
5.5	422.5	2.5
6	442.5	5
6.5	467.5	5
7	500	10
7.5	542.5	17.5
8	605	27.5
8.5	702.5	45

Figure B-22 PMT data at 404+50, 24.0-26.0 ft

Geoscience Group, Inc.
Project: NCDOT U2412B
Boring: B-404+50
Test Depth: 28.0 Feet - 30.0 Feet
Test Performed: Jason Smith
Test Date: April 11, 2013
Probe: Probe #1
Air/Water Differential: 0.5 Tons/Square Foot
Pilot Hole Performed By Pushing 2.5 Inch Outer Diameter Reverse Bevel Split-Spoon Sampler

Test Data

Pressure (tons/sq foot)	60 Second Volume Reading (cc)	Creep (cc)
0	0	
0.5	225	22.5
1	237.5	2.5
1.5	247.5	2.5
2	255	2.5
2.5	262.5	0
3	275	2.5
3.5	290	2.5
4	307.5	5
4.5	330	7.5
5	357.5	10
5.5	392.5	12.5
6	437.5	20
6.5	492.5	25
7	567.5	32.5
7.5	652.5	37.5

Figure B-23 PMT data at 404+50, 28.0-30.0 ft

Geoscience Group, Inc.
Project: NCDOT U2412B
Boring: B-404+50
Test Depth: 34.5 Feet - 36.5 Feet
Test Performed: Jason Smith
Test Date: April 11, 2013
Probe: Probe #1
Air/Water Differential: 0 Tons/Square Foot
Pilot Hole Performed By Pushing 2.5 Inch Outer Diameter Reverse Bevel Split-Spoon Sampler

Test Data

Pressure (tons/sq foot)	60 Second Volume Reading (cc)	Creep (cc)
0	0	
0.5	272.5	60
1	290	2.5
1.5	302.5	2.5
2	315	2.5
2.5	327.5	0
3	342.5	0
3.5	357.5	5
4	372.5	5
4.5	385	2.5
5	402.5	7.5
5.5	417.5	5
6	435	5
6.5	457.5	5
7	482.5	7.5
7.5	512.5	10
8	550	15
8.5	592.5	15
9	652.5	25

Figure B-24 PMT data at 404+50, 34.5-36.5 ft

Geoscience Group, Inc.
Project: NCDOT U2412B
Boring: B-404+70
Test Depth: 3.5 Feet - 5.5 Feet
Test Performed: Jason Smith
Test Date: April 11, 2013
Probe: Probe #1
Air/Water Differential: 1.0 Tons/Square Foot
Pilot Hole Performed By Pushing 2.5 Inch Outer Diameter Reverse Bevel Split-Spoon Sampler

Test Data

Pressure (tons/sq foot)	60 Second Volume Reading (cc)	Creep (cc)
0	0	
0.5	197.5	32.5
1	210	2.5
1.5	220	2.5
2	227.5	0
2.5	237.5	0
3	250	2.5
3.5	262.5	2.5
4	282.5	5
4.5	307.5	5
5	347.5	12.5
5.5	410	22.5
6	502.5	42.5
6.5	615	52.5

Figure B-25 PMT data at 405+70, 3.5-5.5 ft

Geoscience Group, Inc.
Project: NCDOT U2412B
Boring: B-404+70
Test Depth: 8.5 Feet - 10.5 Feet
Test Performed: Jason Smith
Test Date: April 11, 2013
Probe: Probe #1
Air/Water Differential: 1.0 Tons/Square Foot
Pilot Hole Performed By Pushing 2.5 Inch Outer Diameter Reverse Bevel Split-Spoon Sampler

Pressuremeter Test Was Performed Immediately After Sheet Pile Was Vibrated Into The Ground

Test Data

Pressure (tons/sq foot)	60 Second Volume Reading (cc)	Creep (cc)
0	0	
0.5	242.5	62.5
1	272.5	7.5
1.5	312.5	10
2	387.5	32.5
2.5	495	50
3	645	72.5

Figure B-26 PMT data at 405+70, 8.5-10.5 ft

Geoscience Group, Inc.
Project: NCDOT U2412B
Boring: B-404+70
Test Depth: 14.5 Feet - 16.5 Feet
Test Performed: Jason Smith
Test Date: April 11, 2013
Probe: Probe #1
Air/Water Differential: 0.5 Tons/Square Foot
Pilot Hole Performed By Pushing 2.5 Inch Outer Diameter Reverse Bevel Split-Spoon Sampler

Pressuremeter Test Was Performed Immediately After Sheet Pile Was Vibrated Into The Ground

Test Data

Pressure (tons/sq foot)	60 Second Volume Reading (cc)	Creep (cc)
0	0	
0.5	235	57.5
1	275	10
1.5	335	22.5
2	417.5	40
2.5	545	57.5
3	725	90

Figure B-27 PMT data at 405+70, 14.5-16.5 ft

Geoscience Group, Inc.
Project: NCDOT U2412B
Boring: B-404+70
Test Depth: 19.0 Feet - 21.0 Feet
Test Performed: Jason Smith
Test Date: April 11, 2013
Probe: Probe #1
Air/Water Differential: 0.5 Tons/Square Foot
Pilot Hole Performed By Pushing 2.5 Inch Outer Diameter Reverse Bevel Split-Spoon Sampler

Sheet Pile Installation Stopped Prior To Running Test

Test Data

Pressure (tons/sq foot)	60 Second Volume Reading (cc)	Creep (cc)
0	0	
0.25	210	27.5
0.5	217.5	0
0.75	222.5	2.5
1	227.5	0
1.25	232.5	2.5
1.5	237.5	2.5
1.75	240	0
2	245	2.5
2.25	250	2.5
2.5	257.5	2.5
2.75	262.5	0
3	272.5	2.5
3.25	280	2.5
3.5	292.5	2.5
3.75	310	7.5
4	330	7.5
4.25	355	12.5
4.5	385	12.5
4.75	432.5	20
5	477.5	20
5.25	532.5	25
5.5	602.5	35
5.75	675	35

Figure B-28 PMT data at 405+70, 19.0-21.0 ft

Geoscience Group, Inc.
Project: NCDOT U2412B
Boring: B-404+70
Test Depth: 23.0 Feet - 25.0 Feet
Test Performed: Jason Smith
Test Date: April 11, 2013
Probe: Probe #1
Air/Water Differential: 0.5 Tons/Square Foot
Pilot Hole Performed By Pushing 2.5 Inch Outer Diameter Reverse Bevel Split-Spoon Sampler

Test Data

Pressure (tons/sq foot)	60 Second Volume Reading (cc)	Creep (cc)
0	0	
0.5	202.5	5
1	210	0
1.5	217.5	0
2	225	2.5
2.5	230	0
3	237.5	2.5
3.5	242.5	2.5
4	252.5	2.5
4.5	262.5	2.5
5	280	2.5
5.5	297.5	7.5
6	322.5	10
6.5	367.5	15
7	432.5	27.5
7.5	517.5	37.5
8	637.5	55

Figure B-29 PMT data at 405+70, 23.0-25.0 ft

Geoscience Group, Inc.
Project: NCDOT U2412B
Boring: B-404+70
Test Depth: 29.0 Feet - 31.0 Feet
Test Performed: Jason Smith
Test Date: April 11, 2013
Probe: Probe #1
Air/Water Differential: 0.25 Tons/Square Foot
Pilot Hole Performed By Pushing 2.5 Inch Outer Diameter Reverse Bevel Split-Spoon Sampler

Test Data

Pressure (tons/sq foot)	60 Second Volume Reading (cc)	Creep (cc)
0	0	
0.5	130	5
1	142.5	2.5
1.5	155	2.5
2	167.5	2.5
2.5	182.5	2.5
3	197.5	2.5
3.5	212.5	2.5
4	227.5	5
4.5	245	2.5
5	270	10
5.5	292.5	7.5
6	315	10
6.5	347.5	12.5
7	385	12.5
7.5	442.5	20
8	522.5	35
8.5	622.5	45

Figure B-30 PMT data at 405+70, 29.0-30.0 ft

Geoscience Group, Inc.
Project: NCDOT U2412B
Boring: B-404+70
Test Depth: 34.5 Feet - 36.5 Feet
Test Performed: Jason Smith
Test Date: April 11, 2013
Probe: Probe #1
Air/Water Differential: 0 Tons/Square Foot
Pilot Hole Performed By Pushing 2.5 Inch Outer Diameter Reverse Bevel Split-Spoon Sampler

Test Data

Pressure (tons/sq foot)	60 Second Volume Reading (cc)	Creep (cc)
0	0	
0.5	185	12.5
1	197.5	0
1.5	212.5	5
2	222.5	2.5
2.5	232.5	0
3	245	2.5
3.5	260	2.5
4	272.5	2.5
4.5	292.5	5
5	315	7.5
5.5	342.5	10
6	377.5	15
6.5	422.5	15
7	482.5	25
7.5	562.5	35
8	662.5	45

Figure B-31 PMT data at 405+70, 34.5-36.5 ft

Appendix C. Field monitor instrument

Field monitor instruments including moisture, matric suction, inclinometer, LiDAR scan, strain gauge and vibrating wire push-in pressure cell. All sensors were installed prior to any excavation, and continued to monitor changes until the end of the entire field test program. Moisture and matric suction sensors are installed in all four locations. The locations and depths of all installed sensors are shown in Figure C-1 to Figure C-4, for 0.5:1, 0.25:1, 1:1 and sheet pile wall, respectively.

Figure C-1 Locations and depths of moisture and FTC sensors (0.5:1 slope)

Figure C-2 Locations and depths of moisture and FTC sensors (0.25:1 slope)

Figure C-3 Locations and depths of moisture and FTC sensors (1:1 slope)

Figure C-4 Plan view of instruments in sheet pile

Inclinometer, strain gauge and vibrating wire push-in pressure cell were installed in sheet pile wall area, and the plan view of sensors is also shown in **Error! Reference source ot found.**. Description and measurement are listed in the following sub-sections.

C.1 Moisture and matric suction monitoring

In order to monitor the suction and moisture movement in the soil profile, sixteen FTC-100 sensors were installed for taking the matric suction measurements (Figure C-5) and sixteen 10HS moisture sensors were installed for taking the volumetric water content measurements (Figure C-6).

Figure C-5 FTC-100 sensor from GCTS co.

Figure C-6 Moisture sensor from Decagon Co.

The suction and moisture sensors were installed on June 13, 2013. The initial readings were taken on June 27, 2013, which was two weeks after the installation to give the sensors a sufficient amount time to reach equilibrium.

The monitoring schedule incorporated every two weeks from June 27, 2013 to March 10, 2014. The suction and moisture profile changes over time were monitored using instrumentation. Man-made infiltration by ponding water on top of the slopes was maintained from February 6, 2014 to the end of monitoring.

Table C-1 presents information about the installed matric suction and volumetric water content measuring sensors. Good contact between the sensors and soil was ensured upon installation. The readings of the matric suction sensors were taken in conjunction with the moisture sensors.

Table C-1 Installed sensors information

Slope	Station	FTC Sensor (depth, ft)	Quantities	Moisture Sensor (depth, ft)	Quantities
1:1	403+45	3, 6, 10, 20	4	2, 4, 6, 8	4
0.25:1	404+50	3, 6, 10, 20	4	2, 4, 7	3
0.5:1	405+70	3, 6, 10	3	2, 4, 8	3
Sheet pile wall	404+50	3, 6, 10, 14, 20	5	2, 2.6, 4, 5, 6, 14	6

Figure C-7 through Figure C-14 show the suction and moisture profiles at various points in time, and the plan view of the installed sensors and borings. The solid squares and crosses (from light to dark colors) represent the data obtained from the field-installed sensors from the beginning to the end of the monitoring process. To verify the actual state of the field soil, the initial state (hollow red circles) and final state (solid black circles) of the soil profiles were determined by testing the bored samples. The initial and final suction states were determined from the suction of each Shelby tube using tensiometers. The water contents of the Shelby tube samples were determined by oven drying each sample over 24 hours.

Figure C-7 Suction profile of 0.5:1 slope

Figure C-8 Moisture profile of 0.5:1 slope

Figure C-9 Suction profile of 0.25:1 slope

Figure C-10 Moisture profile of 0.25:1 slope

Figure C-11 Suction profile of 1:1 slope

Figure C-12 Moisture profile of 1:1 slope

Figure C-13 Suction profile of sheet pile wall

Figure C-14 Moisture profile of sheet pile wall

C.2 Inclinometer

Inclinometer systems (that include a probe, control cable, and reading box) can be used to monitor soil movement and deformation. These systems include an inclinometer casing, which is installed in a vertical borehole where movement is expected to occur. The inclinometer casing has grooves that guide the probe and control its orientation as it measures displacement uniformly from the top to the bottom of the borehole. For this study, the entire length of the casing was measured twice during each survey to obtain accurate data. The first survey established the initial profiles of the casing, which mitigated any concerns that may have been caused by imperfect casing installation. The displacement, or movement, was calculated by comparing the initial profile results to the subsequent survey results.

As shown in **Error! Reference source not found.**, four inclinometer casings were nstalled in the ground behind and at the center of the sheet pile wall. Figure C-15 shows the measured inclinometer data obtained from the casings installed in the ground behind the sheet pile wall at distances of 0.6 m, 1.5 m, 2.7 m, and 4 m from the wall. Figure C-16 presents the lateral displacements at 0.3 m below the ground surface behind the sheet pile wall as obtained from the inclinometer-measured data.

4 m from sheet pile wall 2.7 m from sheet pile wall 1.5 m from sheet pile wall 0.6 m from sheet pile wall

Figure C-15 Measured displacements obtained from inclinometers behind sheet pile wall

Figure C-16 Lateral displacements at 0.3 m below ground surface behind sheet pile wall

The displacement data obtained from the inclinometers show the deformation of the soil throughout the excavation steps. The closer the inclinometer casings are to the sheet pile wall, the more the displacements at the top of the ground surface increase, as shown in Figure C-15 and Figure C-16. After the 6.1 m excavation step, 35 mm lateral displacement took place at 1.2 m from the sheet pile wall, but the ground surface moved 170 mm laterally after the 6.7 m excavation. One assumption is that shear deformation occurred, and the collapsed soil body was pushed toward the sheet pile wall, resulting in large displacement due to rainfall that infiltrated the gap between the sheet pile wall and the soil. The infiltration of water could cause the matric suction and subsequently the shear strength of the soil to decrease and potentially reach the failure state. Figure C-17 (a) shows the separation between the sheet pile wall and the soil after the 6.1 m excavation. Figure C-17 (b) shows the cracks behind the wall after the 6.7 m stage of excavation. The cracks at the sheet pile wall took place gradually. A clear failure crack was observed 1 m from the sheet pile wall, but crack lines also were found at 1.5 m and 2.1 m from the sheet pile wall.

(a)

(b)

Figure C-17 (a) Observed gap between sheet pile wall and soil after 6.1 m stage of excavation and (b) observed failure crack after 6.7 m stage of excavation

The four tables from Table **C-2**to Table **C-5** are the raw data of inclinometers in the sheet pile area, 0.6, 1.5, 2.7 and 4.0 meters from sheet pile, respectively. The six tables from **Error! eference source not found.**Table **C-6** to Table **C-11** are the raw data of inclinometers in the three slope areas, and two inclinometers are installed for each slope, 2.0 meters and 0.9 meters from crest, respectively.

Table C-2 Sheet pile area (0.6 m from sheet pile)

0.6 m from sheet pile		Lateral displacement (mm)			Lateral displacement (mm)			Lateral displacement (mm)		
	Initial	After 4.6 m excavation			After 6.1 m excavation			After 6.7 m excavation		
Depth (m)	6/27/2013	9/4/2013	9/23/2013	10/8/2013	10/24/2013	11/7/2013	11/20/2013	1/9/2014	1/23/2014	2/18/2014
0.3	0	17.6	22.1	23.8	32.4	34.8	36.3	128.4	154.2	166.3
0.8	0	16.3	20.2	21.4	29.6	31.7	33.1	115.6	139.7	150.5
1.3	0	15.1	18.4	19.4	27.2	29.1	30.4	104.0	125.9	135.3
1.8	0	14.0	17.0	17.7	25.2	26.9	28.0	92.9	112.6	120.8
2.3	0	12.7	15.3	15.8	23.1	24.5	25.4	81.4	99.0	105.9
2.8	0	10.8	13.2	13.6	20.8	22.0	22.9	70.0	85.3	91.0
3.3	0	9.1	11.4	11.7	19.0	20.1	20.9	56.3	69.1	73.6
3.8	0	7.5	9.8	10.0	17.2	18.1	18.8	43.7	54.5	58.2
4.3	0	6.1	8.2	8.4	15.6	16.4	17.0	36.5	45.7	48.9
4.8	0	4.7	6.4	6.5	13.4	14.2	14.7	34.9	44.3	47.5
5.3	0	3.6	4.9	5.0	11.4	12.2	12.6	30.3	39.4	42.8
5.8	0	3.0	3.9	3.9	10.0	10.7	11.1	24.5	31.8	34.4
6.3	0	2.4	3.0	3.0	7.8	8.4	8.7	18.5	23.1	25.1
6.8	0	1.9	2.4	2.4	5.6	6.2	6.4	13.8	16.3	17.6
7.3	0	1.6	1.9	1.9	4.3	4.8	5.0	10.8	12.3	13.0
7.8	0	1.4	1.7	1.7	3.6	4.1	4.3	9.4	10.6	11.2
8.3	0	1.3	1.6	1.5	3.0	3.5	3.7	7.4	8.2	8.6
8.8	0	1.2	1.4	1.4	2.7	3.1	3.3	5.8	6.4	6.7
9.3	0	1.2	1.4	1.3	2.4	2.9	3.0	4.8	5.1	5.4
9.8	0	1.1	1.2	1.2	2.2	2.6	2.7	3.8	4.0	4.2
10.3	0	1.0	1.1	1.1	2.0	2.4	2.5	3.4	3.5	3.6
10.8	0	0.9	1.0	1.0	1.8	2.2	2.3	3.0	3.0	3.0
11.3	0	0.6	0.8	0.7	1.6	1.9	2.0	2.8	2.8	3.0
11.8	0	0.5	0.6	0.6	1.4	1.7	1.8	2.6	2.6	2.7
12.3	0	0.4	0.4	0.4	1.1	1.3	1.4	2.1	2.2	2.2
12.8	0	0.3	0.4	0.3	0.9	1.1	1.2	1.7	1.8	1.8
13.3	0	0.2	0.2	0.2	0.7	0.8	0.9	1.3	1.4	1.4
13.8	0	0.2	0.2	0.2	0.5	0.5	0.6	0.9	0.9	0.9
14.3	0	0.1	0.1	0.1	0.2	0.3	0.3	0.4	0.4	0.4
14.8	0	0	0	0	0	0	0	0	0	0

Table C-3 Sheet pile area (1.5 m from sheet pile)

1.5 m from sheet pile	Lateral displacement (mm)				Lateral displacement (mm)			Lateral displacement (mm)		
	Initial	After 4.6 m excavation			After 6.1 m excavation			After 6.7 m excavation		
Depth (m)	6/27/2013	9/4/2013	9/23/2013	10/8/2013	10/24/2013	11/7/2013	11/20/2013	1/9/2014	1/23/2014	2/18/2014
0.53	0	14.55	17.91	18.65	25.48	26.79	27.72	109.29	135.66	146.76
1.03	0	14.07	17.08	17.77	24.69	25.92	26.77	96.17	119.57	129.94
1.53	0	13.04	15.84	16.45	23.46	24.66	25.55	82.49	103.51	112.79
2.03	0	11.6	14.09	14.64	21.61	22.84	23.67	68.76	88.06	95.91
2.53	0	10.1	12.23	12.67	19.24	20.35	21.01	55.7	72.91	79.37
3.03	0	8.6	10.5	10.86	16.93	17.84	18.34	44.96	59.77	64.86
3.53	0	7.18	8.96	9.27	15	15.8	16.2	36.87	49	52.82
4.03	0	5.94	7.58	7.83	13.45	14.14	14.46	30.58	40.47	43.62
4.53	0	4.85	6.29	6.47	12.03	12.59	12.88	25.47	33.4	36.21
5.03	0	3.91	5.1	5.21	10.53	11	11.23	20.95	26.48	28.98
5.53	0	3.12	4.07	4.14	8.9	9.28	9.46	16.94	20.2	22.38
6.03	0	2.45	3.22	3.31	7.3	7.65	7.8	14.76	16.81	18.73
6.53	0	1.98	2.57	2.65	5.84	6.13	6.23	12.27	13.7	15.1
7.03	0	1.58	2	2.02	4.51	4.75	4.82	9.78	10.83	11.8
7.53	0	1.29	1.59	1.56	3.53	3.74	3.8	7.73	8.63	9.28
8.03	0	1.09	1.34	1.32	2.88	3.07	3.11	6.28	6.95	7.41
8.53	0	0.93	1.14	1.13	2.4	2.58	2.62	5.16	5.63	5.99
9.03	0	0.81	0.99	0.98	2.02	2.18	2.21	4.04	4.34	4.61
9.53	0	0.76	0.93	0.9	1.8	1.97	1.97	3.32	3.52	3.77
10.03	0	0.66	0.86	0.85	1.64	1.78	1.78	2.68	2.78	2.94
10.53	0	0.54	0.69	0.65	1.37	1.48	1.49	2.14	2.18	2.26
11.03	0	0.52	0.62	0.61	1.27	1.41	1.4	1.96	1.98	2.08
11.53	0	0.43	0.51	0.49	1.08	1.21	1.21	1.74	1.76	1.86
12.03	0	0.29	0.35	0.32	0.82	0.91	0.92	1.37	1.38	1.48
12.53	0	0.2	0.24	0.22	0.61	0.69	0.68	1.06	1.07	1.15
13.03	0	0.18	0.17	0.15	0.45	0.51	0.52	0.77	0.81	0.86
13.53	0	0.09	0.07	0.05	0.19	0.26	0.25	0.39	0.43	0.44
14.03	0	0	0	0	0	0	0	0	0	0

Table C-4 Sheet pile area (2.7 m from sheet pile)

2.7 m from sheet pile		Lateral displacement (mm)			Lateral displacement (mm)			Lateral displacement (mm)		
	Initial	After 4.6 m excavation			After 6.1 m excavation			After 6.7 m excavation		
Depth (m)	6/27/2013	9/4/2013	9/23/2013	10/8/2013	10/24/2013	11/7/2013	11/20/2013	1/9/2014	1/23/2014	2/18/2014
0.38	0	10.06	11.32	11.35	16.56	17.52	17.93	30.59	36.66	44.66
0.88	0	9.24	10.69	10.71	15.49	16.27	16.6	25.46	30.88	38.25
1.38	0	8.65	10.08	10.13	14.54	15.33	15.63	23.33	28.37	35.46
1.88	0	8.11	9.54	9.62	13.99	14.79	15.08	22.73	27.57	33.9
2.38	0	7.27	8.58	8.67	12.78	13.59	13.89	20.68	24.55	29.67
2.88	0	6.21	7.43	7.48	11.59	12.39	12.66	19.09	21.9	25.95
3.38	0	5.44	6.59	6.62	10.72	11.48	11.73	18.2	20.37	23.63
3.88	0	4.61	5.58	5.57	9.38	10.09	10.32	16.36	18.16	20.72
4.38	0	3.92	4.75	4.72	8.17	8.82	9.01	14.41	15.81	17.89
4.88	0	3.27	3.92	3.86	7.06	7.67	7.82	12.78	13.83	15.51
5.38	0	2.78	3.3	3.25	6.12	6.67	6.8	11.41	12.3	13.72
5.88	0	2.33	2.76	2.68	5.22	5.72	5.83	10.09	10.87	12.03
6.38	0	2	2.33	2.25	4.43	4.89	4.98	8.71	9.37	10.29
6.88	0	1.71	1.95	1.86	3.67	4.1	4.17	7.41	7.99	8.72
7.38	0	1.46	1.63	1.54	3.08	3.48	3.52	6.33	6.83	7.42
7.88	0	1.28	1.4	1.31	2.57	2.99	2.99	5.33	5.74	6.23
8.38	0	1.06	1.14	1.09	2.17	2.53	2.55	4.45	4.81	5.18
8.88	0	0.94	1	0.95	1.88	2.22	2.23	3.75	4.03	4.34
9.38	0	0.87	0.91	0.85	1.65	2	2	3.21	3.41	3.73
9.88	0	0.78	0.81	0.76	1.47	1.8	1.8	2.8	2.93	3.22
10.38	0	0.69	0.72	0.68	1.35	1.61	1.63	2.47	2.62	2.82
10.88	0	0.57	0.6	0.56	1.18	1.4	1.42	2.16	2.3	2.48
11.38	0	0.47	0.49	0.48	1	1.21	1.24	1.89	2	2.19
11.88	0	0.4	0.41	0.41	0.88	1.07	1.08	1.65	1.76	1.93
12.38	0	0.36	0.33	0.35	0.72	0.91	0.93	1.41	1.49	1.65
12.88	0	0.26	0.26	0.27	0.63	0.73	0.78	1.16	1.24	1.33
13.38	0	0.19	0.18	0.21	0.51	0.52	0.58	0.87	0.94	0.96
13.88	0	0.09	0.09	0.11	0.33	0.29	0.34	0.52	0.58	0.58
14.38	0	0.04	0.04	0.05	0.14	0.14	0.15	0.21	0.22	0.24
14.88	0	0	0	0	0	0	0	0	0	0

Table C-5 Sheet pile area (4.0 m from sheet pile)

4 m from sheet pile		Lateral displacement (mm)			Lateral displacement (mm)			Lateral displacement (mm)		
	Initial	After 4.6 m excavation			After 6.1 m excavation			After 6.7 m excavation		
Depth (m)	6/27/2013	9/4/2013	9/23/2013	10/8/2013	10/24/2013	11/7/2013	11/20/2013	1/9/2014	1/23/2014	2/18/2014
0.24	0	5.02	5.8	5.78	9.43	10.2	10.52	18.83	20.2	22.43
0.74	0	5.32	6.34	6.38	9.92	10.49	10.64	17.73	19.29	20.58
1.24	0	5.57	6.75	6.8	10.28	10.82	10.9	16.84	18.15	19.25
1.74	0	5.54	6.72	6.8	10.3	10.87	10.98	16.32	17.42	18.49
2.24	0	5.18	6.3	6.39	9.78	10.37	10.48	15.47	16.44	17.52
2.74	0	4.81	5.85	5.96	9.21	9.76	9.87	14.36	15.14	16.07
3.24	0	4.36	5.33	5.42	8.53	9.05	9.17	13.32	13.96	14.74
3.74	0	3.87	4.73	4.81	7.74	8.23	8.34	12.16	12.69	13.34
4.24	0	3.34	4.09	4.15	6.88	7.34	7.44	11.02	11.51	12.07
4.74	0	2.89	3.54	3.58	6.07	6.51	6.59	9.93	10.42	10.91
5.24	0	2.44	2.98	3.02	5.22	5.61	5.67	8.75	9.24	9.64
5.74	0	2.09	2.54	2.58	4.52	4.86	4.91	7.76	8.24	8.61
6.24	0	1.83	2.26	2.27	4.07	4.39	4.43	7.12	7.61	7.95
6.74	0	1.58	1.95	1.95	3.54	3.84	3.87	6.3	6.75	7.04
7.24	0	1.36	1.67	1.66	3.06	3.35	3.36	5.51	5.93	6.14
7.74	0	1.16	1.43	1.41	2.62	2.91	2.91	4.8	5.16	5.3
8.24	0	0.98	1.21	1.17	2.22	2.48	2.49	4.08	4.41	4.49
8.74	0	0.86	1.02	1.01	1.93	2.11	2.14	3.45	3.75	3.86
9.24	0	0.74	0.87	0.85	1.63	1.83	1.86	2.96	3.22	3.29
9.74	0	0.64	0.75	0.73	1.41	1.59	1.64	2.53	2.78	2.81
10.24	0	0.56	0.66	0.64	1.22	1.37	1.39	2.14	2.37	2.37
10.74	0	0.48	0.56	0.56	1.05	1.19	1.2	1.84	2.03	2.04
11.24	0	0.4	0.47	0.47	0.89	1.02	1.02	1.57	1.72	1.74
11.74	0	0.32	0.37	0.38	0.73	0.83	0.83	1.28	1.4	1.44
12.24	0	0.26	0.3	0.3	0.61	0.7	0.72	1.1	1.18	1.19
12.74	0	0.2	0.24	0.24	0.49	0.56	0.57	0.89	0.95	0.95
13.24	0	0.15	0.17	0.18	0.36	0.41	0.42	0.66	0.69	0.7
13.74	0	0.09	0.1	0.1	0.23	0.25	0.25	0.41	0.42	0.42
14.24	0	0.02	0.03	0.06	0.12	0.12	0.14	0.21	0.23	0.22
14.74	0	0	0	0	0	0	0	0	0	0

Table C-6 0.5 : 1 SLOPE (0.9 m from crest)

		δx (mm)			δx (mm)			δx (mm)		δx (mm)			
	Initial	After 4.6 m ex.			After 6.1 m ex.			After 6.7 m ex.		150 mm level of pond			
Depth (m)	6/27/13	9/4/13	9/23/13	10/8/13	10/25/13	11/8/13	11/22/13	1/13/14	1/24/14	2/10/14	2/19/14	3/4/14	3/10/14
0	0	1.88	3.94	3.79	4.61	4.97	5.35	8.76	7.86	9.69	10.98	9.68	10.73
0.5	0	2.14	3.9	3.52	4.49	4.64	4.7	7.98	8	8.96	9.83	9.05	10.29
1	0	2.27	3.91	3.43	4.49	4.61	4.63	7.83	7.83	8.7	9.51	8.81	10.05
1.5	0	2.09	3.65	3.15	4.25	4.38	4.37	7.63	7.65	8.51	9.28	8.56	9.83
2	0	1.83	3.34	2.83	4.01	4.18	4.16	7.32	7.35	8.21	8.96	8.26	9.52
2.5	0	1.6	3.08	2.61	3.9	4.12	4.09	7.07	7.08	7.92	8.64	7.96	9.21
3	0	1.46	2.9	2.49	3.92	4.17	4.13	6.95	6.94	7.75	8.45	7.8	9.02
3.5	0	1.28	2.63	2.25	3.8	4.1	4.06	6.84	6.84	7.64	8.32	7.72	8.89
4	0	1.19	2.38	2.06	3.71	3.96	3.95	6.63	6.68	7.46	8.11	7.57	8.67
4.5	0	1.05	2.07	1.84	3.55	3.76	3.78	6.27	6.31	7.05	7.62	7.2	8.23
5	0	0.96	1.78	1.68	3.38	3.55	3.62	5.94	6	6.76	7.17	6.88	7.8
5.5	0	0.89	1.54	1.47	3.22	3.37	3.48	5.68	5.76	6.53	6.72	6.7	7.37
6	0	0.83	1.24	1.23	3.04	3.16	3.32	5.49	5.56	6.32	6.43	6.54	7.11
6.5	0	0.81	1.01	1.07	2.91	2.98	3.17	5.25	5.34	6.09	6.18	6.4	6.85
7	0	0.84	0.86	0.96	2.8	2.81	3.04	5	5.08	5.8	5.92	6.26	6.54
7.5	0	0.85	0.73	0.86	2.66	2.64	2.9	4.7	4.81	5.49	5.6	6	6.18
8	0	0.8	0.59	0.72	2.46	2.43	2.7	4.36	4.48	5.12	5.23	5.65	5.77
8.5	0	0.75	0.54	0.64	2.25	2.22	2.49	3.94	4.09	4.68	4.75	5.15	5.29
9	0	0.7	0.53	0.6	2.05	2.03	2.27	3.53	3.67	4.21	4.26	4.61	4.76
9.5	0	0.6	0.49	0.58	1.78	1.81	1.99	3.03	3.12	3.55	3.61	3.87	4.09
10	0	0.56	0.51	0.57	1.6	1.67	1.81	2.68	2.75	3.15	3.2	3.39	3.62
10.5	0	0.5	0.46	0.5	1.38	1.44	1.57	2.26	2.32	2.64	2.7	2.83	3.07
11	0	0.47	0.47	0.51	1.28	1.34	1.46	2.04	2.1	2.38	2.44	2.55	2.78
11.5	0	0.47	0.53	0.55	1.25	1.33	1.44	1.94	1.99	2.19	2.28	2.35	2.62
12	0	0.44	0.52	0.52	1.14	1.2	1.3	1.71	1.76	1.91	2.02	2.05	2.35
12.5	0	0.43	0.53	0.53	1.06	1.11	1.22	1.53	1.59	1.69	1.8	1.8	2.1
13	0	0.36	0.43	0.45	0.88	0.89	0.98	1.21	1.26	1.35	1.45	1.46	1.67
13.5	0	0.33	0.41	0.4	0.76	0.78	0.86	1.02	1.05	1.13	1.2	1.21	1.4
14	0	0.26	0.31	0.3	0.58	0.61	0.68	0.77	0.79	0.85	0.88	0.9	1.05
14.5	0	0.17	0.2	0.19	0.39	0.42	0.48	0.51	0.51	0.57	0.58	0.59	0.71
15	0	0.13	0.18	0.18	0.29	0.34	0.39	0.39	0.38	0.38	0.38	0.38	0.47
15.5	0	0	0	0	0	0	0	0	0	0	0	0	0

Table C-7 0.5 : 1 SLOPE (2 m from crest)

		δx (mm)			δx (mm)			δx (mm)		δx (mm)			
	Initial	After 4.6 m ex.			After 6.1 m ex.			After 6.7 m ex.		150 mm level of pond			
Depth (m)	6/28/13	9/6/13	9/24/13	10/8/13	10/25/13	11/8/13	11/22/13	1/13/14	1/24/14	2/10/14	2/19/14	3/4/14	3/10/14
0	0	0.77	1.01	1.01	1.48	1.4	1.4	3.44	3.65	3.98	3.87	4.43	4.57
0.5	0	0.85	1.06	1.08	1.44	1.35	1.39	3.6	3.63	4.13	4.01	4.58	4.75
1	0	0.92	1.18	1.23	1.68	1.62	1.64	3.78	3.81	4.3	4.18	4.77	4.93
1.5	0	0.85	1.09	1.14	1.66	1.6	1.63	3.83	3.85	4.34	4.24	4.84	4.98
2	0	0.81	1.03	1.08	1.67	1.62	1.67	3.82	3.83	4.31	4.2	4.8	4.93
2.5	0	0.73	0.93	1.01	1.64	1.58	1.63	3.76	3.8	4.24	4.14	4.76	4.86
3	0	0.69	0.89	0.96	1.68	1.64	1.67	3.78	3.82	4.24	4.16	4.79	4.9
3.5	0	0.66	0.87	0.93	1.73	1.71	1.74	3.76	3.82	4.23	4.15	4.78	4.89
4	0	0.63	0.83	0.9	1.77	1.76	1.8	3.74	3.81	4.21	4.14	4.76	4.87
4.5	0	0.59	0.79	0.85	1.79	1.79	1.83	3.69	3.78	4.15	4.09	4.71	4.82
5	0	0.57	0.75	0.81	1.79	1.82	1.86	3.65	3.72	4.09	4.05	4.66	4.77
5.5	0	0.56	0.72	0.78	1.81	1.85	1.89	3.61	3.68	4.04	4.01	4.61	4.72
6	0	0.56	0.71	0.77	1.81	1.85	1.9	3.54	3.61	3.96	3.95	4.52	4.64
6.5	0	0.57	0.7	0.77	1.82	1.87	1.92	3.5	3.57	3.91	3.91	4.47	4.56
7	0	0.56	0.68	0.75	1.79	1.87	1.92	3.43	3.5	3.83	3.83	4.39	4.47
7.5	0	0.52	0.62	0.69	1.7	1.77	1.8	3.22	3.29	3.62	3.61	4.16	4.22
8	0	0.45	0.52	0.59	1.52	1.59	1.6	2.89	2.91	3.23	3.21	3.73	3.78
8.5	0	0.35	0.41	0.46	1.26	1.3	1.3	2.39	2.39	2.69	2.67	3.14	3.17
9	0	0.24	0.29	0.33	1.02	1.02	1.03	1.94	1.93	2.19	2.18	2.59	2.62
9.5	0	0.18	0.23	0.27	0.84	0.83	0.84	1.6	1.59	1.81	1.8	2.19	2.19
10	0	0.17	0.22	0.26	0.7	0.75	0.78	1.47	1.47	1.58	1.58	1.89	1.9
10.5	0	0.11	0.16	0.19	0.54	0.68	0.64	1.24	1.25	1.34	1.29	1.59	1.58
11	0	0.1	0.14	0.15	0.44	0.57	0.52	1.04	1.05	1.1	1.08	1.33	1.32
11.5	0	0.08	0.12	0.1	0.35	0.47	0.44	0.88	0.88	0.92	0.89	1.11	1.1
12	0	0.05	0.08	0.06	0.28	0.38	0.35	0.73	0.7	0.76	0.71	0.91	0.89
12.5	0	0.02	0.05	0.03	0.2	0.28	0.26	0.56	0.53	0.59	0.53	0.71	0.67
13	0	-0.01	0.03	0.02	0.14	0.19	0.18	0.4	0.37	0.44	0.37	0.54	0.48
13.5	0	-0.03	0	0.01	0.07	0.09	0.08	0.24	0.21	0.27	0.21	0.35	0.28
14	0	0.02	0.02	0.02	0.03	0.05	0.05	0.15	0.11	0.16	0.15	0.2	0.13
14.5	0	0	0	0	0	0	0	0	0	0	0	0	0

Table C-8 0.25 : 1 SLOPE (0.9 m from crest)

		δx (mm)			δx (mm)			δx (mm)		δx (mm)			
	Initial	After 4.6 m ex.			After 6.1 m ex.			After 6.7 m ex.		150 mm level of pond			
Depth (m)	06/28/13	09/06/13	09/24/13	10/08/13	10/25/13	11/08/13	11/22/13	01/13/14	01/24/14	02/10/14	02/19/14	03/04/14	03/10/14
0.24	0	0.45	2.1	2.14	3.78	3.48	4.33	5.38	6.17	5.91	6.59	6.81	6.82
0.74	0	0.87	2.04	2.24	3.68	3.5	4.12	5.66	6.29	6.08	6.69	6.83	6.85
1.24	0	1.13	2	2.24	3.66	3.45	3.98	5.67	6.28	6.02	6.6	6.69	6.76
1.74	0	1.3	1.95	2.13	3.65	3.45	3.95	5.72	6.33	6.03	6.56	6.66	6.76
2.24	0	1.41	2.05	2.22	3.84	3.66	4.14	5.9	6.47	6.19	6.69	6.81	6.93
2.74	0	1.47	2.11	2.32	4.09	3.97	4.44	6.21	6.76	6.48	6.95	7.04	7.17
3.24	0	1.47	2.08	2.28	4.19	4.12	4.55	6.31	6.82	6.57	7.02	7.12	7.24
3.74	0	1.44	2.02	2.22	4.25	4.25	4.69	6.49	6.98	6.78	7.17	7.29	7.4
4.24	0	1.39	1.9	2.11	4.28	4.31	4.74	6.61	7.08	6.91	7.27	7.4	7.51
4.74	0	1.34	1.84	2.03	4.32	4.38	4.78	6.66	7.11	6.96	7.29	7.44	7.55
5.24	0	1.28	1.76	1.93	4.25	4.34	4.73	6.66	7.12	6.97	7.3	7.46	7.56
5.74	0	1.24	1.68	1.83	4.19	4.26	4.68	6.6	7.09	6.92	7.24	7.41	7.53
6.24	0	1.23	1.65	1.79	4.09	4.19	4.6	6.45	6.93	6.76	7.07	7.26	7.37
6.74	0	1.21	1.61	1.74	3.97	4.09	4.47	6.24	6.71	6.57	6.86	7.06	7.17
7.24	0	1.17	1.54	1.65	3.78	3.89	4.26	5.89	6.38	6.21	6.52	6.69	6.83
7.74	0	1.05	1.38	1.47	3.42	3.51	3.86	5.28	5.73	5.56	5.86	6.03	6.18
8.24	0	0.88	1.17	1.25	2.94	3	3.32	4.52	4.91	4.75	5.02	5.18	5.32
8.74	0	0.73	0.97	1.04	2.49	2.53	2.81	3.79	4.16	3.95	4.21	4.37	4.52
9.24	0	0.59	0.8	0.85	2.06	2.08	2.33	3.09	3.43	3.22	3.45	3.59	3.72
9.74	0	0.46	0.64	0.67	1.65	1.67	1.87	2.45	2.74	2.58	2.76	2.86	2.94
10.24	0	0.36	0.52	0.51	1.33	1.36	1.5	1.94	2.16	2.08	2.23	2.3	2.32
10.74	0	0.28	0.42	0.4	1.07	1.11	1.22	1.56	1.73	1.67	1.78	1.86	1.86
11.24	0	0.22	0.34	0.31	0.85	0.89	0.99	1.22	1.38	1.29	1.39	1.45	1.46
11.74	0	0.17	0.28	0.24	0.69	0.72	0.81	0.96	1.1	1.03	1.09	1.17	1.15
12.24	0	0.14	0.22	0.19	0.55	0.57	0.64	0.72	0.85	0.72	0.85	0.9	0.87
12.74	0	0.11	0.16	0.16	0.45	0.45	0.52	0.51	0.71	0.47	0.67	0.68	0.66
13.24	0	0.09	0.14	0.14	0.36	0.36	0.42	0.36	0.58	0.3	0.5	0.5	0.5
13.74	0	0.03	0.04	0.05	0.16	0.18	0.21	0.15	0.31	0.09	0.23	0.23	0.23
14.24	0	0	0	0	0	0	0	0	0	0	0	0	0

Table C-9 0.25 : 1 SLOPE (2 m from crest)

		δx (mm)			δx (mm)			δx (mm)		δx (mm)			
	Initial	After 4.6 m ex.			After 6.1 m ex.			After 6.7 m ex.		150 mm level of pond			
Depth (m)	6/28/13	9/6/13	9/24/13	10/8/13	10/25/13	11/8/13	11/22/13	1/13/14	1/24/14	2/10/14	2/19/14	3/4/14	3/10/14
0.3	0	0.15	1.07	1.56	2.41	2.88	2.38	3.27	3.89	3.77	4.07	3.44	4.48
0.8	0	0.62	1.25	1.6	2.68	3.03	2.69	4.01	4.61	4.75	4.65	4.67	5.11
1.3	0	0.81	1.31	1.6	2.8	3.16	2.86	4.57	5.08	5.23	4.96	5.18	5.5
1.8	0	0.94	1.37	1.63	2.89	3.29	3	4.88	5.34	5.48	5.13	5.34	5.71
2.3	0	1.1	1.43	1.68	3.05	3.45	3.15	4.95	5.43	5.54	5.19	5.38	5.79
2.8	0	1.17	1.47	1.71	3.18	3.57	3.29	4.92	5.47	5.59	5.25	5.46	5.88
3.3	0	1.17	1.47	1.69	3.23	3.62	3.39	4.96	5.45	5.54	5.25	5.44	5.88
3.8	0	1.19	1.47	1.68	3.27	3.66	3.43	5.01	5.45	5.53	5.24	5.43	5.85
4.3	0	1.2	1.48	1.68	3.32	3.67	3.45	5.06	5.48	5.54	5.27	5.48	5.89
4.8	0	1.21	1.5	1.69	3.35	3.69	3.46	5.09	5.55	5.6	5.36	5.56	5.98
5.3	0	1.22	1.49	1.66	3.37	3.7	3.5	5.13	5.6	5.66	5.45	5.63	6.05
5.8	0	1.22	1.48	1.64	3.32	3.63	3.45	5.12	5.58	5.65	5.44	5.64	6.05
6.3	0	1.21	1.45	1.6	3.23	3.54	3.4	4.99	5.43	5.49	5.3	5.47	5.92
6.8	0	1.17	1.42	1.54	3.12	3.42	3.3	4.78	5.2	5.25	5.07	5.23	5.67
7.3	0	1.1	1.34	1.45	2.95	3.23	3.11	4.46	4.85	4.9	4.71	4.87	5.29
7.8	0	0.97	1.19	1.29	2.65	2.9	2.78	3.98	4.35	4.4	4.19	4.36	4.75
8.3	0	0.82	1.02	1.09	2.27	2.48	2.36	3.38	3.71	3.74	3.54	3.69	4.04
8.8	0	0.66	0.82	0.88	1.91	2.09	1.97	2.79	3.1	3.08	2.9	3.03	3.36
9.3	0	0.57	0.69	0.74	1.63	1.78	1.68	2.35	2.65	2.58	2.43	2.5	2.84
9.8	0	0.47	0.57	0.58	1.35	1.47	1.38	1.94	2.2	2.18	1.98	2.03	2.34
10.3	0	0.39	0.48	0.48	1.13	1.22	1.13	1.59	1.83	1.81	1.61	1.64	1.93
10.8	0	0.32	0.43	0.41	0.97	1.04	0.96	1.34	1.57	1.52	1.34	1.38	1.65
11.3	0	0.26	0.35	0.33	0.8	0.84	0.78	1.1	1.3	1.3	1.09	1.13	1.36
11.8	0	0.18	0.28	0.22	0.63	0.63	0.57	0.84	1.06	1.11	0.88	0.86	1.04
12.3	0	0.15	0.25	0.2	0.54	0.51	0.47	0.67	0.89	0.89	0.71	0.68	0.87
12.8	0	0.13	0.25	0.19	0.44	0.46	0.42	0.53	0.73	0.68	0.58	0.5	0.72
13.3	0	0.08	0.18	0.11	0.29	0.29	0.25	0.35	0.5	0.51	0.4	0.32	0.48
13.8	0	0.11	0.13	0.06	0.18	0.15	0.1	0.2	0.3	0.38	0.25	0.17	0.27
14.3	0	0.1	0.09	0.08	0.13	0.09	0.06	0.13	0.16	0.22	0.16	0.13	0.18
14.8	0	0	0	0	0	0	0	0	0	0	0	0	0

Table C-10 1 : 1 SLOPE (0.9 m from crest)

		δx (mm)			δx (mm)			δx (mm)		δx (mm)			
	Initial	After 4.6 m ex.			After 6.1 m ex.			After 6.7 m ex.		150 mm level of pond			
Depth (m)	6/28/13	9/9/13	9/25/13	10/9/13	10/24/13	11/8/13	11/22/13	1/13/14	1/24/14	2/10/14	2/19/14	3/4/14	3/10/14
0.12	0	1.31	1.04	2.28	3.04	3.38	2.73	2.6	3.1	1.68	2.71	3.33	2.79
0.62	0	1.44	1.35	2.57	3.57	3.89	3.54	3.98	4.69	3.78	4.08	4.55	4.37
1.12	0	1.51	1.32	2.47	3.55	3.87	3.65	4.64	5.29	4.45	4.69	5.01	5.06
1.62	0	1.71	1.38	2.39	3.49	3.8	3.57	5.12	5.64	4.81	5.17	5.42	5.55
2.12	0	1.88	1.5	2.37	3.49	3.75	3.48	5.28	5.78	4.95	5.39	5.65	5.79
2.62	0	1.9	1.58	2.32	3.5	3.75	3.45	5.29	5.78	5.04	5.4	5.72	5.89
3.12	0	1.97	1.68	2.39	3.7	3.97	3.69	5.58	6.06	5.39	5.73	6.09	6.27
3.62	0	2.15	1.9	2.58	4.03	4.34	4.09	6.04	6.51	5.88	6.21	6.58	6.79
4.12	0	2.43	2.2	2.85	4.4	4.72	4.47	6.43	6.87	6.27	6.6	6.98	7.2
4.62	0	2.56	2.36	2.97	4.57	4.89	4.62	6.54	6.94	6.37	6.7	7.08	7.3
5.12	0	2.3	2.11	2.69	4.29	4.6	4.33	6.13	6.49	5.94	6.26	6.61	6.85
5.62	0	1.81	1.64	2.15	3.72	4.01	3.76	5.33	5.66	5.17	5.44	5.72	6
6.12	0	1.56	1.41	1.88	3.41	3.68	3.44	4.79	5.06	4.62	4.83	5.1	5.35
6.62	0	1.56	1.42	1.85	3.38	3.66	3.43	4.71	4.96	4.54	4.8	5	5.26
7.12	0	1.56	1.46	1.85	3.45	3.75	3.54	4.96	5.22	4.85	5.12	5.37	5.63
7.62	0	1.51	1.43	1.78	3.33	3.61	3.42	4.77	5.01	4.67	4.9	5.19	5.43
8.12	0	1.41	1.33	1.64	3.07	3.33	3.16	4.35	4.56	4.25	4.47	4.73	4.93
8.62	0	1.22	1.15	1.42	2.69	2.9	2.74	3.75	3.92	3.63	3.84	4.05	4.23
9.12	0	0.99	0.95	1.17	2.27	2.46	2.31	3.17	3.29	3.09	3.21	3.41	3.54
9.62	0	0.81	0.77	0.96	1.94	2.1	1.95	2.69	2.78	2.61	2.71	2.87	3
10.12	0	0.72	0.67	0.84	1.69	1.83	1.68	2.32	2.4	2.24	2.32	2.47	2.57
10.62	0	0.58	0.55	0.68	1.36	1.46	1.32	1.82	1.89	1.76	1.81	1.93	2.02
11.12	0	0.46	0.46	0.54	1.1	1.19	1.06	1.48	1.53	1.43	1.46	1.55	1.63
11.62	0	0.32	0.34	0.38	0.82	0.91	0.78	1.15	1.17	1.11	1.12	1.18	1.27
12.12	0	0.18	0.24	0.22	0.57	0.63	0.54	0.83	0.85	0.88	0.83	0.84	0.95
12.62	0	0.18	0.21	0.19	0.47	0.52	0.44	0.65	0.68	0.71	0.69	0.67	0.77
13.12	0	0.12	0.15	0.11	0.34	0.38	0.31	0.49	0.51	0.52	0.53	0.53	0.58
13.62	0	0.07	0.09	0.06	0.2	0.23	0.18	0.3	0.35	0.31	0.32	0.36	0.37
14.12	0	0.06	0.06	0.04	0.12	0.11	0.09	0.17	0.19	0.15	0.18	0.19	0.2
14.62	0	0	0	0	0	0	0	0	0	0	0	0	0

Table C-11 1 : 1 SLOPE (2 m from crest)

		δx (mm)			δx (mm)			δx (mm)		δx (mm)			
	Initial	After 4.6 m ex.			After 6.1 m ex.			After 6.7 m ex.		150 mm level of pond			
Depth (m)	6/28/13	9/9/13	9/25/13	10/9/13	10/24/13	11/8/13	11/22/13	1/13/14	1/24/14	2/10/14	2/19/14	3/4/14	3/10/14
-0.25	0	-1.92	-1.51	-2.08	-1.63	-1.72	-1.52	-0.4	-1.06	-1.01	-0.38	-1.17	-1.15
0.25	0	-0.71	-0.31	-0.62	-0.3	-0.18	-0.35	0.88	0.82	1.24	1.09	1.18	0.99
0.75	0	-0.27	0.18	-0.12	0.21	0.37	0.18	1.4	1.31	1.98	1.74	1.95	1.8
1.25	0	0.05	0.51	0.22	0.62	0.81	0.62	1.87	1.76	2.41	2.13	2.44	2.3
1.75	0	0.16	0.6	0.3	0.73	0.89	0.72	2.14	2.04	2.65	2.41	2.73	2.63
2.25	0	0.29	0.73	0.42	0.95	1.12	0.96	2.49	2.41	3.04	2.82	3.18	3.08
2.75	0	0.46	0.9	0.59	1.17	1.37	1.22	2.59	2.49	3.11	2.88	3.25	3.14
3.25	0	0.56	0.99	0.67	1.3	1.53	1.4	2.68	2.58	3.13	2.89	3.26	3.14
3.75	0	0.62	1.06	0.75	1.44	1.65	1.52	2.69	2.56	3.08	2.84	3.15	3.02
4.25	0	0.71	1.14	0.84	1.59	1.81	1.68	2.82	2.68	3.21	2.96	3.28	3.17
4.75	0	0.76	1.19	0.89	1.68	1.92	1.79	2.95	2.8	3.32	3.07	3.42	3.31
5.25	0	0.83	1.25	0.95	1.81	2.07	1.94	3.11	2.97	3.47	3.25	3.6	3.5
5.75	0	0.82	1.24	0.93	1.79	2.08	1.94	3.11	2.98	3.51	3.25	3.59	3.49
6.25	0	0.74	1.15	0.84	1.71	2	1.86	3	2.87	3.38	3.12	3.47	3.37
6.75	0	0.71	1.12	0.8	1.69	1.97	1.84	2.94	2.8	3.28	3.04	3.39	3.29
7.25	0	0.69	1.08	0.76	1.63	1.91	1.78	2.82	2.67	3.14	2.9	3.24	3.15
7.75	0	0.6	0.98	0.67	1.49	1.74	1.62	2.57	2.4	2.86	2.62	2.94	2.85
8.25	0	0.53	0.88	0.58	1.35	1.56	1.45	2.29	2.13	2.54	2.31	2.62	2.52
8.75	0	0.47	0.8	0.53	1.24	1.42	1.32	2.07	1.92	2.29	2.08	2.36	2.26
9.25	0	0.39	0.7	0.44	1.06	1.21	1.12	1.77	1.6	1.96	1.75	2.01	1.91
9.75	0	0.32	0.61	0.34	0.9	1.02	0.94	1.5	1.34	1.65	1.47	1.69	1.59
10.25	0	0.31	0.57	0.31	0.82	0.9	0.84	1.33	1.18	1.47	1.29	1.5	1.4
10.75	0	0.3	0.51	0.27	0.72	0.78	0.72	1.16	1.02	1.26	1.11	1.28	1.19
11.25	0	0.3	0.49	0.26	0.66	0.7	0.67	1.02	0.91	1.09	1.01	1.1	1.04
11.75	0	0.23	0.4	0.2	0.55	0.57	0.58	0.85	0.76	0.9	0.85	0.9	0.88
12.25	0	0.2	0.32	0.16	0.46	0.46	0.48	0.7	0.6	0.72	0.69	0.72	0.69
12.75	0	0.18	0.26	0.15	0.39	0.39	0.42	0.56	0.5	0.56	0.57	0.58	0.56
13.25	0	0.09	0.16	0.07	0.23	0.23	0.24	0.34	0.28	0.35	0.34	0.35	0.33
13.75	0	0.08	0.09	0.06	0.15	0.13	0.14	0.18	0.16	0.18	0.18	0.18	0.18
14.25	0	0	0	0	0	0	0	0	0	0	0	0	0

C.3 LiDAR scan

LiDAR scan surveys were performed by the NCDOT in order to monitor the behavior of the sheet pile and the ground surface behind the sheet pile wall. LiDAR is a remote sensing technology that measures geology by illuminating a target with a laser and analyzing the reflected light. The LiDAR scan data are based on a scan resolution of 6 mm (position) and 4 mm (distance). Based on the white circles marked on the sheet pile wall after the first stage of excavation (**Figure C-18)** and the wooden stakes in the ground behind the sheet pile wall, lateral and vertical displacements were measured by comparing the initial survey data and the subsequent survey scan data. Wooden stakes were installed using spacing of 1.5 m x 3 m White circles spaced 152 mm apart were marked on the sheet pile wall in five rows after the first stage (4.7 m) of the excavation, as shown in **Figure C-18**. Prior to the excavation, 50.8 mm white circles were marked on the sheet pile wall approximately 1 m from the original ground surface as initial points. Based on these initial points, the lateral displacement of the sheet pile wall above 1 m from the ground surface could be monitored. However, the five rows of circles marked on the sheet pile wall after the first stage of excavation could not be considered initial points, so the movement of the sheet pile obtained from the LiDAR scan reflects the cumulative lateral displacement, as shown in **Figure C-18**. The approximate location of the initial line, which connects the point marked on the sheet pile wall from 1 m above the original ground surface prior to excavation and the point marked on the sheet pile wall at 4.6 m below the original ground surface after the first stage of excavation, was added in order to evaluate the displacement of sheet pile wall. Based on this approximate initial line and the LiDAR scan data, the movement of the sheet pile wall between each stage of excavation could be estimated. The beam numbering diagram is shown in Figure **C-19**.

Figure C-18 Sheet pile wall with rows of 51 mm white circles for LiDAR scanning

Figure C-19 Location of white circle marks on sheet pile wall

The deformations of the sheet pile wall were affected directly by lateral pressure. The upper part of the sheet pile wall deformed linearly after the excavation, which means that the earth pressure on the upper portion of the sheet pile wall was close to zero. If any earth pressure occurred on the sheet pile wall, a bending curve was evident where the pressure was applied. The linear shape of the deformation indicates that suction force reduced the lateral earth pressure on the active earth pressure zone. After 6.7 m of excavation, the deformation of the sheet pile wall suddenly increased. Two possible explanations for this phenomenon are: 1) when the 0.6 m excavation took place, the active earth pressure increased; and/or 2) rain infiltration occurred between the sheet pile wall and the soil, which caused the soil strength to decrease and a large shear deformation to take place, thereby causing the collapsed soil to push the sheet pile wall forward. When checking the displacement of the sheet pile wall at approximately 1 m above the ground surface at the center of the sheet pile, as shown in **Figure C-20**, it was clear that the 215 mm lateral displacement occurred after the 6.7 m depth excavation. The lateral displacement was over two times larger than the lateral displacement after the 6.1 m excavation. This result indicates that large shear deformation occurred after the 6.7 m excavation.

Figure C-20 Cumulative movement of sheet pile wall at center of wall

Vertical displacements of the ground surface were observed behind the sheet pile wall. As shown in **Figure C-22**, maximum vertical displacement of 100 mm occurred at the ground surface 0.6 m from sheet pile wall after the 6.7 m excavation. These vertical displacements were caused by shear deformation. **Figure C-17** (b) also shows evidence of the collapsed soil behind the sheet pile wall after the 6.7 m depth excavation.

Figure C-21 Lateral displacements of sheet pile wall at 1 m above original ground surface

Figure C-22 Vertical displacements behind sheet pile wall

The two scan images are presented in Figure **C-23** a and b.

Figure C-23 Scan the field site using LiDAR scanner

Raw data are listed from Table **C-12** to Table **C-16**.

Table C-12 Beam 1

	offset (m)								
Elevation (m)	7/3/13	7/31/13	8/22/13	9/9/13	10/1/13	10/28/13	11/12/13	1/21/14	2/20/14
268.97	26.900	26.892	26.873	26.830	26.836	26.772	26.776	26.569	26.556
268.13						26.792	26.796	26.617	26.597
267.99						26.781	26.799	26.619	26.604
267.80						26.805	26.806	26.633	26.614
267.66						26.811	26.806	26.638	26.620
267.50						26.815	26.817	26.649	26.631
267.37						26.818	26.817	26.655	26.640
267.21						26.825	26.827	26.663	26.646
267.06						26.832	26.830	26.668	26.655
266.88						26.832	26.830	26.677	26.667
266.72						26.838	26.840	26.684	26.672
266.57						26.841	26.840	26.694	26.681
266.43						26.845	26.848	26.704	26.692
266.26						26.851	26.856	26.713	26.698
266.12						26.855	26.856	26.726	26.708
265.97						26.862	26.864	26.730	26.716
265.81						26.867	26.867	26.738	26.726
265.67						26.874	26.869	26.743	26.734
265.53						26.875	26.874	26.754	26.741
265.38						26.882	26.879	26.760	26.751
265.23						26.888	26.887	26.772	26.758
265.07						26.894	26.892	26.781	26.768
264.94						26.894	26.897	26.789	26.775
264.76						26.906	26.900	26.797	26.785
264.61						26.910	26.910	26.807	26.792
264.46						26.911	26.914	26.815	26.804
264.31						26.918	26.917	26.823	26.810
264.14						26.924	26.920	26.832	26.821
264.00						26.928	26.930	26.840	26.830
263.84						26.934	26.931	26.849	26.840
263.70							26.935	26.858	26.847
263.56							26.937	26.871	26.856
263.39							26.949	26.880	26.867
263.23							26.955	26.887	26.876
263.07							26.960	26.897	26.886
262.91							26.964	26.904	26.896
262.77							26.965	26.913	26.903
262.62							26.974	26.923	26.913
262.46							26.979	26.929	26.924
262.32							26.983	26.938	26.929
262.16							26.992	26.947	26.939
262.00								26.956	26.948
261.87								26.965	26.954
261.70								26.976	26.967
261.56								26.982	26.976
261.42								26.991	26.984

Table C-13 Beam 3

	offset (m)								
Elevation (m)	7/3/13	7/31/13	8/22/13	9/9/13	10/1/13	10/28/13	11/12/13	1/21/14	2/20/14
268.99	26.939	26.931	26.921	26.878	26.882	26.833	26.836	26.720	26.700
268.11						26.839	26.839	26.736	26.716
267.96						26.839	26.836	26.740	26.723
267.80						26.837	26.833	26.738	26.722
267.66						26.839	26.837	26.741	26.726
267.49						26.839	26.839	26.745	26.727
267.36						26.839	26.837	26.746	26.731
267.19						26.843	26.836	26.750	26.732
267.04						26.839	26.839	26.754	26.736
266.86						26.837	26.841	26.756	26.737
266.73						26.839	26.837	26.760	26.741
266.57						26.839	26.837	26.760	26.745
266.42						26.839	26.837	26.764	26.744
266.27						26.837	26.840	26.763	26.745
266.11						26.839	26.836	26.765	26.749
265.98						26.839	26.839	26.765	26.752
265.82						26.843	26.840	26.769	26.754
265.65						26.842	26.840	26.769	26.758
265.52						26.839	26.844	26.773	26.762
265.37						26.839	26.840	26.774	26.763
265.22						26.839	26.842	26.779	26.764
265.07						26.837	26.836	26.779	26.768
264.91						26.839	26.844	26.783	26.768
264.76						26.839	26.840	26.783	26.774
264.62						26.839	26.840	26.784	26.774
264.47						26.839	26.841	26.788	26.777
264.30						26.843	26.841	26.789	26.777
264.15						26.839	26.841	26.793	26.777
263.99						26.842	26.838	26.795	26.782
263.83						26.839	26.840	26.794	26.782
263.66							26.840	26.799	26.787
263.51							26.840	26.802	26.786
263.36							26.833	26.799	26.791
263.19							26.833	26.804	26.791
263.06							26.835	26.804	26.791
262.90							26.836	26.805	26.796
262.74							26.832	26.808	26.797
262.59							26.832	26.808	26.796
262.44							26.827	26.807	26.800
262.28							26.832	26.811	26.800
262.14							26.832	26.808	26.800
261.97								26.811	26.800
261.82								26.808	26.804
261.65								26.809	26.805
261.48								26.808	26.800
261.34								26.805	26.800

Table C-14 Beam 5 (Center of sheet pile wall)

	offset (m)								
Elevation (m)	7/3/13	7/31/13	8/22/13	9/9/13	10/1/13	10/28/13	11/12/13	1/21/14	2/20/14
269.06	26.914	26.904	26.896	26.864	26.874	26.838	26.837	26.719	26.698
267.98						26.847	26.848	26.748	26.728
267.83						26.852	26.849	26.754	26.736
267.67						26.851	26.854	26.754	26.739
267.52						26.855	26.854	26.759	26.745
267.37						26.859	26.854	26.765	26.745
267.18						26.860	26.856	26.767	26.746
267.05						26.857	26.862	26.770	26.753
266.90						26.862	26.864	26.775	26.757
266.73						26.862	26.865	26.778	26.765
266.60						26.865	26.866	26.779	26.766
266.44						26.865	26.870	26.787	26.771
266.28						26.865	26.872	26.791	26.774
266.14						26.871	26.872	26.793	26.777
265.99						26.874	26.876	26.797	26.781
265.83						26.874	26.876	26.801	26.785
265.68						26.877	26.879	26.806	26.790
265.54						26.879	26.879	26.806	26.794
265.37						26.880	26.885	26.811	26.798
265.23						26.880	26.886	26.815	26.799
265.08						26.886	26.889	26.820	26.806
264.90						26.887	26.891	26.826	26.811
264.76						26.892	26.894	26.831	26.814
264.60						26.890	26.892	26.831	26.818
264.47						26.890	26.894	26.838	26.821
264.29						26.893	26.898	26.840	26.825
264.15						26.895	26.900	26.842	26.833
263.98						26.895	26.900	26.846	26.835
263.83						26.899	26.901	26.853	26.839
263.69						26.902	26.904	26.854	26.843
263.53							26.901	26.857	26.846
263.39							26.902	26.863	26.849
263.24							26.902	26.866	26.856
263.08							26.905	26.869	26.857
262.91							26.909	26.872	26.863
262.76							26.909	26.876	26.866
262.62							26.910	26.878	26.871
262.45							26.914	26.883	26.874
262.32							26.913	26.886	26.875
262.14							26.918	26.889	26.881
261.98							26.917	26.897	26.885
261.83								26.899	26.891
261.67								26.900	26.891
261.54								26.907	26.899
261.36								26.907	26.898
261.22								26.911	26.904

Table C-15 Beam 7

	offset (m)								
Elevation (m)	7/3/13	7/31/13	8/22/13	9/9/13	10/1/13	10/28/13	11/12/13	1/21/14	2/20/14
268.97	26.907	26.895	26.888	26.853	26.862	26.833	26.836	26.745	26.725
268.01						26.841	26.845	26.763	26.746
267.86						26.844	26.845	26.767	26.746
267.70						26.844	26.848	26.771	26.753
267.55						26.847	26.848	26.771	26.754
267.40						26.851	26.850	26.775	26.760
267.25						26.849	26.848	26.778	26.760
267.08						26.851	26.851	26.778	26.762
266.96						26.851	26.851	26.781	26.762
266.79						26.848	26.851	26.785	26.769
266.62						26.855	26.854	26.788	26.775
266.47						26.854	26.854	26.788	26.774
266.33						26.857	26.857	26.792	26.774
266.17						26.855	26.854	26.795	26.779
266.01						26.855	26.854	26.800	26.783
265.88						26.859	26.859	26.799	26.786
265.69						26.859	26.859	26.803	26.788
265.54						26.864	26.862	26.804	26.791
265.40						26.861	26.862	26.808	26.795
265.25						26.866	26.866	26.811	26.800
265.10						26.866	26.864	26.814	26.802
264.95						26.871	26.868	26.818	26.804
264.80						26.869	26.866	26.820	26.807
264.65						26.869	26.869	26.820	26.808
264.48						26.871	26.868	26.824	26.814
264.34						26.871	26.868	26.825	26.814
264.19						26.872	26.868	26.827	26.815
264.03						26.872	26.871	26.831	26.821
263.87						26.869	26.871	26.830	26.821
263.74						26.875	26.872	26.834	26.824
263.58							26.874	26.837	26.827
263.44							26.876	26.841	26.831
263.28							26.873	26.843	26.833
263.12							26.877	26.845	26.836
262.97							26.876	26.847	26.837
262.82							26.876	26.852	26.841
262.66							26.876	26.852	26.846
262.51							26.866	26.858	26.849
262.35							26.880	26.858	26.851
262.18							26.885	26.863	26.853
262.02							26.883	26.866	26.857
261.86								26.870	26.859
261.70								26.870	26.862
261.56								26.874	26.864
261.39								26.876	26.868
261.23								26.878	26.871

Table C-16 Beam 9

	offset (m)								
Elevation (m)	7/3/13	7/31/13	8/22/13	9/9/13	10/1/13	10/28/13	11/12/13	1/21/14	2/20/14
268.88	26.903	26.893	26.875	26.834	26.842	26.820	26.824	26.675	26.667
267.87						26.825	26.822	26.695	26.685
267.72						26.823	26.824	26.704	26.685
267.57						26.831	26.830	26.709	26.694
267.42						26.831	26.831	26.716	26.697
267.25						26.835	26.834	26.717	26.707
267.11						26.840	26.836	26.722	26.710
266.96						26.838	26.838	26.727	26.713
266.78						26.838	26.838	26.733	26.719
266.66						26.841	26.842	26.736	26.725
266.50						26.845	26.842	26.739	26.731
266.35						26.849	26.845	26.743	26.731
266.20						26.845	26.851	26.752	26.740
266.06						26.852	26.849	26.759	26.746
265.88						26.858	26.857	26.761	26.749
265.74						26.858	26.860	26.768	26.752
265.58						26.861	26.857	26.774	26.761
265.42						26.866	26.864	26.778	26.764
265.27						26.866	26.866	26.783	26.771
265.13						26.870	26.869	26.787	26.774
264.97						26.871	26.869	26.796	26.783
264.83						26.871	26.872	26.796	26.783
264.67						26.870	26.872	26.803	26.792
264.52						26.877	26.878	26.806	26.798
264.36						26.880	26.880	26.813	26.801
264.21						26.883	26.879	26.813	26.807
264.07						26.883	26.882	26.823	26.807
263.93						26.886	26.882	26.829	26.816
263.76						26.891	26.890	26.835	26.819
263.60						26.890	26.894	26.837	26.825
263.44							26.891	26.841	26.828
263.29							26.892	26.845	26.835
263.16							26.894	26.847	26.841
263.00							26.891	26.854	26.844
262.85							26.894	26.855	26.847
262.70							26.894	26.862	26.853
262.55							26.901	26.861	26.856
262.39							26.901	26.869	26.856
262.22							26.902	26.873	26.865
262.06							26.903	26.876	26.868
261.91							26.903	26.879	26.871
261.75								26.881	26.871
261.61								26.889	26.877
261.42								26.888	26.883
261.27								26.898	26.886
261.13								26.898	26.889

Figure C-24 Location of stakes behind of sheet pile wall

Table C-17 Raw data from the five stake rows

	after 4.6 m excavation		after 6.1 m excavation				after 6.7 m excavation			
	10/1/2013		10/28/2013		11/12/2013		1/21/2014		2/20/2014	
	GR_EL. (m)	OFFSET (m)	GR_EL.	OFFSET (m)	GR_EL. (m)	OFFSET (m)	GR_EL. (m)	OFFSET (m)	GR_EL. (m)	OFFSET (m)
Row 1	268.22	3.69	GR_EL. (m)	3.68	268.22	3.68	268.22	101.03	268.21	101.03
	268.22	2.19	268.22	2.19	268.22	2.16	268.19	96.05	268.20	96.03
	268.25	0.69	268.25	0.68	268.25	0.68	268.03	90.68	267.99	90.55
Row 2	268.23	3.72	268.24	3.70	268.23	3.71	268.23	3.71	268.23	3.70
	268.25	2.28	268.24	2.27	268.24	2.27	268.22	2.23	268.21	2.21
	268.26	0.69	268.26	0.69	268.25	0.70	268.19	0.60	268.16	0.59
Row 3	268.65	3.98	268.64	3.98	268.65	3.98	268.64	102.03	268.63	101.98
	268.26	2.52	268.26	2.52	268.26	2.52	268.25	97.19	268.24	97.11
	268.32	0.69	268.33	0.67	268.33	0.67	268.31	90.61	268.31	90.73
*Row 3 is located in center of sheet pile wall										
Row 4	268.19	3.71	268.19	3.71	268.19	3.70	268.13	101.15	268.18	101.11
	268.12	2.32	268.12	2.32	268.13	2.31	268.11	96.51	268.10	96.52
	268.17	0.67	268.17	0.67	268.16	0.68	268.12	90.84	268.11	90.83
Row 5	268.11	3.65	268.11	3.64	268.11	3.64	268.09	100.94	268.09	100.94
	268.10	2.23	268.10	2.22	268.10	2.20	268.10	96.20	268.09	96.18
	268.17	0.70	268.17	0.69	268.16	0.69	267.94	90.94	267.93	90.91

- For estimating vertical displacement of ground surface behind sheet pile wall, measured data of row 3 cannot be used because the white marks were located at top of inclinometer casings, which did not move.

C.4 Strain gauge

Bending moments are related to the deformation of the sheet pile wall due to lateral earth pressure. Figure C-25 shows the locations of vibrating wire strain gauges that were installed on the sheet pile wall to monitor the bending moments of the wall. These strain gauges were welded onto the sheet pile wall at depths of 3 m, 4.9 m, 6.1 m, 7.3 m, 8.2 m, and 9.8 m in two rows that were 0.3 m from either side of the center of the sheet pile wall. A welding angle iron was installed over the top of the strain gauges and cables to protect the sensors during the process of driving the sheet pile wall, as shown in Figure C-26.

Figure C-25 Locations of strain gauges on sheet pile wall

Figure C-26 Installation of strain gauges with iron angle

Strains were measured using the vibrating wire principle, as follows. A length of steel wire is tensioned between two mounting blocks that are welded to the steel. Strain changes at the surface will cause two mounting blocks to move relative to one another, thus altering the tension in the steel wire. The tension in the wire is measured by plucking the wire and measuring its resonant frequency of vibration using an electromagnetic coil positioned next to the wire. (Instruction Manual of Vibrating Wire Strain Gauge, Geokon).

Based on the strain level changes measured in the field, the bending moments could be calculated using Equations (C.1) and (C.2).

$$\sigma_{axial} = E \times \varepsilon_w \tag{C.1}$$

where E is the Young's modulus of the wire (210,000 MPa), and ε_w is the calibrated wire strain change during excavation.

$$M = \sigma_{axial} \times S \tag{C.2}$$

where S is the section modulus value of the sheet pile wall, and σ_{axial} is calculated using the measured strain change.

Figure C-27 presents the results for the bending moments as a function of excavation depth. The maximum values of the bending moments of the sheet pile wall increased and occurred at lower parts of the sheet pile wall as the depth of the excavation increased. Based on the bending moments, the lateral earth pressure could be estimated using a differential equation, Equation (C.3).

$$\text{Pressure on sheet pile wall} = \frac{d^2M}{dz^2} \qquad \text{(C.3)}$$

where M is the bending moment, and z is the depth of the sheet pile.

However, the data points alone are not sufficient to estimate a lateral earth diagrams which are required for the design of temporary excavation systems. A pressure diagram can be estimated using numerical modeling by comparing the bending moments obtained from simulations and from strain gauge measurements. A pressure diagram can be computed when both components agree with each other. For this study, data could be collected from the two rows (A and B rows) of strain gauges.

Raw data of strain gauges in A and B rows are presented in Table **C-18**and Table **C-19**, respectively.

4.6-m excavation 6.1-m excavation 6.7-m excavation

Figure C-27 Bending moments obtained from measured strain changes of sheet pile wall

Table C-18 A row gauges (right side)

	4.6 m ex.			6.1 m ex.			6.7 m ex.		
	10/8/13	9/9/13	9/23/13	10/24/13	11/7/13	11/20/14	1/13/14	1/24/14	2/18/14
Depth (m)	σaxial (MPa)	σaxial (MPa)	σaxial (MPa)	σaxial (MPa)	σaxial (MPa)	σaxial (MPa)	σaxial (MPa)	σaxial (MPa)	σaxial (MPa)

	4.6 m ex.			6.1 m ex.			6.7 m ex.		
	10/8/13	9/9/13	9/23/13	10/24/13	11/7/213	11/20/14	1/13/14	1/24/14	2/18/14
Depth (m)	Δμε	Δμε	Δμε	Δμε	Δμε	Δμε	Δμε	Δμε	Δμε
3	171	84	146	333	202	333	325	480	344
4.9	245	215	246	270	160	270	333	107	361
6.1	226	187	185	337	244	337	582	605	609
7.3	670	953	761	-2034	-2388	-2034	-2338	-2246	-2184
8.2	33	75	535	-31	-1395	-31	-3426	-3364	-3263
9.8	105	-29	53	618	316	618	203	518	486
3	36	18	31	70	42	70	68	101	72
4.9	51	45	52	57	34	57	70	22	76
6.1	48	39	39	71	51	71	122	127	128
7.3	141	200	160	-427	-501	-427	-491	-472	-459
8.2	7	16	112	-6	-293	-6	-720	-706	-685
9.8	22	-6	11	130	66	130	43	109	102

* Young's modulus of the wire (210,000 Mpa)

	4.6 m ex.			6.1 m ex.			6.7 m ex.		
	10/8/13	9/9/13	9/23/13	10/24/13	11/7/13	11/20/14	1/13/14	1/24/14	2/18/14
Depth (m)	M	M	M	M	M	M	M	M	M
3	47	23	40	91	55	91	89	131	94
4.9	67	59	67	74	44	74	91	29	99
6.1	62	51	50	92	67	92	159	165	166
7.3	183	260	208	-555	-652	-555	-638	-613	-596
8.2	9	20	146	-8	-381	-8	-935	-918	-891
9.8	29	-8	14	169	86	169	55	141	133

The section modulus value is 1,300cm^3/m and unit of M (bending moment) is kN-,m/m

*Δμε : Micro-strain = strain x 10^6

Table C-19 B row gauges (left side)

	4.6 m ex.			6.1 m ex.			6.7 m ex.		
	10/8/13	9/9/13	9/23/13	10/24/13	11/7/13	11/20/14	1/13/14	1/24/14	2/18/14
Depth (m)	Δμε	Δμε	Δμε	Δμε	Δμε	Δμε	Δμε	Δμε	Δμε
3	80	3	61	84	78	182	170	297	192
4.9	355	294	346	301	369	374	566	673	606
6.1	189	146	146	274	261	334	653	620	713
7.3	61	66	65	266	249	279	654	738	800
8.2	-110	-115	-115	29	19	39	476	551	609
9.8	-34	-35	-35	-19	-30	-19	124	146	195

*Δμε : Micro-strain = strain x 10^6

	4.6 m ex.			6.1 m ex.			6.7 m ex.		
	10/8/13	9/9/13	9/23/13	10/24/13	11/7/13	11/20/14	1/13/14	1/24/14	2/18/14
Depth (m)	σaxial (MPa)	σaxial (MPa)	σaxial (MPa)	σaxial (MPa)	σaxial (MPa)	σaxial (MPa)	σaxial (MPa)	σaxial (MPa)	σaxial (MPa)
3	17	1	13	18	16	38	36	62	40
4.9	75	62	73	63	78	78	119	141	127
6.1	40	31	31	58	55	70	137	130	150
7.3	13	14	14	56	52	59	137	155	168
8.2	-23	-24	-24	6	4	8	100	116	128
9.8	-7	-7	-7	-4	-6	-4	26	31	41

* Young's modulus of the wire (210,000 Mpa)

	4.6 m ex.			6.1 m ex.			6.7 m ex.		
	10/8/13	9/9/13	9/23/13	10/24/13	11/7/13	11/20/14	1/13/14	1/24/14	2/18/14
Depth (m)	M	M	M	M	M	M	M	M	M
3	22	1	17	23	21	50	46	81	52
4.9	97	80	94	82	101	102	154	184	165
6.1	52	40	40	75	71	91	178	169	195
7.3	17	18	18	73	68	76	179	201	218
8.2	-30	-32	-31	8	5	11	130	150	166
9.8	-9	-10	-10	-5	-8	-5	34	40	53

The section modulus value is 1,300cm^3/m and unit of M (bending moment) is kN-,m/m

C.5 Vibrating wire push-in pressure cell

Vibrating wire push-in pressure cells (itmsoil Co.) were installed 0.3 m from the sheet pile wall at depths of 3 m, 4.5 m, 6 m, and 7.8 m to monitor the changes in earth pressure in the soil throughout the excavation process. A piezometer was used to measure the pore water pressure, and the effective stress then could be derived subsequently. The measured values were adjusted using calibration factors for the temperature. Figure C-28 shows the pressure cell measurements and presents the changes in horizontal stress throughout the excavation steps. The stress release then could be estimated based on the pressure change. During the three stages of excavation, decreases in the lateral stress were observed. The pressure cell at a depth of 6 m indicated relatively large initial lateral earth pressure because of the existence of the embedded A-7-5 layer. Raw data are presented in Table **C-20**.

Figure C-28 Measurement results of lateral stress change using pressure cells

Table C-20 Pressure cell data

Excavation depth	Location depth (m)	Total lateral pressure (kPa)
0 m (before excavation)	3.0	140
	4.6	146
	6.1	211
	7.6	155
4.6 m (after 1 day)	3.0	58
	4.6	79
	6.1	178
	7.6	131
4.6 m (after 1 month)	3.0	59
	4.6	79
	6.1	175
	7.6	126
6.1 m (after 1 day)	3.0	40
	4.6	32
	6.1	91
	7.6	107
6.1 m (after 2 weeks)	3.0	41
	4.6	32
	6.1	94
	7.6	107
6.1 m (after 1 month)	3.0	42
	4.6	37
	6.1	97
	7.6	111
6.7 m (after 1 month)	3.0	27
	4.6	22
	6.1	64
	7.6	77
6.7 m (after 2 months)	3.0	26
	4.6	19
	6.1	40
	7.6	91

Appendix D. Laboratory testing program

Ninety-four Shelby tubes were taken in the test site, from 10 boring holes and depth from 2 feet to 51 feet. 20 Shelby tubes were sent to NCDOT laboratory for consolidation undrain triaxial tests, and 66 Shelby tubes were sent to CFL lab at NCState for tests including matric suction measurement, filter paper test, pressure plate test and unsaturated triaxial test. The test program is summarized in Table **D-1**, and the locations of Shelby tubes are shown in Figure D-1.

Table D-1 Test program

	Tube number	Test types	# of test	Note
NCDOT Geotechnical Lab	ST-1 to ST-25, ST-27, ST-29, ST-31, ST-33 and ST-35	Consolidation test	1 per tube	
		CIU triaxial test	1~3 per tube	
		Permeability test	1	ST-27 (A-4 soil)
NCState CFL Soil Lab	ST-28, ST-30, ST-32, ST-34 and ST-36 to ST-94	Matric suction measurement	Every tube	Measured by tensiometer
		Pressure plate test	10	
		Unsaturated triaxial test	46	20 single stage; 26 multistage

Figure D-1 Plan view of locations of Shelby tubes

D.1 Tested soil

Soil samples for testing were obtained from a construction site in Greensboro, Guilford County, North Carolina. The specimens were obtained from depths of 3 to 52 feet. The site soils are mainly red silt clay and tan sandy silt. These colors resulted from the various degrees of chemical weathering processes. The red color is due to the iron oxides contents. The soil at the shallower layers experienced a higher degree of weathering, which results in a darker red color and higher percent of finer particles. The tan color is closer to the color of origin rock (gneiss, schist and granite). The tan colored soil exists in deeper layer or has lower fines content, which indicates less weathering has occurred.

The physical properties of the four groups of test soils found at the site are shown in Table **D-2**. The site soils can be separated into three types on the basis of their physical properties. These are MH, ML and SC according to USCS classification and A-7-5, A-4 and A-2-6 according to ASSHTO classification. The ML soils were divided into two subgroups based on the significantly different percent fines content (percent smaller than 0.074 mm).

Table D-2 Properties of major groups of soil in this research

Symbol	Soil Type (USCS)	Soil Type (AASHTO)	Depth (ft)	ρ_d (g/cm^3)	Gs	LL (%)	PI (%)	< #200 (%)	Clay (%)	Silt (%)	Sand (%)	φ' (deg)	c' (psi)
G1	MH	A-7-5	5-12	1.11	2.76	61	22	88	15	73	12	27	1.9
G2	ML	A-4	24-50	1.61	2.70	40	6	60	4	56	45	30	2.8
G3	ML	A-5	13-27	1.65	2.73	45	10	84	6	78	16	28	2.5
G4	SC	A-2-6	2-7	1.75	2.68	34	11	32	10	22	68	36	0

ψ_t	Tensiometer suction
ψ_f	Filter paper suction
w_f	Filter paper sample water content

Table D-3 Soil properties of Tubes from 0.5:1 slope (405+70 3 LT)

0.5:1 slope 405+70 3'LT																						
#	Depth	Soil Type		w	γ_d	γ_t	G_s	S	e	θ_w	θ_s	#200	5μm	2μm	LL	PL	PI	Tensiometer	ψ_t	Filter paper	ψ_f	w_f
	(ft)	(AASHTO)	(USCS)	(%)	(pcf)	(pcf)		(%)				(%)	(%)	(%)				time	(kPa)	time	(kPa)	(%)
ST36	2.0	A-7-5	MH	25.8	80	100	2.69	63	1.11	0.33	0.53	83.5	32.5	22.3	50	34	16	7/12/13	86.7			
	4.0			28.6	76	97		63	1.22	0.35	0.55							7/12/13	86.1	7/19/13	268.6	27.6
																		9/18/13	86.0	9/30/13	179.3	
ST37	5.0	A-7-5	MH	38.9	61	84	2.72	59	1.79	0.38	0.64	87.4	22.8	14.0	47	35	12	7/17/13	84.8			
	7.0			32.6	72	95		65	1.36	0.38	0.58							7/17/13	81.6	7/24/13	163.2	29.8
ST38	8.0	A-7-5	MH	29.5	61	79	2.72	45	1.79	0.29	0.64	94.6	31.7	21.5	61	40	21	7/17/13	73.9			
																		10/18/13	79.6	10/30/13	441.2	29.1
	10.0			35.0	67	91		62	1.52	0.38	0.60							7/17/13	77.1	7/24/13	128.1	33.0
ST39	16.0	A-7-5	MH	41.3	58	82	2.72	58	1.93	0.38	0.66	85.8	17.2	8.8	58	42	16	7/18/13	58.5			
																		10/16/13	58.7	10/30/13	53.9	40.9
	18.0			36.0	67	92		64	1.52	0.39	0.60							7/18/13	56.4	7/26/13	62.9	37.9
ST40	18.0	A-7-5	MH	42.2	66	94	2.74	73	1.59	0.45	0.61	85.8	17.2	8.8	58	42	16	7/18/13	48.8			
																		10/17/13	49.2	10/30/13	47.0	39.4
	20.0			17.5	71	83		34	1.42	0.20	0.59							7/18/13	45.7	7/26/13	57.4	20.3
ST41	25.0	A-7-5	MH	46.1	73	107	2.79	94	1.37	0.54	0.58	84.7	5.7	2.2	60	42	18	7/19/13	34.7	7/27/13	53.9	45.1
ST42	28.0	A-7-5	MH	42.6	78	111	2.76	97	1.22	0.53	0.55	89.2	10.9	5.0	50	37	13	7/26/13	14.2			
																		10/28/13	28.6	11/6/2013	45.3	40.6
	30.0			39.9	83	116		102	1.07	0.53	0.52							7/26/13	17.5	8/2/13	50.3	37.0
ST43	34.5	A-4	ML	20.1	110	133	2.81	96	0.59	0.36	0.37	76.7	8.0	2.0	31	27	4	7/30/13	13.9	8/6/13	48.3	20.4
ST44	38.9	A-6	ML	17.3	114	133	2.84	88	0.56	0.32	0.36	60.1	4.0	1.0	38	25	13	7/30/13	11.5	8/6/13	30.7	18.5
ST45	44.1	A-4	ML	20.5	115	139	2.88	105	0.56	0.38	0.36	68.2	14.7	10.4	34	27	7	8/6/13	18.3	8/14/13	38.3	19.6
ST46	49.5	A-4	ML	19.3	111	133	2.92	88	0.64	0.34	0.39	48.5	10.0	5.0	38	29	9	8/7/13	38.2	8/15/13	57.8	25.1

Table D-4 Soil properties of Tubes from 0.5:1 slope (405+70 9 RT)

0.5:1 slope 405+70 9'RT PMT																						
#	Depth	Soil Type		w	γ_d	γ_t	G_s	S	e	θ_w	θ_s	%#200	5μm	2μm	LL	PL	PI	Tensiometer	ψ_t	Filter paper	ψ_f	w_f
	(ft)	(AASHTO)	(USCS)	(%)	(pcf)	(pcf)		(%)				(%)	(%)	(%)				time	(kPa)	time	(kPa)	(%)
ST88	6.4	A-7-5	MH	34.1	77	103	2.74	77	1.22	0.42	0.55	93.6	46.1	29.0	60	38	22	10/4/13	102.2	10/19/13	177.0	34.7
	8.4			33.9	56	75		46	2.03	0.31	0.67							10/4/13	102.2	10/21/13	182.0	32.4
ST89	11.4	A-7-5	MH	35.3	63	85	2.82	56	1.79	0.36	0.64	90.4	22.0	14.0	67	47	20	10/21/13	86.2	11/6/13	620.3	34.8
	13.4			46.3	53	78		57	2.30	0.40	0.70							9/20/13	86.7	9/30/13	104.5	45.5
ST90	16.4	A-7-5	MH	44.2	61	87	2.86	65	1.94	0.43	0.66	93.1	40.0	25.0	62	41	21	10/23/13	67.4	11/6/13	129.2	41.4
	18.4			51.3	66	100		86	1.71	0.54	0.63							8/21/13	63.4	9/8/13	61.0	45.7
ST91	21.4	A-7-5	MH	32.1	70	93	2.83	60	1.51	0.36	0.60	69.7	30.0	15.0	53	38	15	10/23/13	56.4	11/6/13	101.2	30.0
	23.4			35.2	81	109		83	1.19	0.45	0.54							8/23/13	54.0	9/8/13	61.4	32.8
ST92	28.4	A-7-5	MH	40.7	74	104	2.82	83	1.39	0.48	0.58	69.8	13.4	4.0	57	40	17	8/20/13	40.8	9/8/13	50.1	41.1
ST93	33.4	A-4	ML	24.0	98	121	2.83	84	0.81	0.38	0.45	66.4	11.5	4.3	40	31	9	9/13/13	27.2	9/30/13	43.2	25.4
																				9/30/13	40.6	25.5
ST94	39.4	A-7-5	MH	34.3	86	116	2.88	92	1.08	0.48	0.52	84.2	6.8	4.1	51	37	14	9/13/13	38.8	9/30/13	56.0	31.2
																					51.9	30.6

Table D-5 Soil properties of Tubes from 0.25:1 slope (404+50 3 LT)

0.25:1 Slope 404+50 3'LT																							
#	Depth	Soil Type		w	γ_d	γ_t	G_s	S	e	θ_w	θ_s	%#200	5μm	2μm	LL	PL	PI	Tensiometer	ψ_t	Filter paper	ψ_f	w_f
3'LT	(ft)	(AASHTO)	(USCS)	(%)	(pcf)	(pcf)		(%)				(%)	(%)	(%)				time	(kPa)	time	(kPa)	(%)
ST47	2.2	A-7-5	MH	34.0	76	102	2.75	75	1.25	0.42	0.56	87.4	36.6	25.0	61	39	22	7/2/13	39.1	11/6/13	98.3	34.2
																		10/29/13	44.8			
	4.2			36.8	69	94		67	1.50	0.40	0.60							7/2/13	67.8	7/9/13	132.4	34.6
ST48	5.2	A-7-5	MH	33.6	73	97	2.81	67	1.41	0.39	0.58	88.4	36.2	24.0	64	42	22	7/2/13	71.5	11/6/13	218.5	34.3
																		10/30/13	72.8			
	7.2			37.4	72	98		73	1.45	0.43	0.59							7/2/13	67.8	7/9/13	142.4	33.5
ST49	7.5	A-7-5	MH	35.8	68	93	2.77	65	1.53	0.39	0.61	84.8	31.4	18.0	61	39	22	7/3/13	78.6	11/6/13	243.7	34.7
																		10/30/13	78.7			
	9.5			33.5	72	96		66	1.41	0.39	0.59							7/3/13	74.2	7/11/13	138.7	33.0
																		10/30/13	76.4			
ST50	10.2	A-7-5	MH	40.2	70	98	2.79	76	1.48	0.45	0.60	88.5	25.1	14.9	59	36	23	11/6/13	63.4	1/22/14	106.3	36.01
	12.2			35.7	78	106		81	1.24	0.45	0.55							7/12/13	60.5	7/19/13	125.5	35.3
ST51	13.2	A-7-5	MH	44.2	61	88	2.70	68	1.76	0.43	0.64	84.4	20.0	11.0	60	36	24	7/11/13	44.8	11/7/13	51.9	43.5
																		11/7/13	47.5			
	15.2			46.8	65	96		80	1.58	0.49	0.61							7/11/13	41.3	7/18/13	55.9	45.6
ST52	18.2	A-7-5	MH	50.2	67	101	2.80	88	1.60	0.54	0.61	84.3	13.0	2.0	60	45	15	7/3/13	23.8	7/11/13	38.5	48.7
	20.2			49.4	65	97		81	1.70	0.51	0.63							11/10/13	24.6	1/22/14	47.8	46.7
ST53	25.2	A-7-5	MH	42.3	78	111	2.73	97	1.19	0.53	0.54	84.8	17.5	7.0	63	45	18	8/8/13	29.3	8/18/13	44.7	38.7
ST54	30.2	A-7-5	MH	24.3	98	121	2.76	88	0.76	0.38	0.43	55.4	14.3	7.0	51	36	15	8/9/13	23.6	8/18/13	40.0	28.5
ST55	35.2	A-7-5	ML	22.3	102	125	2.83	87	0.72	0.37	0.42	63.6	9.7	4.0	43	32	11	8/7/13	25.1	8/15/13	37.6	25.5
ST56	40.2	A-4	ML	24.4	100	125	2.75	94	0.71	0.39	0.42	58.7	8.0	3.0	36	29	7	8/8/13	21.3	8/18/13	34.8	22.0
ST57	44.7	A-4	SM	19.3	104	124	2.70	85	0.62	0.32	0.38	41.0	11.0	5.0	30	25	5	7/3/13	10.8	8/14/13	25.9	19.0
ST58	49.2	A-4	SM	17.0	114	133	2.73	94	0.50	0.31	0.33	43.0	7.5	4.5	35	30	5	8/9/13	13.4	8/18/13	34.8	16.1

Table D-6 Soil properties of Tubes from 1:1 slope (403+45 3 LT)

1:1 Slope 403+45 3'LT																						
#	Depth	Soil Type		w	γ_d	γ_t	G_s	S	e	θ_w	θ_s	%#200	5µm	2µm	LL	PL	PI	Tensiometer	ψ_t	Filter paper	ψ_f	w_f
	(ft)	(AASHTO)	(USCS)	(%)	(pcf)	(pcf)		(%)				(%)	(%)	(%)				time	(kPa)	time	(kPa)	(%)
ST59	2.1	A-2-6	SC	12.6	114	129	2.70	72	0.47	0.23	0.32	30.0	12.2	10.8	37	24	13	7/4/13	76.0	7/11/13	650.9	
	4.1			9.5	123	135		69	0.37	0.19	0.27							7/4/13	81.7			
ST60	5.1	A-2-6	SC	16.5	110	128	2.67	86	0.51	0.29	0.34	34.0	13.7	11.7	34	23	11					
	6.9			15.0	109	126		76	0.52	0.26	0.34							7/4/13	9.8	7/11/13	44.7	13.24
ST61	10.1	A-4	ML	13.0	109	123	2.78	62	0.59	0.23	0.37	81.3	23.3	16.1	34	26	8	7/5/13	45.2			
																		11/11/13	50.8			
	12.1			11.9	114	128		64	0.52	0.22	0.34							7/5/13	59.5			
																		11/11/13	60.5	7/12/13	148.4	19.16
ST62	13.1	A-7-5	ML	23.3	91	112	2.78	71	0.91	0.34	0.48	81.3	7.9	4.5	44	33	11	7/11/13	37.9			
																		11/20/13	50.0			
	15.1			20.7	109	132		98	0.59	0.36	0.37							7/11/13	29.1	7/18/13	192.9	19.17
ST63	18.1	A-7-5	ML	23.7	101	125	2.72	94	0.68	0.38	0.41	75.4	13.1	4.8	48	34	14	7/5/13	30.5			
	20.1																	7/5/13	24.3	7/12/13	181.0	20.55
ST64	27.1	A-7-5	ML	21.5	106	128	2.81	92	0.66	0.36	0.40	84.7	5.7	2.2	45	33	12	8/13/13	35.3	8/23/13	49.4	21.28
ST65	30.8	A-4	ML	24.2	101	126	2.86	91	0.76	0.39	0.43	79.2	12.0	7.1	37	29	8	8/13/13	29.0	8/23/13	45.9	19.88
ST66	35.8	A-4	SM	16.7	107	125	2.75	76	0.60	0.29	0.38	41.0	4.7	4.0	29	27	2	8/14/13	13.8	8/26/13	32.8	15.55
ST67	40.8	A-4	ML	21.5	101	122	2.71	86	0.68	0.35	0.41	80.5	5.9	3.0	37	30	7	8/14/13	13.8	8/26/13	41.5	20.70
ST68	45.8	A-7-5	MH	49.3	73	108	2.93	95	1.52	0.57	0.60	93.9	20.0	6.1	63	35	28	8/15/13	17.3	8/26/13	31.2	51.32
ST69	50.3	A-4	SM	14.4	119	137	2.75	91	0.44	0.28	0.30	43.4	4.9	3.2	31	27	4	8/15/13	12.5	8/26/13	30.2	11.65

Table D-7 Soil properties of Tubes from Sheet pile (404+50 86 RT)

Sheetpile wall 404+50 86'RT PMT																						
#	Depth	Soil Type		w	γ_d	γ_t	G_s	S	e	θ_w	θ_s	%#200	5μm	2μm	LL	PL	PI	Tensiometer	ψ_t	Filter paper	ψ_f	w_f
	(ft)	(AASHTO)	(USCS)	(%)	(pcf)	(pcf)		(%)				(%)	(%)	(%)				time	(kPa)	time	(kPa)	(%)
ST81	6	A-5	ML				2.68			0.17	0.52	61.0	21.0	13.3	41	33	8	7/19/13	94.7			
	8			13.2	80	90		32	1.10									7/19/13	95.7	7/27/13	379.5	15.4
ST82	12	A-4	ML	16.2	85	98	2.75	43	1.03	0.22	0.51	61.5	9.1	4.4	39	32	7	7/23/13	85.5	7/30/13	166.7	16.3
ST83	16	A-4	ML				2.61					58.1	3.1	2.3	38	32	6	7/23/13	85.1			
	18			18.9	81	97		49	1.00	0.25	0.50							7/23/13	79.1	7/30/13	71.7	18.5
ST84	23	A-4	ML	27.2	81	103	2.66	69	1.04	0.35	0.51	64.2	15.1	12.1	40	33	7	7/24/13	65.1	8/1/13	57.9	
ST85	28	A-4	ML	28.8	89	114	2.69	87	0.89	0.41	0.47	68.6	11.8	4.0	45	34	11	9/12/13	43.2	9/26/13	50.7	27.4
																				9/26/13	53.3	28.9
ST86	33	A-4	ML	31.1	84	110	2.73	82	1.03	0.42	0.51	56.5	12.0	6.0	38	31	7	9/12/13	26.5	9/26/13	41.1	28.0
																				9/26/13	41.3	29.4
ST87	39.5	A-4	ML	27.9	97	124	2.70	102	0.74	0.43	0.43	55.8	9.1	4.6	38	32	6	8/19/13	23.2	9/8/13	38.8	25.6

Table D-8 Soil properties of Tubes from Sheet pile (404+50 94 RT)

Sheetpile wall 404+50 94'RT																						
#	Depth	Soil Type		w	γ_d	γ_t	G_s	S	e	θ_w	θ_s	%#200	5μm	2μm	LL	PL	PI	Tensiometer	ψ_t	Filter paper	ψ_f	w_f
	(ft)	(AASHTO)	(USCS)	(%)	(pcf)	(pcf)		(%)				(%)	(%)	(%)				time	(kPa)	time	(kPa)	(%)
ST26	6.5	A-6	CL	14.6	54	62	2.69	19	2.12	0.13	0.68	57.5	14.3	10.4	39	27	12					
ST28	15.2	A-4	ML	17.0	85	100	2.69	47	0.97	0.23	0.49	66.3	17.0	8.8	36	29	7	4/7/13	66.8			
ST30	24.2	A-7-5	CH	35.9	82	111	2.80	88	1.14	0.47	0.53	71.4	18.6	12.4	58	25	33	7/24/13	28.0	8/1/13	60.2	
ST32	34.2	A-4	ML	26.1	99	124	2.77	96	0.75	0.41	0.43	53.1	11.1	4.7	38	30	8	7/24/13	18.7	8/1/13	48.7	24.1
ST34	44.2	A-4	ML	22.5	102	125	2.79	88	0.71	0.37	0.42	61.5	10.9	1.5	38	28	10	7/24/13	20.0	8/1/13	48.0	22.9

Table D-9 Soil properties of Tubes from Sheet pile (404+50 102 RT)

Sheetpile wall 404+50 102'RT																						
#	Depth	Soil Type		w	γ_d	γ_t	G_s	S	e	θ_w	θ_s	%#200	5μm	2μm	LL	PL	PI	Tensiometer	ψ_t	Filter paper	ψ_f	w_f
	(ft)	(AASHTO)	(USCS)	(%)	(pcf)	(pcf)		(%)				(%)	(%)	(%)				time	(kPa)	time	(kPa)	(%)
ST70	5.2	A-7-5	CL	23.8	83	103	2.70	62	1.03	0.32	0.51	72.1	27.8	17.1	45	26	19	8/16/13	184.0	8/26/13	1124.9	21.1
ST71	8.2			20.0	102	122	2.68	84	0.64	0.33	0.39	72.9	21.0	12.0				10/8/13	170.0	10/19/13	776.3	18.0
ST72	13.2			15.5	67	77	2.71	27	1.54	0.17	0.61	75.1	16.3	11.8				10/3/13	136.6	10/19/13	464.5	14.9
																				10/19/13	431.0	15.9
ST73	16.2	A-7-5	ML	29.1	89	115	2.81	84	0.98	0.41	0.49	77.3	6.8	4.5	55	41	14	9/18/13	92.5	9/30/13	747.3	28.7
ST74	20.8	A-7-5	ML	14.0	111	127	2.74	71	0.54	0.25	0.35	60.0	11.5	5.7	44	33	11	9/9/13	57.8	9/19/13	124.8	15.9
																				9/19/13	128.2	15.6
																				3/12/14	176.9	19.5
ST75	26.2	A-7-5	ML	17.5	104	122	2.73	75	0.64	0.29	0.39	64.3	8.8	4.4	42	31	11	9/10/13	34.8	9/26/13	55.0	16.1
																				9/26/13	53.3	16.2
																				3/12/14	101.2	15.7
ST76	31.2	A-7-5	ML	18.3	110	130	2.69	92	0.53	0.32	0.35	51.9	8.0	1.5	44	33	11	8/21/13	20.1	9/8/13	44.9	19.0
ST77	36.2	A-4	ML	21.1	101	123	2.68	86	0.65	0.34	0.39	58.8	7.0	0.8	32	27	5	8/23/13	25.1	9/8/13	39.6	20.4
ST78	41.2	A-4	ML	20.3	99	119	2.68	79	0.69	0.32	0.41	58.2	5.4	1.8	36	29	7	8/22/13	18.6	9/8/13	44.2	19.0
ST79	46.2	A-4	ML	17.6	115	135	2.83	93	0.54	0.32	0.35	60.5	9.9	3.8	28	25	3	8/20/13	23.7	9/8/13	48.5	14.9
ST80	51.2	A-4	ML	21.0	107	130	2.68	101	0.56	0.36	0.36	59.0	6.5	1.9	34	29	5	8/26/13	28.7	9/9/13	44.5	20.3

Saturated Strength Properties

Figure D-2 shows plots of the peak p'-q values from the saturated tests for the four major groups of soil in this test site, with the interpreted strength parameters recorded in Table D-2. The tests were performed on specimens from tubes at field locations nearby to the tubes from which the unsaturated test specimens were obtained. The magnitudes of initial effective confining pressures applied were in the same range of net confining pressure applied in unsaturated tests. Therefore, the parameters obtained from the CIU testing are considered to be applicable to the unsaturated data.

Figure D-2 Results of Saturated Consolidation Undrained Tests (a) G1; (b) G2; (c) G3; (d) G4

D.2 Laboratory testing device

In order to study the matric suction comprehensively, pressure plate tests (ASTM 6836) were performed to generate SWCCs, and filter paper tests (ASTM 5298) also were used for comparison. Subsequent soil characterization tests, which included natural water content (ASTM D4959), grain size distribution (ASTM D422), specific gravity (ASTM D854) and Atterberg limits (ASTM D4318), also were conducted by following ASTM standards.

The experimental test set-up, lab testing procedure, and theory behind each matric suction measurement method are presented in the following sections.

Tensiometer

The T5 Miniature Tensiometer (as shown in **Figure D-3**) is specially designed for taking punctual measurements. With an active surface of only 0.5 cm2 and a diameter of 5 mm, the ceramic tip has all the advantages of small dimensions: little soil disturbance, punctual pick-up, and fast response.

Figure D-3 T5 Tensiometer

Specifications for both the T5 and the specialized T5x Miniature Tensiometer are presented in Table D-10. Both tensiometers are used to measure matric suction by insertion directly into the soil. The range of the T5 tensiometer is from +100 kPa (pore water pressure) to -85 kPa (matric suction). The special version T5x can measure a higher range of matric suction to -160 kPa due to the finer pores of the ceramic tip of the sensor.

Table D-10 T5 and T5x Tensiometer Specifications

Material	Acrylic glass
Shaft length	5 cm for T5(x)-5 and 10 cm T5(x)-10
Shaft diameter	5 mm
Sensor body length	3.5 cm
Sensor body diameter	20 mm
Power supply	10.6VDC/1.3mA
Accuracy	±0.5 kPa
Range	T5: +100 kPa to -85 kPa T5x: +100 kPa to -160 kPa
Advantages	Accurate zero-tension reading Fast response: With sufficient filling, the T5 responds within 5 seconds to an applied air pressure change of 0 kPa to 85 kPa. Most standard T5x reach a range of at least 160 kPa
Limitations	Not for dry soils and not frost resistant

Operation of the tensiometers (testing, precautions, and saturation)

Testing. By using the shaft to drill a hole in the soil, the sensor is installed in the predrilled hole. When the test is performed, the shaft of the sensor must not be twisted or it will loosen the connection between the shaft and the sensor body, which may cause the sensor to become desaturated or give erroneous readings.

Saturation. Before each test, the saturation condition of the sensors must be checked to ensure the accuracy of the tests. If the sensor is desaturated, air bubbles can easily be observed in the transparent shaft.

Sensor operation. The tensiometer needs to be refilled if the curve of the readings becomes flatter and/or if the maximum -85 kPa can no longer be attained. If the soil dries out and reaches the air entry value (-200 kPa for T5 and -500 kPa for T5x), the tension will decrease rapidly as air enters the cup. In order to check if the T5 requires refilling, it should be connected to a voltmeter. Then, a dry paper tissue should be wrapped around the cup to dry the ceramic surface. If the reading rises to -80 kPa within 10 seconds when the T5 tip is waved in the air, then the T5 does not require refilling.

Tensiometers allow the direct and precise measurement of small amounts of tension in the soil. In this study, T5 and T5x laboratory tensiometers were used for measuring the matric suction. The tensiometer was inserted into the soil, and the output was recorded as voltage. The voltage corresponds directly to the matric suction.

Figure D-4 T5 tensiometer and test set-up

Filter paper

Filter paper also can be used for testing the matric suction of Shelby tube samples. For this study, two 1-inch thick soil biscuits were cut, and Whatman #42 (42 mm diameter)

filter paper was placed between the two soil biscuits. To prevent contamination, the Whatman #42 filter paper was placed between two Fisherband P8 (5.5 cm diameter) filter papers.

Figure D-5 Filter paper specimen

The moistened filter paper was weighed using an analytical balance with a four-decimal precision 0.0001 g balance. Then, the filter paper was placed in an oven at 105 Celsius degrees for 24 hours. After the drying process was completed, the filter paper was weighed again, and the matric suction was calculated based on the calibration found in ASTM 5298.

Pressure plate

The pressure plate cell design developed by Wang and Benson (2004) was used in this study for obtaining the SWCCs. Fifteen-bar ceramic stone normally is used to determine the SWCCs in a full suction range from 0 kPa to 1500 kPa. However, 5-bar ceramic stone was used in this study because it allows for a less time-consuming process due to the fact that the hydraulic conductivity of 5-bar stone is two orders of magnitude higher than that of 15-bar stone. This set-up also allows for less suction (≤ 500 kPa), which is the research concern of this study.

Figure D-6 Pressure plate test set-up

Sample preparation

An undisturbed sample was extruded from a Shelby tube into a standard consolidation ring with dimensions of 5 cm in diameter and 2.5 cm in height. The sample was sandwiched and stabilized using filter paper and porous stone in a perforated disk-shaped clamp. The sample was immersed in a plastic cell with sufficient de-aired water. A vacuum was applied on top of the cell for at least 48 hours. If air bubbles still escaped from the sample, a longer time of saturation was required until no air bubbles were observed. The target sample mass at 100% saturation was calculated before the sample was saturated. The sample mass at post-saturation was measured and compared with the target mass at 100% saturation. If 99% saturation was not reached, the saturation process was repeated.

Before the saturation of the soil sample, a 5-bar ceramic stone (air entry value of the ceramic stone is 500 kPa) was saturated, and the ceramic stone was kept in the pressure plate extractor filled with de-aired water to maintain the saturation level. Once the sample was placed on top of the ceramic stone, it was rotated about 180 degrees to ensure close attachment to the stone. Air pressure was applied from a compressed air tank and controlled

by air pressure regulators. A stepwise increasing air pressure supply was used from 10 kPa to 480 kPa, and each air pressure increment doubled the previous air pressure, i.e., 10 kPa to 20 kPa, 20 kPa to 40 kPa, until reaching the maximum 480 kPa, which is close to the air entry value of 500 kPa of the ceramic stone. At each pressure level before increasing to next pressure level, 48 hours of equilibrium (as recommended in ASTM) was applied to establish the soil-air-water equilibrium for the system. The water that was squeezed out from the sample was collected in a pair of transparent plastic tubes with diameters of 1 cm each. By applying different air pressures, the decreasing water content of the soil sample was reflected in the increasing water level in the tubes. Based on the recorded water level in the tubes, the water content that corresponded to the applied air pressure could be back-calculated.

Procedure of obtaining SWCC

First, ensuring that the porous stone is fully saturated is crucial to the test. If the stone is not fully saturated, air will escape through the stone. For air pressure less than 500 kPa and the case of saturated stone, the surface tension is enough to sustain the air pressure. A tank of pressurized air was used as the source of the pressure supply in this study. Air could not escape from the stone, but water could slowly drain out due to the low hydraulic conductivity of the porous stone. An O-ring was used to ensure a good seal. The chamber and the base were tightened together by six bolts. The same amount of torque was applied to each bolt; the necessary amount of torque is 5 kN·m (3.7 kip·ft).

Second, constant air flushing is important when measurements are taken. Air bubbles can easily form at the base of the porous stone and in the tubes, so a small manual air pump was used in this study to push water from one tube to the other as an effective way to remove the air bubbles.

After flushing, a small cap was put on the tubes to avoid water evaporation. This air flushing process was conducted every seven to eight hours. During the tests, the air entry value is an important point to be determined because it marks when the soil begins to desaturate.

Unsaturated triaxial test

Apparatus

A schematic of the unsaturated triaxial test system used in testing is shown in **Figure D-7**. The device has both outer and inner chamber. A pressure panel is used to apply equal pressures to inner and outer chambers, with the ability to monitor the volume change. One modification is that the chamber is designed to have air and water connections on both top and bottom plates to accelerate the sample's equilibrium process.

The air supply is connected to a regulator to control and maintain the pressure magnitude, and is applied to both top and bottom connections. Two water pumps provide the pore water pressure from both top and bottom ends of the specimen. The photo shown in Figure D-8 includes loading frame, pumps, pressure panel and laptop with program running.

Figure D-7 Schematic of the unsaturated triaxial test device

Figure D-8 Photo of unsaturated triaxial test device

Figure D-9 is the photo of the top and bottom end in this research. The parts of porous stone are connected to air supply to apply air pressure to the specimen.

The parts of ceramic disk are connected to the water pump, and during test, the ceramic disk and the connection lines from ceramic disk to water pump are all saturated. When the ceramic disk is saturated, it prevents the air with an air pressure less than the air entry value of the ceramic from passing through it.

Figure D-9 Photo of top and bottom caps

Procedure

For the unsaturated triaxial testing, samples were extracted from Shelby tubes and trimmed to 4-inch height and 2-inch diameter. The ratio of height to diameter was 2 to 1, in concert with ASTM-7181 (which specifies a ratio shall be between 2 to 2.5 in consolidated drained triaxial testing).

During the equilibrium process, 2 to 3 psi of net confining pressure was maintained to prevent the membrane around the specimen from expanding and the water content of the specimen decreased to approach the values corresponding to the applied matric suction. The shear process has begun after reaching equilibrium.

In each stage of shearing, the applied air pressure and water pressure were maintained constant during shearing, so it is possible to determine the peak strength and its corresponding net confining pressure and matric suction.

Two multistage tests and two single stage tests were performed for each of the MH and ML soil types. The net confining pressure used for each specimen was based on the in situ mean stress corresponding to the depth of the soil sample in the ground. In all stages of the multistage testing, the net confining pressure was maintained constant, so the change of the shear strength as a function of the increase in matric suction, at a certain depth, could be evaluated.

The magnitude of the matric suction applied to the specimen was also assessed from the in situ condition. In the 2-5 m depth range, the matric suction was on the order of 130 kPa, while from 11 to 15 m, it was on the order of 30 kPa. Therefore, the maximum value of matric suction used in testing was 130 kPa. The multistage test was performed such that the specimens were sheared at lower matric suction as the first stage, and then higher values of matric suction were applied to the specimen. The specimen was sheared either two or three times. For each stage of matric suction, the water pressure was maintained constant and the air pressure was increased to induce the higher matric suction.

Appendix E. Suction measurement and prediction of SWCC

Matric suction measurement and the prediction of SWCC are the fundamental parameters for executing unsaturated soil properties. Therefore, in this chapter, the quick measurement of matric suction device, tensiometer, is introduced including reliability of measuring time, and an empirical model for predicting matric suction as a function of volumetric water content is presented.

E.1 Verification of measuring time of tensiometer

A calibration study was undertaken for this research to evaluate the performance of the fast-response tensiometers.

Paired sensors investigation

For each suction level, the ratio between the T5 and T5x tensiometers was plotted, as presented in **Figure E-1**, as a function of time. The T5/T5x ratio is seen to be within 0.89 and 1.2 after 20 minutes. The ratio between the T5 and T5x sensors seems not to be affected by the passage of time. That is, no obvious trend or pattern for the readings is evident from the two sensors. The data do not show that T5x provides consistently higher readings than T5. So, both T5 and T5x are seen to generate nearly the same matric suction values (for values lower than 70 kPa) with a COV of 15 percent.

Figure E-1 T5/T5x ratio by passage of time

Figure **E-2** shows the same data from Figure **E-1** plotted against the suction of the T5x sensor. For suction levels higher than 20 kPa, both the T5 and T5x tensiometers still show consistent results, and the variation between the two sensors is 0.89 to 1.2. So, T5 and T5x can generate similar matric suction values at different suction levels and times.

The compacted samples indicate that the required equilibrium time can be determined as 20 minutes. For the paired T5 and T5x tensiometers, the variation is 0.89 to 1.2. It appears that neither time nor suction level affects the measuring consistency of the two sensors. One sensor is the same as the other for suction levels higher than 20 kPa and lower than 70 kPa.

Figure E-2 T5/T5x ratio over suction range

Proposed test duration for matric suction determination

Table **E-1** presents the suction readings at 20 minutes and 60 minutes and the ratio of suction at 20 minutes and 60 minutes for each suction level.

Table E-1 Measured Suction of Compacted Samples: 20 Minutes vs. 60 Minutes

Suction level (kPa)	ψ_{20min} (kPa)	ψ_{60min} (kPa)	$\psi_{20min}/\psi_{60min}$ (%)
11	7.4	10.7	68.6
23	18.1	23.0	78.6
35	35.3	34.9	101.1
68	68.0	68.0	100.0

Note: ψ_{20min}: Suction at 20 minutes
ψ_{60min}: Suction at 60 minutes

For 11 kPa and 23 kPa suction levels, $\psi_{20min}/\psi_{60min}$ are 68.6% and 78.6%, respectively. Therefore, approximately 70% of the suction at 60 minutes can be obtained at 20 minutes. At 35 kPa and 68 kPa, the 20-minute readings are basically the same as the 60-minute readings. For suction levels lower than 20 kPa (which is close to the air entry value of the A-7-5 soil), a longer time is required to reach equilibrium. Therefore, 20 minutes can be considered as a reliable time to determine the equilibrium suction for suction levels higher than 35 kPa.

Suction readings at 2min

Because suction measurements taken during the thin-walled tube sampling process in the field were obtained over a relatively short time, on the order of a few minutes (between tube extraction and wax-sealing of the tube ends), it was determined that a suction correction factor (*SCF* in figures) was necessary to predict the actual field suction.

Suction correction factor of lab-tested Shelby tube samples

In the lab, readings for both short (on the order of two minutes) and long (on the order of 20 minutes) times were obtained for the tube samples of the A-7-5 (MH) and A-4 (ML) soils. Again, in these tests, the paired sensors, as shown in Figure **D-3**, were used to ensure the accuracy of the readings. The number of tube samples tested is shown in Table E-2. The statistically determined data outliers were excluded from this analysis.

Figure E-3 Tensiometer testing in the laboratory

Table E-2 Number of Samples Tested in Laboratory

Soil Type	A-7-5 (MH)	A-4 (ML)
Number of tubes tested	32	20
Outliers excluded	8	6
Number of data points used	24	14

Based on analysis of the data presented in Figure **E-4**, a function for predicting the 20-minute value (believed to be the actual equilibrium value) from the 2-minute value was developed. Knowing the suction at two minutes, the ratio between ψ_{20min} and ψ_{2min} could be calculated as

$$\psi_{20min}/\psi_{2min} = 1.011 - 0.000061\psi_{2min} \tag{E.1}$$

In order to account for the variability (scatter) in the measured data, a lower-bound model, such one that has as a 95% confidence limit (Triola 1998), could be used, as shown in Equation E.2.

$$\psi_{20min} = \psi_{2min} * \left\{1.011 - 0.000061\psi_{2min} - 0.04\left[0.042 + \frac{(\psi_{2min} - 63.8)^2}{8446}\right]^{0.5}\right\} \tag{E.2}$$

However, instead of using Equation E.2, a simple suction correction factor of 0.99, based on the lower prediction at the mean of the data, is presented in Figure **E-4**. This correction factor can provide a reasonable approximation to the more complex function. Thus, the model in Equation E.3 can be obtained:

$$\psi_{20\mathrm{min}MH} = 0.99\psi_{2min} \tag{E.3}$$

So, the 2min readings are essentially the same as the 20min readings.

Figure E-4 SCF for A-7-5 (MH) soil by using best-fit function and lab tests of tube samples

The same procedures were followed using the data obtained from tests of the A-4 (ML) soil; the results are presented in Figure **E-5** and Equations E.4, E.5, and E.6.

The ratio between ψ_{20min} and ψ_{2min} is

$$\psi_{20min}/\psi_{2min} = 1.052 - 0.0000483\psi_{2min} \tag{E.4}$$

The 95% confidence limit at the lower bound is

$$\psi_{20min} = \psi_{2min} * \left\{1.052 - 0.000483\psi_{2min} - 0.066\left[0.071 + \frac{(\psi_{2min} - 41.8)^2}{8518}\right]^{0.5}\right\} \tag{E.5}$$

The mean suction correction factor based on the mean of the data for the A-4 (ML) soil is

$$\psi_{20\min ML} = 0.99\psi_{2min} \tag{E.6}$$

Figure E-5 SCF for A-4 (ML) soil by using best-fit function and lab tests of tube samples

The simplified suction correction factor for both the A-7-5 (MH) and A-4 (ML) soils is 0.99. So, for the lab-tested samples, the suction at two minutes essentially can be assumed to be the same as the suction at 20 minutes.

E.2 Measured soil water characteristic curves

Curve-fitting the experimental data

The experimental data of the SWCCs were curve-fitted using the Fredlund and Xing (1994) model. The upper bound used in the pressure plate test was 500 kPa. The residual matric suction was pre-designated as 3000 kPa. Fredlund and Xing (1994) found that the ψ_r, residul matric suction is generally in the range of 1500 kPa to 3000 kPa and that it will normally generate satisfactory approximation. Also, Vanapalli et al. (1996) used 3000 kPa as the ψ_r for estimating unsaturated shear strength from SWCCs.

These studies provide the basis for using 3000 kPa as the residual matric suction in the curve fitting in this study.

The SWCCs of the two soil types are shown in Figure **E-6** and Figure **E-7**. The parameters *a*, *n*, and *m* in the Fredlund-Xing model are shown in Table E-3. Some variability in the measured SWCCs is evident for the same type of soils. This variability of the tested SWCCs also was noted by Zapata et al. (2000).

Figure E-6 Soil water characteristic curves of A-7-5 (MH) soil samples

Figure E-7 Soil water characteristic curves of A-4 (ML) soil samples

Table E-3 Summary of soil properties for testing SWCCs

#	Depth	Type		P200	P2 μm	Cu	Cc	LL	PI	θ_s	Gs	ρ_d	a	n	m	AEV[1]
	(ft)	(USCS)	(AASHTO)	(%)	(%)							(g/cm^3)				(kPa)
ST36	2.2	MH	A-7-5	83.5	22.3	30	2.8	50	16	0.541	2.69	1.23	14.9	0.78	0.60	2.1
ST47	2.2	MH	A-7-5	87.4	25.0	13	1.1	61	22	0.615	2.75	1.06	38.5	2.04	0.30	13.0
ST70	5.2	CL	A-7-5	72.1	17.1	32	0.8	45	19	0.533	2.70	1.26	30.9	0.85	0.64	5.1
ST38	8.2	MH	A-7-5	94.6	21.5	14	1.5	61	21	0.611	2.72	1.06	36.3	1.64	0.61	11.4
ST50	10.2	MH	A-7-5	88.5	14.9	12	2.4	59	23	0.594	2.79	1.13	72.4	1.14	0.97	18.0
ST40	18.0	MH	A-7-5	85.8	8.8	8	1.1	58	16	0.580	2.74	1.15	49.8	0.76	1.63	8.8
ST61	10.0	ML	A-4	81.3	16.1	12	0.8	34	8	0.422	2.78	1.61	44.6	1.65	0.33	13.4
ST28	15.2	ML	A-4	66.3	8.8	9	0.9	36	7	0.435	2.69	1.52	49.9	1.66	1.03	16.7
ST64	27.0	ML	A-7-5	84.7	2.2	4	1.1	45	12	0.442	2.81	1.57	69.2	1.03	1.73	17.8
ST32	34.2	ML	A-4	53.1	4.7	32	0.3	38	8	0.509	2.77	1.36	73.6	1.1	1.45	19.2
ST79	44.2	ML	A-4	60.5	3.8	14	0.6	28	3	0.456	2.83	1.54	33	1.42	1.12	10.1
ST34	44.3	ML	A-4	61.5	7.3	14	0.8	38	10	0.490	2.79	1.43	36.3	1.01	1.32	8.5

Note: 1. AEV (air entry value) is calculated based on Zhai and Rahardjo (2012) equation.

New Model Development Using Multivariate Regression Analysis

For the new model development, SWCCs of twelve samples were determined: six high plasticity and six low plasticity silty soils. The corresponding soil properties also were tested. The first step was to include as many properties as possible in the statistical analysis because no physical theory was available to support which properties should be included or excluded. Also, some of the possible parameters might have an effect on the curvature of the SWCCs. So, the rule of thumb principle was employed to include as many soil index properties as possible. Three categories of soil properties were included for the new model development: grain size distribution, Atterberg limits, and volume-mass relationships.

The SWCCs were determined using pore size distribution, which correlates directly with grain size distribution. The included parameters are: P200, P5 μm (percentage passing 5 μm), P2 μm (percentage passing 2 μm), D10, D30, D60, Cu, Cc, LL, PI, Gs, and ρd.

The so-called 'Best' subsets algorithm (a built-in block in MINITAB) was used to determine the necessary variables for the model. A group of 'Best' subsets, which included different independent variables, was correlated with the response variable in the form of

$$Y = \beta_0 + \beta_1 X_1 + \cdots$$

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots$$

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \cdots$$

These subsets were generated by the MINITAB program. The detailed theory and procedures are explained in Neter et al. (1996). Three criteria were used to determine the best-fit function: R^2, adjusted-R^2, and predicted-R^2. R^2 is the percentage of the response variable variation that is explained by the predictor variables. The adjusted-R^2 criterion is the R^2 value adjusted for the number of predictors in the model. The predicted-R^2 can prevent over-fitting the models. In general, R^2 and adjusted-R^2 will be higher if more predictor variables are included, even when some variables are not necessary. Over-fitted models will give better R^2 and adjusted- R^2 values, but fail to generate valid predictions for future data (Ryan et al. 1982). The results of the best subsets analysis from MINITAB are presented in Table E-4.

Table E-4 Example of Best Subsets Analysis for *a* Values

Vars	R-Sq	R-Sq (adj)	R-Sq (pred)	Mallows Cp	S	P200	5μm	1/D10	1/D30	1/D60	Cu	Gs	ρd	D30	D60
1	33.5	26.8	9.6	2.8	15.552			X							
1	23.0	15.3	0.0	4.5	16.733		X								
2	44.2	31.8	0.6	3.0	15.015			X		X					
2	39.6	26.2	0.0	3.8	15.621	X		X							
3	60.9	46.3	0.0	2.3	13.324			X		X					X
3	60.3	45.4	0.0	2.4	13.431			X		X	X				
4	86.5	78.8	50.0	0.2	8.3740			X	X	X	X				
4	83.8	74.6	33.8	0.6	9.1659		X	X		X	X				
5	**92.3**	**85.8**	**69.3**	**1.3**	**6.8418**			**X**	**X**	**X**	**X**		**X**		
5	89.5	80.7	54.5	1.7	7.9832		X	X		X	X		X		
6	92.9	84.4	0.0	3.1	7.1797			X	X	X	X		X		X
6	92.7	84.0	60.2	3.2	7.2801		X	X	X	X	X		X		
7	93.7	82.8	0.0	5.0	7.5463		X	X	X	X	X		X		X
7	93.3	81.6	0.0	5.1	7.7992			X	X	X	X		X	X	X
8	93.8	77.3	0.0	7.0	8.6586		X	X	X	X	X	X	X		X
8	93.7	77.0	0.0	7.0	8.7133		X	X	X	X	X		X	X	X
9	93.8	66.0	0.0	9.0	10.601	X	X	X	X	X	X	X	X		X
9	93.8	66.0	0.0	9.0	10.602		X	X	X	X	X	X	X	X	X
10	93.8	32.1	0.0	11.0	14.986	X	X	X	X	X	X	X	X	X	X

The best subsets analysis indicates that the related soil properties with *a*, *n*, and *m* can be considered as the following general forms of functions:

$$a = f(\frac{1}{D_{10}}, \frac{1}{D_{30}}, \frac{1}{D_{60}}, \frac{D_{60}}{D_{10}}, \rho_d) \tag{E.6}$$

$$n = f(P200, \frac{1}{D_{30}}, \frac{D_{60}}{D_{10}}, \rho_d, D_{30}, D_{60}) \tag{E.7}$$

$$m = f(P200, 5\mu m, G_s, \rho_d) \tag{E.8}$$

Next, multivariate linear regression analysis was performed to determine which explanatory variables should be incorporated into the function. The criterion to determine the significance of each explanatory variable is the P-value. A hypothesis test was performed to determine the coefficient of each explanatory variable. If the P-value for the coefficient of one explanatory variable was higher than 0.05, this coefficient was considered as zero, and

the corresponding explanatory variable was considered insignificant and was excluded from the model. So, after the first-step refinement, the insignificant variable, D_{30} in the equation E.6 with P-value = 0.165, was excluded from the model. The P-value of each term is shown in Table **E-5**.

Table E-5 P-values for Choosing the Terms in Prediction Model

a		n		m	
Term	P-value	Term	P-value	Term	P-value
$\frac{1}{D_{60}}$	0.001	P200	0.049	P200	0.036
$\frac{1}{D_{30}}$	0.008	D_{60}	0.000	5μm	0.000
$\frac{1}{D_{10}}$	0.002	$\frac{1}{D_{30}}$	0.000	G_s	0.012
$\frac{D_{60}}{D_{10}}$	0.004	$\frac{D_{60}}{D_{10}}$	0.012	ρ_d	0.000
		ρ_d	0.006		

The prediction models for each Fredlund-Xing *a*, *n*, and *m* parameter are

$$a = 17.2 + \frac{1.89}{D_{60}} - \frac{0.363}{D_{30}} - \frac{0.063}{D_{10}} + 2.5 * \frac{D_{60}}{D_{10}} \quad \text{(E.9)}$$

$$n = -0.105 - 0.018 * P200 + 9.55 * D_{60} + \frac{0.012}{D_{30}} - 0.057 * \frac{D_{60}}{D_{10}} + 1.203 * \rho_d \quad \text{(E.10)}$$

$$m = 11.24 + 0.0074 * P200 - 0.075 * 5\mu m - 2.665 * G_s - 1.452 * \rho_d \quad \text{(E.11)}$$

Testing New Model Using Data from Rahardjo et al. (2012)

The proposed model was tested using the unsaturated properties tested by Rahardjo (2012) who had studied residual soils in Singapore. The soil water characteristic curve of

residual soils were obtained from soils at three locations: sedimentary Jurong Formation, Bukit Timah Granite and Old Alluvium in Singapore. The silty material from Bukit Timah Granite was used for testing the model here since it is similar to the soil in this study.

The grain size distribution from Rahardjo (2012) is presented in Figure **E-8**. But the specific gravity and dry density information at this location wasn't explicitly mentioned in Rahardjo (2012). So, the specific gravity and dry density is respectively set to be default values of 2.7 and 1.2 g/cm^3, respectively, both believed to be reasonable assumptions for residual soils. The predicted SWCC by the proposed model is compared with the measured data in Figure **E-9**.

Figure E-8 Grain size distribution of residual soil from Bukit Timah Granite (Rahardjo, 2012)

Figure E-9 Drying SWCC of residual soil from Bukit Timah Granite vs the predicted SWCC

The predicted SWCC from the proposed model shows a reasonably good agreement with the upper bound of SWCC from Bukit Timah Granite. And this also suggests that without the specific data of specific gravity and dry density, the default values of specific gravity, 2.7 and dry density, 1.2 g/cm^3 be used for predicting SWCCs.

<u>Adjust to field SWCC</u>

Figure E-10 Field curve determination

Prediction of the change in the suction profile by the proposed model

Since the suction profiles were monitored, the proposed suction prediction model in section 4 is used here to produce the predicted change of suction profiles. Since the changed of suction at sheet pile wall and 0.5:1 slope area is obvious, the soil properties at those two locations were used here to produce the predicted suction profiles in order to study the predictive ability of the model. By using the measured soil properties, such as grain size distribution, specific gravity and density information, the SWCC parameters can be predicted by the proposed model which was expressed as equation E.9, E.10 and E.11. The soil properties and predicted SWCC parameters is shown in Figure **E-4**and Figure **E-5**. This analysis only used the soil properties above upper 10 ft since the monitored change of suction profiles was only at upper 10ft of soil layers. The predicted SWCCs for the soils at sheet pile wall and 0.5:1 slope area are shown in Figure **E-11** to Figure **E-14**.

Table E-6 Soil properties at sheet pile wall and predicted SWCC parameters by the proposed model

Depth (ft)	#	D60 (mm)	D30 (mm)	D10 (mm)	5μm (%)	ρd (g/cm^3)	Gs	θs	a	n	m
5.2	70	0.035	0.006	0.001	27.7	1.26	2.7	0.51	29.8	0.74	0.67
13.2	72	0.039	0.014	0.002	16.2	1.73	2.71	0.61	54.6	0.9	0.85

Table E-7 Soil properties at 0.5:1 slope and predicted SWCC parameters by the proposed model

Depth (ft)	#	D60 (mm)	D30 (mm)	D10 (mm)	5μm (%)	ρd (g/cm^3)	Gs	θs	a	n	m
4	36	0.015	0.005	0.0005	32.5	1.24	2.69	0.54	12.9	0.91	0.46
7	37	0.013	0.003	0.002	35.9	1.15	2.72	0.58	30.9	3.12	0.29

Figure E-11 Predicted SWCC and field curve at 5.2 ft of sheet pile wall area

Figure E-12 Predicted SWCC and field curve at 13.2 ft of sheet pile wall area

Figure E-13 Predicted SWCC and field curve at 4 ft of 0.5:1 slope area

Figure E-14 Predicted SWCC and field curve at 7 ft of 0.5:1 slope area

Appendix F. Measurement and prediction of unsaturated shear strength

Unsaturated shear strength is an important factor for the applications of slope stability and cantilever sheet pile wall design. Therefore, in this chapter, measured unsaturated shear strength values from unsaturated triaxial tests are presented, and prediction models are also evaluated.

Two types of unsaturated triaxial tests were performed in this research: axial compression test and lateral extension test. The majority of specimens were tested as axial compression test, and only few are tested as lateral extension test.

F.1 Measured stress strain curves of unsaturated triaxial tests

Three components were shown here for the measure strengths from triaxial tests: equilibrium, stress-strain response and shear strength.

Unsaturated triaxial axial compression test

Specimen equilibrium process in triaxial tests

The monitoring of the water outflow is used to indicate when the specimen has reached equilibrium. When the specimen approaches equilibrium, the flow rate of water moving out of the specimen becomes very low or almost zero. Several equalization times were attempted in this research. Figure **F-1** shows the amount of water released from specimen recorded every 12 hours, normalized with respect to the initial volume of water in the specimen. During the first 12 hours, the highest volume is released, with the rate decreasing over time. Toward equilibrium, the value of water released per 12 hours per initial volume of water is less than 0.12 %, which is used herein as the criteria for equilibrium. This equilibrium rate is defined at an outflow rate of less than 0.01 %/hr.

Figure F-1 Volume of water released per day divided by initial volume versus days

Measured shear strength

Total of 46 unsaturated triaxial tests were performed in this research, including 20 single stage tests and 26 multistage tests. Table C1 to C3 are the test conditions and measured peak stress, dry density and degree of saturation of each shearing. Figure C1 to C46 are the stress strain curves and basic properties of specimens, including index properties and photo of each specimen.

1. The order of the figures for each individual specimen follows the orders in the table, based on the area of the specimen: 0.5:1 Slope (405+70), 0.25:1 Slope (404+50), 1:1 Slope (403+45) and sheet pile (404+50).
2. The definition of clay, silt and sand are according to NCDOT's lab report, which are <0.005 mm for clay, 0.05-0.005 mm for silt and 0.05-0.25 for fine sand.

3. The grain size distribution tests were performed for each specimen, but Atterberg limit tests were performed for each tube only, because more soil is needed for Atteburg test.
4. The values of matric suction and degree of saturation shown in the Tables are values applied and measured in the test, but the values shown on the charts above stress strain curves are the measurement taken on the tube by tensiometer.

Table F-1 Test conditions and measured data (single stage test)

Area	Soil type	#	Depth	$\sigma_{c,net}$	$u_a - u_w$	$\sigma_{d,peak}$	γ_d	S
			m	kPa	kPa	kPa	g/cm^3	
0.5:1 Slope	MH	ST-36	0.6-1.2	27.6	152.0	264.5	1.27	0.60
		ST-91	3.0-3.5	69.0	27.6	187.5	1.30	0.92
		ST-40	3.1-3.7	34.5	34.5	160.0	1.16	0.75
		ST-42	8.5-9.1	75.8	20.7	200.5	1.32	0.98
		ST-43	10.3-10.9	103.4	13.8	388.9	1.67	0.98
		ST-94	12.0-12.6	113.8	37.9	433.7	1.36	0.94
0.25:1 Slope	MH	ST-47	0.7-1.3	82.7	89.6	292.8	1.09	0.65
		ST-124	1.2-1.8	137.9	62.1	353.0	1.20	0.81
		ST-50	3.0-3.5	41.4	62.1	197.2	1.11	0.71
		ST-53	7.7-8.3	82.7	27.6	202.7	1.17	0.92
		ST-54	9.2-9.8	93.1	24.1	239.9	1.36	0.94
1:1 Slope	SC	ST-59B	0.5-1.0	20.7	72.4	175.1	1.74	0.52
		ST-60	1.5-2.0	20.7	55.2	175.1	1.82	0.61
		ST-114B	0.5-1.1	82.7	55.2	336.5	1.72	0.63
		ST-116E	0.5-1.1	137.9	10.3	392.3	1.76	0.79
	ML	ST-65A	9.4-10.0	82.7	31.0	388.2	1.67	0.98
		ST-65B	9.4-10.0	100.0	31.0	432.3	1.71	0.99
Sheet pile	ML	ST-75	7.4-8.0	75.8	27.6	281.3	1.63	0.88
		ST-77	8.0-8.5	69.0	55.2	315.8	1.61	0.85
		ST-85	10.0-10.5	103.4	27.6	330.3	1.53	0.83

S: Degree of saturation

Table F-2 Test conditions and measured data (multiple stage test for specimens from slope area)

Area	Soil type	#	Depth m	Stage	$\sigma_{c,net}$ kPa	u_a kPa	$\sigma_{d,peak}$ kPa	γ_d g/cm^3	S
0.5:1 Slope	MH	ST-37A	2.0-2.5	1st	20.7	82.7	177.4	1.19	0.54
				2nd	20.7	124.1	195.6	1.21	0.49
		ST-37B	2.0-2.5	1st	20.7	93.1	177.2	1.08	0.65
				2nd	20.7	124.1	197.2	1.09	0.60
		ST-38A	2.5-3.0	1st	27.6	75.8	186.5	1.15	0.63
				2nd	27.6	137.9	180.1	1.16	0.59
		ST-38B	2.5-3.0	1st	27.6	20.7	103.4	1.08	0.91
				2nd	27.6	89.6	195.1	1.09	0.65
		ST-39A	4.9-5.5	1st	20.7	55.2	146.1	1.08	0.67
				2nd	20.7	82.7	166.2	1.09	0.61
		ST-39B	4.9-5.5	1st	34.5	55.2	143.5	1.10	0.66
				2nd	34.5	106.9	207.3	1.11	0.59
0.25:1 Slope		ST-49A	2.0-2.5	1st	24.1	75.8	168.2	1.13	0.65
				2nd	24.1	120.7	202.7	1.13	0.62
		ST-49B	2.0-2.5	1st	24.1	27.6	111.7	1.12	0.90
				2nd	24.1	89.6	169.6	1.12	0.69
				3rd	24.1	137.9	206.2	1.13	0.58
		ST-51	3.0-3.5	1st	41.4	44.8	159.3	1.08	0.76
				2nd	41.4	89.6	200.0	1.09	0.72
		ST-52	5.6-6.2	1st	62.1	31.0	215.5	1.19	0.91
				2nd	62.1	62.1	266.3	1.20	0.86
	ML	ST-57	13.6-14.2	1st	131.0	10.3	318.4	1.69	0.90
				2nd	131.0	41.4	366.5	1.69	0.79
				3rd	131.0	62.1	377.8	1.70	0.70
1:1 Slope	SC	ST-59A	0.5-1.0	1st	20.7	20.7	136.5	1.83	0.61
				2nd	20.7	137.9	252.4	1.83	0.43
		ST-59C	0.5-1.0	1st	20.7	10.3	89.5	1.79	0.69
				2nd	20.7	103.4	206.2	1.79	0.58
	ML	ST-62	4.0-4.5	1st	41.4	41.4	174.4	1.72	0.81
				2nd	41.4	69.0	218.6	1.73	0.78
		ST-64	7.5-8.0	1st	75.8	34.5	237.9	1.68	0.80
				2nd	75.8	69.0	257.9	1.69	0.70

Table F-3 Test conditions and measured data (multiple stage test for specimens from sheet pile area)

Area	Soil type	#	Depth m	Stage	$\sigma_{c,net}$ kPa	$u_a - u_w$ kPa	$\sigma_{d,peak}$ kPa	γ_d g/cm^3	S
Sheet pile	ML	ST-81	2.4-3.0	1st	20.7	96.5	150.1	1.24	0.42
				2nd	20.7	117.2	163.6	1.25	0.39
				3rd	41.4	117.2	199.6	1.26	0.39
				4th	62.1	117.2	236.9	1.26	0.39
		ST-30	4.9-5.5	1st	48.3	6.9	133.6	1.40	0.84
				2nd	48.3	48.3	196.2	1.40	0.70
				3rd	96.5	48.3	311.9	1.41	0.71
		ST-83	5.5-6.1	1st	41.4	75.8	161.7	1.43	0.49
				2nd	41.4	103.4	190.9	1.43	0.44
				3rd	41.4	124.1	217.4	1.43	0.41
		ST-74	6.3-6.9	1st	62.1	55.2	272.0	1.73	0.71
				2nd	62.1	82.7	321.7	1.73	0.69
		ST-87	11.5-12.0	1st	117.2	20.7	318.0	1.55	0.89
				2nd	117.2	55.2	388.2	1.55	0.67
				3rd	117.2	75.8	443.3	1.56	0.62
		ST-34A	13.5-14.1	1st	89.6	6.9	253.3	1.56	0.81
				2nd	89.6	27.6	316.1	1.56	0.80
				3rd	89.6	55.2	351.2	1.56	0.73
		ST-34B	13.5-14.1	1st	44.8	6.9	173.4	1.54	0.78
				2nd	89.6	6.9	254.0	1.57	0.77
				3rd	89.6	27.6	288.9	1.57	0.75
		ST-79A	14.1-14.7	1st	89.6	27.6	319.5	1.71	0.82
				2nd	62.1	56.2	357.2	1.71	0.77
				3rd	62.1	82.7	383.5	1.72	0.71
		ST-79B	14.1-14.7	1st	144.8	13.8	288.6	1.63	0.90
				2nd	144.8	41.4	374.9	1.64	0.83
				3rd	131.0	89.6	469.1	1.64	0.63
		ST-80A	15.0-15.5	1st	144.8	27.6	409.1	1.66	0.87
				2nd	144.8	69.0	500.6	1.68	0.65
				3rd	144.8	96.5	550.9	1.68	0.56
		ST-80B	15.0-15.5	1st	69.0	6.9	234.3	1.66	0.89
				2nd	124.1	6.9	297.9	1.66	0.89
				3rd	124.1	55.2	389.9	1.67	0.72
				4th	165.5	55.2	468.8	1.68	0.72

Position of the soil speciman	Location	405 + 70, 3LT
	Number	ST-36
	Depth (m)	0.6-1.2
Soil properties and classifiction	Specific Gravity	2.69
	% of Clay	26
	% of Silt	46
	% of Fine Sand	15
	% of Coarse Sand	13
	Passing #200	74
	Passing #40	91
	Passing #10	99
	Liquid Limit	50
	Plastic index	16
	AASHTO Classification	A-7-5
Initial measured parameters	Water content	28.6%
	Degree of saturation	63.0%
	Matric suction	86 kPa

Position of the soil speciman	Location	405 + 70, 9RT
	Number	ST-91A
	Depth (m)	3.0-3.5
Soil properties and classifiction	Specific Gravity	2.83
	% of Clay	25
	% of Silt	54
	% of Fine Sand	16
	% of Coarse Sand	5
	Passing #200	83
	Passing #40	97
	Passing #10	100
	Liquid Limit	53
	Plastic index	15
	AASHTO Classification	A-7-5
Intial measured parameters	Water content	35.2%
	Degree of saturation	83.4%
	Matric suction	54 kPa

Figure F-2 ST-36, net confining pressure = 28 kPa

Figure F-3 ST-91, net confining pressure = 69 kPa

Position of the soil speciman	Location	405 + 70, 3LT
	Number	ST-40
	Depth (m)	3.1-3.7
Soil properties and classifiction	Specific Gravity	2.74
	% of Clay	12
	% of Silt	55
	% of Fine Sand	19
	% of Coarse Sand	14
	Passing #200	70
	Passing #40	92
	Passing #10	100
	Liquid Limit	-
	Plastic index	-
	AASHTO Classification	-
Initial measured parameters	Water content	42.2%
	Degree of saturation	74.0%
	Matric suction	45.7 kPa

Position of the soil speciman	Location	405 + 70, 3LT
	Number	ST-42
	Depth (m)	8.5-9.1
Soil properties and classifiction	Specific Gravity	2.78
	% of Clay	16
	% of Silt	69
	% of Fine Sand	12
	% of Coarse Sand	3
	Passing #200	87
	Passing #40	99
	Passing #10	100
	Liquid Limit	50
	Plastic index	13
	AASHTO Classification	A-7-5
Intial measured parameters	Water content	42.6%
	Degree of saturation	97.0%
	Matric suction	17.5 kPa

Figure F-4 ST-40, net confining pressure = 35 kPa

Figure F-5 ST-42, net confining pressure = 76 kPa

*Specimen located in the transition zone between MH and ML soils

Position of the soil speciman	Location	405 + 70, 3LT
	Number	ST-43
	Depth (m)	10.3-10.9
Soil properties and classifiction	Specific Gravity	2.81
	% of Clay	6
	% of Silt	64
	% of Fine Sand	23
	% of Coarse Sand	7
	Passing #200	77
	Passing #40	97
	Passing #10	99
	Liquid Limit	31
	Plastic index	4
	AASHTO Classification	A-4
Initial measured parameters	Water content	20.1%
	Degree of saturation	96.0%
	Matric suction	13.9 kPa

Position of the soil speciman	Location	405 + 70, 9RT
	Number	ST-94
	Depth (m)	12.0-12.6
Soil properties and classifiction	Specific Gravity	2.88
	% of Clay	10
	% of Silt	52
	% of Fine Sand	19
	% of Coarse Sand	19
	Passing #200	65
	Passing #40	88
	Passing #10	95
	Liquid Limit	51
	Plastic index	14
	AASHTO Classification	A-7-5
Initial measured parameters	Water content	34.0%
	Degree of saturation	92.0%
	Matric suction	38.8 kPa

Figure F-6 ST-43, net confining pressure = 103 kPa

Figure F-7 ST-94, , net confining pressure = 114 kPa

Position of the soil speciman	Location	404 + 50, 3LT
	Number	ST-47B
	Depth (m)	0.7-1.3
Soil properties and classifiction	Specific Gravity	2.75
	% of Clay	38
	% of Silt	48
	% of Fine Sand	12
	% of Coarse Sand	2
	Passing #200	88
	Passing #40	98
	Passing #10	100
	Liquid Limit	61
	Plastic index	22
	AASHTO Classification	A-7-5
Initial measured parameters	Water content	36.8%
	Degree of saturation	67.0%
	Matric suction	68 kPa

Figure F-8 ST-47, net confining pressure = 83 kPa

Position of the soil speciman	Location	404 + 50, 4.5LT
	Number	ST-124
	Depth (m)	1.2-1.8
Soil properties and classifiction	Specific Gravity	2.81
	% of Clay	21
	% of Silt	51
	% of Fine Sand	15
	% of Coarse Sand	13
	Passing #200	75
	Passing #40	91
	Passing #10	99
	Liquid Limit	-
	Plastic index	-
	AASHTO Classification	A-7-5
Initial measured parameters	Water content	36.1%
	Degree of saturation	-
	Matric suction	73.4 kPa

Figure F-9 ST-124, net confining pressure = 138 kPa

Position of the soil speciman	Location	404 + 50, 3LT
	Number	ST-50B
	Depth (m)	3.2-3.7
Soil properties and classifiction	Specific Gravity	2.79
	% of Clay	22
	% of Silt	61
	% of Fine Sand	9
	% of Coarse Sand	8
	Passing #200	85
	Passing #40	100
	Passing #10	100
	Liquid Limit	59
	Plastic index	23
	AASHTO Classification	A-7-5
Initial measured parameters	Water content	40.2%
	Degree of saturation	76.0%
	Matric suction	63 kPa

Figure F-10 ST-50, net confining pressure = 41 kPa

Position of the soil speciman	Location	404 + 50, 3LT
	Number	ST-53
	Depth (m)	7.7-8.3
Soil properties and classifiction	Specific Gravity	2.81
	% of Clay	20
	% of Silt	59
	% of Fine Sand	16
	% of Coarse Sand	5
	Passing #200	81
	Passing #40	98
	Passing #10	100
	Liquid Limit	65
	Plastic index	18
	AASHTO Classification	A-7-5
Initial measured parameters	Water content	42.3%
	Degree of saturation	97.0%
	Matric suction	4.2 psi

Figure F-11 ST-53, net confining pressure = 83 kPa

Position of the soil speciman	Location	404 + 50, 3LT
	Number	ST-54
	Depth (m)	9.2-9.8
Soil properties and classifiction	Specific Gravity	2.7
	% of Clay	15
	% of Silt	60
	% of Fine Sand	21
	% of Coarse Sand	4
	Passing #200	79
	Passing #40	99
	Passing #10	99
	Liquid Limit	51
	Plastic index	15
	AASHTO Classification	A-7-5
Initial measured parameters	Water content	24.3%
	Degree of saturation	88.0%
	Matric suction	23.6 kPa

Figure F-12 ST-54, net confining pressure = 93 kPa

Position of the soil speciman	Location	403 + 45, 3LT
	Number	ST-59B
	Depth (m)	0.6-1.3
Soil properties and classifiction	Specific Gravity	2.7
	% of Clay	10
	% of Silt	17
	% of Fine Sand	18
	% of Coarse Sand	55
	Passing #200	92
	Passing #40	56
	Passing #10	31
	Liquid Limit	37
	Plastic index	13
	AASHTO Classification	A-2-6
Intial measured parameters	Water content	12.6%
	Degree of saturation	72.0%
	Matric suction	76 kPa

Figure F-13 ST-59B, net confining pressure = 21 kPa

Position of the soil speciman	Location	403 + 45, 3LT
	Number	ST-60
	Depth (m)	1.6-2.1
Soil properties and classifiction	Specific Gravity	2.67
	% of Clay	6
	% of Silt	22
	% of Fine Sand	18
	% of Coarse Sand	54
	Passing #200	30
	Passing #40	59
	Passing #10	95
	Liquid Limit	34
	Plastic index	11
	AASHTO Classification	A-2-6
Initial measured parameters	Water content	15.0%
	Degree of saturation	76.5%
	Matric suction	78 kPa

Position of the soil speciman	Location	403 + 45, 1RT
	Number	ST-114B
	Depth (m)	0.1-0.6
Soil properties and classifiction	Specific Gravity	2.71
	% of Clay	8
	% of Silt	21
	% of Fine Sand	16
	% of Coarse Sand	55
	Passing #200	31
	Passing #40	61
	Passing #10	98
	Liquid Limit	-
	Plastic index	-
	AASHTO Classification	A-2-6
Initial measured parameters	Water content	10.0%
	Degree of saturation	-
	Matric suction	71.8 kPa

Figure F-14 ST-60, net confining pressure = 21 kPa

Figure F-15 ST-114B, net confining pressure = 83 kPa

Position of the soil speciman	Location	403 + 45, 4LT
	Number	ST-116E
	Depth (m)	0.1-0.6
Soil properties and classifiction	Specific Gravity	2.72
	% of Clay	12
	% of Silt	26
	% of Fine Sand	17
	% of Coarse Sand	45
	Passing #200	40
	Passing #40	70
	Passing #10	99
	Liquid Limit	-
	Plastic index	-
	AASHTO Classification	A-2-6
Initial measured parameters	Water content	13.3%
	Degree of saturation	-
	Matric suction	34.2 kPa

Position of the soil speciman	Location	403 + 45, 3LT
	Number	ST-65A
	Depth	28.2-30.1
Soil properties and classifiction	Specific Gravity	2.86
	% of Clay	9
	% of Silt	51
	% of Fine Sand	36
	% of Coarse Sand	4
	Passing #200	72
	Passing #40	99
	Passing #10	100
	Liquid Limit	37
	Plastic index	8
	AASHTO Classification	A-4
Initial measured parameters	Water content	24.2%
	Degree of saturation	91.0%
	Matric suction	29 kPa

Figure F-16 ST-116E, net confining pressure = 138 kPa

Figure F-17 ST-65A, net confining pressure = 83 kPa

Position of the soil speciman	Location	403 + 45, 3LT
	Number	ST-65B
	Depth (m)	9.4-10.0
Soil properties and classifiction	Specific Gravity	2.81
	% of Clay	6
	% of Silt	78
	% of Fine Sand	15
	% of Coarse Sand	1
	Passing #200	87
	Passing #40	100
	Passing #10	100
	Liquid Limit	37
	Plastic index	8
	AASHTO Classification	A-4
Intial measured parameters	Water content	24.2%
	Degree of saturation	91.0%
	Matric suction	29 kPa

Position of the soil speciman	Location	404 + 50, 102RT
	Number	ST-75
	Depth (m)	7.4-8.0
Soil properties and classifiction	Specific Gravity	2.68
	% of Clay	10
	% of Silt	45
	% of Fine Sand	22
	% of Coarse Sand	23
	Passing #200	57
	Passing #40	83
	Passing #10	98
	Liquid Limit	42
	Plastic index	10
	AASHTO Classification	A-4
Initial measured parameters	Water content	17.5%
	Degree of saturation	83.4%
	Matric suction	34.8 kPa

Figure F-18 ST-65B, net confining pressure = 28 kPa

Figure F-19 ST-75, net confining pressure = 76 kPa

Position of the soil speciman	Location	404 + 50, 102RT
	Number	ST-77
	Depth (m)	8.0-8.5
Soil properties and classifiction	Specific Gravity	2.72
	% of Clay	9
	% of Silt	54
	% of Fine Sand	14
	% of Coarse Sand	23
	Passing #200	67
	Passing #40	82
	Passing #10	99
	Liquid Limit	32
	Plastic index	5
	AASHTO Classification	A-4
Initial measured parameters	Water content	21.1%
	Degree of saturation	86.0%
	Matric suction	25.1 kPa

Position of the soil speciman	Location	404 + 50, 86RT
	Number	ST-85
	Depth	27.0-28.0
Soil properties and classifiction	Specific Gravity	2.68
	% of Clay	12
	% of Silt	48
	% of Fine Sand	21
	% of Coarse Sand	19
	Passing #200	64
	Passing #40	87
	Passing #10	99
	Liquid Limit	39
	Plastic index	10
	AASHTO Classification	A-4
Initial measured parameters	Water content	31.3%
	Degree of saturation	82.0%
	Matric suction	26.5 kPa

Figure F-20 ST-77, net confining pressure = 69 kPa

Figure F-21 ST-85, net confining pressure = 103 kPa

Position of the soil speciman	Location	405 + 70, 3LT
	Number	ST-37A
	Depth (m)	1.5-2.1
Soil properties and classifiction	Specific Gravity	2.79
	% of Clay	22
	% of Silt	59
	% of Fine Sand	18
	% of Coarse Sand	1
	Passing #200	87
	Passing #40	100
	Passing #10	100
	Liquid Limit	47
	Plastic index	12
	AASHTO Classification	A-7-5
Intial measured parameters	Water content	32.6%
	Degree of saturation	68.9%
	Matric suction	84 kPa

Position of the soil speciman	Location	405 + 70, 3LT
	Number	ST-37B
	Depth (m)	1.5-2.1
Soil properties and classifiction	Specific Gravity	2.71
	% of Clay	25
	% of Silt	58
	% of Fine Sand	16
	% of Coarse Sand	1
	Passing #200	88
	Passing #40	100
	Passing #10	100
	Liquid Limit	47
	Plastic index	12
	AASHTO Classification	A-7-5
Initial measured parameters	Water content	32.6%
	Degree of saturation	68.9%
	Matric suction	84 kPa

Figure F-22 ST-37A, net confining pressure = 21 kPa

Figure F-23 ST-37B, net confining pressure = 21 kPa

Position of the soil speciman	Location	405 + 70, 3LT
	Number	ST-38A
	Depth	2.4-3.0
Soil properties and classifiction	Specific Gravity	2.87
	% of Clay	20
	% of Silt	67
	% of Fine Sand	12
	% of Coarse Sand	1
	Passing #200	90
	Passing #40	100
	Passing #10	100
	Liquid Limit	61
	Plastic index	21
	AASHTO Classification	A-7-5
Initial measured parameters	Water content	35.0%
	Degree of saturation	62.8%
	Matric suction	74 kPa

Position of the soil speciman	Location	405 + 70, 3LT
	Number	ST-38B
	Depth (m)	2.4-3.0
Soil properties and classifiction	Specific Gravity	2.71
	% of Clay	29
	% of Silt	61
	% of Fine Sand	9
	% of Coarse Sand	1
	Passing #200	94
	Passing #40	99
	Passing #10	100
	Liquid Limit	61
	Plastic index	21
	AASHTO Classification	A-7-5
Initial measured parameters	Water content	35.0%
	Degree of saturation	62.8%
	Matric suction	74 kPa

Figure F-24 ST-38A, net confining pressure = 28 kPa

Figure F-25 ST-38B, net confining pressure = 28 kPa

Note: Specimen failed in the first stage

Position of the soil speciman	Location	405 + 70, 3LT
	Number	ST-39A
	Depth (m)	4.9-5.5
Soil properties and classifiction	Specific Gravity	2.73
	% of Clay	15
	% of Silt	65
	% of Fine Sand	15
	% of Coarse Sand	5
	Passing #200	82
	Passing #40	97
	Passing #10	100
	Liquid Limit	58
	Plastic index	16
	AASHTO Classification	A-7-5
Initial measured parameters	Water content	36.0%
	Degree of saturation	65.3%
	Matric suction	53.9 kPa

Figure F-26 ST-39A, net confining pressure = 21 kPa

Position of the soil speciman	Location	405 + 70, 3LT
	Number	ST-39B
	Depth (m)	4.9-5.5
Soil properties and classifiction	Specific Gravity	2.74
	% of Clay	16
	% of Silt	64
	% of Fine Sand	19
	% of Coarse Sand	1
	Passing #200	88
	Passing #40	100
	Passing #10	100
	Liquid Limit	58
	Plastic index	16
	AASHTO Classification	A-7-5
Initial measured parameters	Water content	36.0%
	Degree of saturation	65.3%
	Matric suction	53.9 kPa

Figure F-27 ST-39B, net confining pressure = 35 kPa

Position of the soil speciman	Location	404 + 50, 3LT
	Number	ST-49A
	Depth (m)	2.0-2.5
Soil properties and classifiction	Specific Gravity	2.77
	% of Clay	31
	% of Silt	49
	% of Fine Sand	17
	% of Coarse Sand	3
	Passing #200	85
	Passing #40	99
	Passing #10	100
	Liquid Limit	61
	Plastic index	22
	AASHTO Classification	A-7-5
Initial measured parameters	Water content	33.5%
	Degree of saturation	65.8%
	Matric suction	74.2 kPa

Figure F-28 ST-49A, net confining pressure = 24 kPa

Position of the soil speciman	Location	404 + 50, 3LT
	Number	ST-49B
	Depth (m)	2.0-2.5
Soil properties and classifiction	Specific Gravity	2.66
	% of Clay	30
	% of Silt	54
	% of Fine Sand	15
	% of Coarse Sand	1
	Passing #200	95
	Passing #40	100
	Passing #10	100
	Liquid Limit	61
	Plastic index	22
	AASHTO Classification	A-7-5
Initial measured parameters	Water content	33.5%
	Degree of saturation	65.8%
	Matric suction	74.2 kPa

Figure F-29 ST-49B, net confining pressure = 24 kPa

Position of the soil speciman	Location	404 + 50, 3LT
	Number	ST-51
	Depth (m)	3.0-3.5
Soil properties and classifiction	Specific Gravity	2.78
	% of Clay	21
	% of Silt	61
	% of Fine Sand	14
	% of Coarse Sand	4
	Passing #200	84
	Passing #40	98
	Passing #10	99
	Liquid Limit	60
	Plastic index	24
	AASHTO Classification	A-7-5
Initial measured parameters	Water content	46.8%
	Degree of saturation	79.9%
	Matric suction	45.6 kPa

Position of the soil speciman	Location	404 + 50, 3LT
	Number	ST-52
	Depth (m)	5.6-6.2
Soil properties and classifiction	Specific Gravity	2.8
	% of Clay	10
	% of Silt	70
	% of Fine Sand	16
	% of Coarse Sand	4
	Passing #200	84
	Passing #40	98
	Passing #10	100
	Liquid Limit	60
	Plastic index	15
	AASHTO Classification	A-7-5
Initial measured parameters	Water content	50.2%
	Degree of saturation	88.1%
	Matric suction	24.6 kPa

Figure F-30 ST-51, net confining pressure = 41 kPa

Figure F-31 ST-52, net confining pressure = 62 kPa

Position of the soil speciman	Location	404 + 50, 3LT
	Number	ST-57
	Depth (m)	13.6-14.2
Soil properties and classifiction	Specific Gravity	2.82
	% of Clay	5
	% of Silt	33
	% of Fine Sand	23
	% of Coarse Sand	39
	Passing #200	38
	Passing #40	75
	Passing #10	99
	Liquid Limit	30
	Plastic index	5
	AASHTO Classification	A-4
Initial measured parameters	Water content	19.3%
	Degree of saturation	87.9%
	Matric suction	10.8 kPa

Position of the soil speciman	Location	403 + 45, 3LT
	Number	ST-59A
	Depth (m)	0.6-1.3
Soil properties and classifiction	Specific Gravity	2.7
	% of Clay	9
	% of Silt	20
	% of Fine Sand	17
	% of Coarse Sand	54
	Passing #200	93
	Passing #40	56
	Passing #10	31
	Liquid Limit	37
	Plastic index	13
	AASHTO Classification	A-2-6
Initial measured parameters	Water content	12.6%
	Degree of saturation	72.0%
	Matric suction	76 kPa

Figure F-32 ST-57, net confining pressure = 131 kPa

Figure F-33 ST-59A, net confining pressure = 21 kPa

Position of the soil speciman	Location	403 + 45, 3LT
	Number	ST-59C
	Depth (m)	0.6-1.3
Soil properties and classifiction	Specific Gravity	2.7
	% of Clay	7
	% of Silt	39
	% of Fine Sand	17
	% of Coarse Sand	37
	Passing #200	46
	Passing #40	73
	Passing #10	97
	Liquid Limit	37
	Plastic index	13
	AASHTO Classification	A-2-6
Initial measured parameters	Water content	12.6%
	Degree of saturation	72.0%
	Matric suction	76 kPa

Position of the soil speciman	Location	403 + 45, 3LT
	Number	ST-62
	Depth (m)	4.0-4.5
Soil properties and classifiction	Specific Gravity	2.78
	% of Clay	10
	% of Silt	58
	% of Fine Sand	25
	% of Coarse Sand	7
	Passing #200	72
	Passing #40	97
	Passing #10	100
	Liquid Limit	44
	Plastic index	11
	AASHTO Classification	A-6
Initial measured parameters	Water content	23.3%
	Degree of saturation	71.0%
	Matric suction	37.9 kPa

Figure F-34 ST-59C, net confining pressure = 21 kPa

Figure F-35 ST-62, net confining pressure = 41 kPa

Position of the soil speciman	Location	403 + 45, 3LT
	Number	ST-64
	Depth (m)	7.5-8.0
Soil properties and classifiction	Specific Gravity	2.74
	% of Clay	10
	% of Silt	65
	% of Fine Sand	23
	% of Coarse Sand	2
	Passing #200	85
	Passing #40	99
	Passing #10	100
	Liquid Limit	45
	Plastic index	12
	AASHTO Classification	A-7-5
Intial measured parameters	Water content	21.0%
	Degree of saturation	97.7%
	Matric suction	35.3 kPa

Position of the soil speciman	Location	404 + 50, 86RT
	Number	ST-81
	Depth (m)	2.4-3.0
Soil properties and classifiction	Specific Gravity	2.68
	% of Clay	10
	% of Silt	46
	% of Fine Sand	25
	% of Coarse Sand	19
	Passing #200	59
	Passing #40	90
	Passing #10	100
	Liquid Limit	41
	Plastic index	8
	AASHTO Classification	A-4
Initial measured parameters	Water content	13.2%
	Degree of saturation	32.0%
	Matric suction	95.7 kPa

Figure F-36 ST-64, net confining pressure = 76 kPa

Figure F-37 ST-81, net confining pressure = 21-62 kPa

*The $\sigma_{c,\ net}$ for the four tests are 21, 21, 41 and 62

Position of the soil speciman	Location	404 + 50, 94RT
	Number	ST-30
	Depth (m)	7.3-7.9
Soil properties and classifiction	Specific Gravity	2.67
	% of Clay	8
	% of Silt	49
	% of Fine Sand	24
	% of Coarse Sand	19
	Passing #200	59
	Passing #40	86
	Passing #10	97
	Liquid Limit	33
	Plastic index	6
	AASHTO Classification	A-4
Initial measured parameters	Water content	25.6%
	Degree of saturation	-
	Matric suction	-

Position of the soil speciman	Location	404 + 50, 86RT
	Number	ST-83A
	Depth (m)	4.9-5.5
Soil properties and classifiction	Specific Gravity	2.61
	% of Clay	6
	% of Silt	49
	% of Fine Sand	20
	% of Coarse Sand	25
	Passing #200	58
	Passing #40	82
	Passing #10	98
	Liquid Limit	38
	Plastic index	6
	AASHTO Classification	A-4
Initial measured parameters	Water content	18.9%
	Degree of saturation	70.0%
	Matric suction	79.1 kPa

Figure F-38 ST-30, net confining pressure = 48, 48 and 97 kPa

Figure F-39 ST-83, net confining pressure = 41 kPa

Position of the soil speciman	Location	405 + 70, 3LT
	Number	ST-74
	Depth (m)	6.3-6.9
Soil properties and classifiction	Specific Gravity	2.73
	% of Clay	10
	% of Silt	47
	% of Fine Sand	15
	% of Coarse Sand	18
	Passing #200	60
	Passing #40	78
	Passing #10	98
	Liquid Limit	44
	Plastic index	11
	AASHTO Classification	A-6
Initial measured parameters	Water content	14.0%
	Degree of saturation	71.0%
	Matric suction	57.8 kPa

Position of the soil speciman	Location	404 + 50, 86RT
	Number	ST-87
	Depth (m)	11.5-12.0
Soil properties and classifiction	Specific Gravity	2.68
	% of Clay	9
	% of Silt	44
	% of Fine Sand	18
	% of Coarse Sand	29
	Passing #200	57
	Passing #40	78
	Passing #10	99
	Liquid Limit	38
	Plastic index	6
	AASHTO Classification	A-4
Initial measured parameters	Water content	27.9%
	Degree of saturation	-
	Matric suction	23.2 kPa

Figure F-40 ST-74, net confining pressure = 62 kPa

Figure F-41 ST-87, net confining pressure = 117 kPa

Position of the soil speciman	Location	404 + 50, 94RT
	Number	ST-34A
	Depth (m)	13.5-14.1
Soil properties and classifiction	Specific Gravity	2.64
	% of Clay	10
	% of Silt	43
	% of Fine Sand	32
	% of Coarse Sand	15
	Passing #200	60
	Passing #40	83
	Passing #10	98
	Liquid Limit	38
	Plastic index	10
	AASHTO Classification	A-5
Initial measured parameters	Water content	22.5%
	Degree of saturation	88.5%
	Matric suction	20 kPa

Position of the soil speciman	Location	404 + 50, 94RT
	Number	ST-34B
	Depth (m)	13.5-14.1
Soil properties and classifiction	Specific Gravity	2.64
	% of Clay	10
	% of Silt	48
	% of Fine Sand	20
	% of Coarse Sand	22
	Passing #200	62
	Passing #40	84
	Passing #10	99
	Liquid Limit	38
	Plastic index	10
	AASHTO Classification	A-5
Initial measured parameters	Water content	22.5%
	Degree of saturation	88.5%
	Matric suction	20 kPa

Figure F-42 ST-34A, net confining pressure = 90 kPa

Figure F-43 ST-34B, net confining pressure = 45, 45 and 90 kPa

Position of the soil speciman	Location	404 + 50, 102RT
	Number	ST-79A
	Depth (m)	14.1-14.7
Soil properties and classifiction	Specific Gravity	2.65
	% of Clay	9
	% of Silt	52
	% of Fine Sand	21
	% of Coarse Sand	18
	Passing #200	65
	Passing #40	88
	Passing #10	100
	Liquid Limit	28
	Plastic index	3
	AASHTO Classification	A-4
Initial measured parameters	Water content	17.6%
	Degree of saturation	93.0%
	Matric suction	23.7 kPa

Position of the soil speciman	Location	404 + 50, 102RT
	Number	ST-79B
	Depth (m)	14.1-14.7
Soil properties and classifiction	Specific Gravity	2.70
	% of Clay	10
	% of Silt	50
	% of Fine Sand	15
	% of Coarse Sand	25
	Passing #200	61
	Passing #40	82
	Passing #10	97
	Liquid Limit	28
	Plastic index	3
	AASHTO Classification	A-4
Initial measured parameters	Water content	17.6%
	Degree of saturation	93.0%
	Matric suction	23.7 kPa

Figure F-44 ST-79A, net confining pressure = 90, 62 and 62 kPa

Figure F-45 ST-79B, net confining pressure = 145 and 131 kPa

Position of the soil speciman	Location	404 + 50, 102RT
	Number	ST-80A
	Depth (m)	15.0-15-5
Soil properties and classifiction	Specific Gravity	2.68
	% of Clay	4
	% of Silt	51
	% of Fine Sand	21
	% of Coarse Sand	24
	Passing #200	59
	Passing #40	83
	Passing #10	98
	Liquid Limit	34
	Plastic index	5
	AASHTO Classification	A-4
Initial measured parameters	Water content	21.0%
	Degree of saturation	-
	Matric suction	28.7 kPa

Figure F-46 ST-80A, net confining pressure = 145 kPa

Position of the soil speciman	Location	404 + 50, 102RT
	Number	ST-80B
	Depth (m)	15.0-15-5
Soil properties and classifiction	Specific Gravity	2.66
	% of Clay	6
	% of Silt	49
	% of Fine Sand	21
	% of Coarse Sand	24
	Passing #200	57
	Passing #40	84
	Passing #10	98
	Liquid Limit	34
	Plastic index	5
	AASHTO Classification	A-4
Initial measured parameters	Water content	21.0%
	Degree of saturation	-
	Matric suction	28.7 kPa

Figure F-47 ST-80B, net confining pressure = 69-166 kPa

*The $\sigma_{c,\ net}$ for the four tests are 21, 21, 41 and 62

F.2 Unsaturated lateral extension test

The purpose of lateral extension tests performed in this research is to compare the modulus values between the two test methods.

For lateral extension test, the lateral extension process was started after the specimen reached equilibrium to the applied matric suction and isotropic confining stress. The decrement of confining stress is 0.5 psi each time, and while confining stress was reduced each time, the deviatoric stress was increased by the same magnitude to maintain the constant vertical stress. The vertical displacement of each step was recorded, as well as the volume change of specimen.

While lateral extension test was performed, each decrement was recorded with a corresponding vertical displacement. The vertical displacement was converted to axial strain, and can be plotted with the increase of deviatoric stress according to each decrement of confining stress, so the stress strain response for lateral extension process is shown. For the specimens that failed during lateral extension test, the water content was measured.

Not every test reaches failure during the lateral extension process, but the net isotropic confining pressures of 10, 12 and 20 psi provide enough data points to plot stress-strain curve while they were reduced to 1 psi.

Stress strain responses

The stress-strain responses for lateral extension tests are recorded in Figure F-48a to e for the MH soil, and Figure F-48f to h for the SC soil. In each plot, a pair of stress strain curves from axial compression and lateral extension tests is presented, and each pair has the same given isotopic net confining pressures and matric suction. Figure F-48 shows that the stress strain responses of lateral extension test are at a smaller strain level, comparing to axial compression test. The lateral extension tests were terminated when the net confining pressure reduced to 6.9 kPa, two increments before net confining pressure reaches 0.

● Lateral extension test
○ Axial compression test
(a) u_a-u_w=28kPa, $\sigma_{c,net}$=69kPa
(b) u_a-u_w=62kPa, $\sigma_{c,net}$=41kPa
(c) u_a-u_w=62kPa, $\sigma_{c,net}$=138kPa
(d) u_a-u_w=90kPa, $\sigma_{c,net}$=83kPa
(e) u_a-u_w=124kPa, $\sigma_{c,net}$=83kPa
(f) u_a-u_w=10kPa, $\sigma_{c,net}$=138kPa
Deviatoric stress (kPa)
Axial strain(%)
Axial strain (%)

Figure F-48 Stress strain curves of axial compression and lateral extension tests (a to e: MH soils; f to h: SC soils)

The summary of all test conditions and test results from lateral extension tests (LE) and eight corresponding axial compression tests (AC) is listed in Table F-4. Expect for six pairs of compression and extension tests for the stress-strain comparison, two lateral extension tests were performed to discover the stress at failure during lateral extension tests.

Not every test reaches failure during the lateral extension process, but the net isotropic confining pressures of 69, 83 and 138 kPa provide enough data points to plot stress-strain curve, which were recorded each decrease of 3.5 kPa, until reduced to 7 kPa.

Table F-4 Test conditions and measured modulus values

Soil type	Test Type	u_a-u_w (kPa)	σ_c (Net) (kPa)	$\sigma'_{c,\psi}$ (kPa)	$\sigma_{d,peak}$ (kPa)	$E_{0.1\%}$ (MPa)	E_{50} (MPa)	Reach failure
MH	AC	27.6	68.9	91.1	191.5	9.7	6.7	Y
	LE	27.6	68.9	91.1	72.3	32.6	22.9	N
	LE	27.6	82.7	104.8	86.1	47.4	51.8	N
	AC	62.0	41.3	86.5	196.4	15.3	9.9	Y
	LE	62.0	41.3	86.5	68.9	32.8	39.0	N
	LE	62.0	82.7	127.9	96.5	43.9	35.5	N
	AC	62.0	137.8	183.0	352.8	15.6	8.8	Y
	LE	62.0	137.8	183.0	134.4	46.5	40.1	N
	AC	89.6	82.7	138.4	297.0	14.2	8.6	Y
	LE	89.6	82.7	138.4	103.4	34.5	25.0	N
	LE	89.6	137.8	139.4	141.2	65.4	62.0	N
	AC	124.0	82.7	154.7	333.5	27.3	18.0	Y
	LE	124.0	82.7	154.7	110.2	63.2	72.7	N
SC	LE	10.3	82.7	90.4	72.3	24.0	19.1	Y
	AC	10.3	137.8	145.6	392.0	12.8	7.2	Y
	LE	10.3	137.8	145.6	117.1	22.4	15.3	Y
	LE	20.7	137.8	151.5	124.0	57.3	48.9	Y
	AC	55.1	82.7	114.3	336.2	18.0	10.4	Y
	LE	55.1	82.7	114.3	86.1	34.5	28.1	N
	LE	55.1	137.8	169.5	124.0	49.8	41.3	Y
	AC	103.4	82.7	137.2	385.2	14.6	9.4	Y
	LE	103.4	82.7	137.2	103.4	47.1	40.8	N

*For the lateral tests that did not reach failure, the peak deviatoric stress is defined from K_f line in p'-q plot

Appendix G. Application to slope stability

Numerical analysis

Slope stability analyses were conducted using SEEP/W and SLOPW/W platforms (GEO-SLOPE International, Ltd.). The initial matric suction distribution within the modeled soil profiles and any subsequent variation induced by infiltration were simulated by SEEP/W. Then, using the generated pore water pressure contours and calculated unsaturated shear strength values, SLOPE/W was used to estimate the FS of the slope according to Bishop's Method of Slices.

Model of subsurface profile

Based on the results from the subsurface exploration and laboratory testing program, an idealized profile was developed, with 12 discrete layers to a depth of 15.2 m. **Figure G-2** shows the geometry of the 0.25:1 slope used in the analyses, and Table **G-2** presents the associated soil properties. The layers were defined according to the variations in soil properties and the measured initial values of the matric suction. Each layer was assigned its own SWCC, which was selected based on the soil properties, including dry density, percentage of fines, and the PI. The water table was not observed in the upper 15.2 m of the profile and was estimated to be 16.2 m below the ground surface.

Figure G-1 Model geometry and soil layers for 0.5:1 slope

Table G-1 Material Properties for 0.5:1 Slope

Layer	Soil type	Layer thickness	γ_{sat}	γ_{dry}	Fines	PI	$(u_a - u_w)$	c'	φ'
		(m)	(kN/m^3)	(kN/m^3)	%		(kPa)	(kPa)	(deg.)
1	A-7-5 (3)	1.8	17	11.8	85	14	84	10	27
2	A-7-5 (4)	1.2	16.3	10.1	90	21	72	10	27
3	A-7-5 (4)	1.2	16.3	10.1	90	21	64	10	27
4	A-7-5 (4)	1.2	16.2	9.9	82	16	56	10	27
5	A-7-5 (3)	1.2	16.7	10.5	-	-	45	10	27
6	A-7-5 (3)	1.8	17.6	12.3	89	15	34	10	27
7	A-4 (2)	6.7	21.4	17.8	60	8	12	0	30

Figure G-2 Model geometry and soil layers for 0.25:1 slope

Table G-2 Material Properties for 0.25:1 Slope

Layer	Soil type	Layer thickness	γ_{sat}	γ_{dry}	Fines	PI	$(u_a - u_w)$	c'	φ'
		(m)	(kN/m^3)	(kN/m^3)	%		(kPa)	(kPa)	(deg.)
1	A-7-5 (1)	0.6	17.5	11.9	86	22	42	10	27
2	A-7-5 (1)	0.6	17.5	11.9	86	22	56	10	27
3	A-7-5 (2)	1.2	17.1	11.3	86	22	70	10	27
4	A-7-5 (2)	0.6	17.1	11.3	86	22	64	10	27
5	A-7-5 (2)	0.6	17.1	11.3	86	22	60	10	27
6	A-7-5 (2)	0.6	15.8	9.9	84	23	44	10	27
7	A-7-5 (2)	0.6	15.8	9.9	84	23	40	10	27
8	A-7-5(2)	0.6	17.6	11	84	17	34	10	27
9	A-7-5(2)	3	17.6	11	84	17	24	10	27
10	A-4 (1)	2.4	20.3	15.7	59	11	24	0	30
11	A-4 (1)	1.2	20.3	15.7	59	11	22	0	30
12	A-4 (1)	3	21.1	17.1	42	5	10	0	30

Figure G-3 Model geometry and soil layers for 1:1 slope

Table G-3 Material Properties for 1:1 Slope

Layer	Soil type	Layer thickness	γ_{sat}	γ_{dry}	Fines	PI	$(u_a - u_w)$	c'	φ'
		(m)	(kN/m^3)	(kN/m^3)	%		(kPa)	(kPa)	(deg.)
1	A-2-6	1.8	21.1	17.9	32	12	76	0	36
2	A-2-6	1.2	20.7	16.5	81	10	48	0	36
3	A-7-5 (5)	1.5	20.7	16.5	81	10	38	10	27
4	A-7-5 (5)	4.6	20.0	16.2	80	13	28	10	27
5	A-4 (2)	6.1	20.4	17.1	65	5	12	0	30

Initial matric suction profile

In order to model the effect of the surface water infiltration at the top of the cut slopes, a 30-day transient analysis was performed to obtain an equilibrium suction profile based on the measured initial matric suction profile. This equilibrium suction profile is a function of soil permeability, input suction values, and time. As shown in Figure **G-4**, the suction profile prior to the start of the surface water infiltration matches reasonably well with that obtained from the extensive field-measured values.

Infiltration analysis

The cut slopes were observed over a period of two months after excavation to a depth of 6.7 m. During the second month, 152 mm of water was added to the ponds constructed at the top of the slopes and used to monitor the effects of surface-water infiltration. Infiltration analyses were performed using the Van Gunuchten model, with the SWCC parameters shown in Table **G-4**, in SEEP/W to estimate permeability as a function of matric suction. The SEEP/W-generated pore water pressure contours were then used as inputs to SLOPE/W in order to conduct the stability analysis. As infiltration, and therefore wetting, occurred, the degree of saturation increased, resulting in an increase in the soil weight, which also must be considered.

The procedure described above for the 0.25:1 slope also was applied for the 0.5:1 and 1:1 slopes.

Table G-4 Van Genuchten SWCC Parameters for Slopes area

SLOPE angle	Depth (m)	Soil type	θ_s	θ_r	a (1/kPa)	n	m
0.25 : 1	0-1.2	A-7-5 (1)	0.615	0.17	0.098	1.359	0.263
	1.2-8.5	A-7-5 (2)	0.594	0.17	0.022	1.725	0.42
	8.5-15.2	A-4 (1)	0.509	0.038	0.050	1.589	0.37
0.5 : 1	0-1.8	A-7-5 (3)	0.541	0.17	0.165	1.29	0.224
	1.8-4.3	A-7-5(4)	0.611	0.17	0.051	1.706	0.413
	4.3-8.5	A-7-5 (3)	0.541	0.17	0.165	1.29	0.224
	8.5-15.2	A-4 (2)	0.456	0.038	0.057	1.678	0.404
1 : 1	0-3	A-2-6	0.384	0.11	0.752	1.186	0.157
	3-9.1	A-7-5 (5)	0.442	0.17	0.030	1.622	0.383
	9.1-15.2	A-4 (2)	0.456	0.038	0.057	1.678	0.404

Figure G-4 Initial matric suction profiles after 30 days from SEEP/W without infiltration for (a) 0.25:1 slope, (b) 0.5:1 slope, and (c) 1:1 slope

Field measurements, including those from inclinometers located 1 m back from the slope crest at the center of each 30 m long section, indicate that the lateral displacements of the slopes were less than 10 mm, as shown in Figure **G-5**. Although currently no correlation has been found between the FS and observed slope displacement, the small measured displacements appear consistent with the calculated FS values in excess of 1.5 (or perhaps 1.3 × 1.5 = 1.95, if the underestimation of the model-predicted strength is taken into account).

Figure G-5 Lateral displacement at 1 m from each slope crest from inclinometer tests

Appendix H. Modeling of cantilever sheet pile wall in unsaturated residual soil

H.1 Deformation analysis for unsaturated soil

In this study, in order to determine the lateral pressure on the sheet pile wall, deformation analysis, which accounts for matric suction, was conducted to estimate the deflections that reflect the actual pressure on the sheet pile wall. The deformation analysis of unsaturated soil should consider the contribution of matric suction to both the shear and volumetric deformation. That is, the effects of matric suction on the soil could increase both the shear strength and stiffness of the soil. Researchers have investigated and suggested various frameworks to explain the behavior of unsaturated soil while taking into account matric suction. Three approaches (Nuth and Laloui, 2007) are: Bishop's single effective stress approach, the independent state variable approach, and generalized stress frameworks that employ the critical state concept.

Bishop (1960) proposed a framework that extends Terzaghi's principle of effective stress for saturated soils using the χ parameter to account for the contribution of matric suction to stress as a substitute for positive pore water pressure. This approach can be applied conveniently to well validated existing constitutive models. However, Jennings and Burland (1962) indicated a limitation of the single effective stress approach, arguing that it cannot account for the collapse phenomenon that occurs upon wetting. As a result, they suggested that the effective stress concept cannot always be valid for soil that exhibits collapse behavior.

In the independent state variable approach, Fredlund and Morgenstern (1977) suggested the independent application of suction and stress in the context of the deformation of unsaturated soil. The unsaturated soil's shear strength was developed in the form of an extended Mohr-Coulomb envelope, and the matric suction played the same role as cohesion. For volumetric deformation, Fredlund and Morgenstern (1977) suggested two deformation moduli for the stress and matric suction terms, respectively. Nonetheless, this independent state variable approach also has limitations, including the linear shear strength envelope

(Escario and Saez, 1986 and Fredlund et al., 1987) and the fact that the modeling of the swell and collapse behavior is only useful along monotonic paths (Nuth and Laloui, 2007).

Recently, several constitutive frameworks have been suggested and developed based on the critical state concept using the single effective stress and independent state variable approaches. After the work by Alonso et al. (1990), several constitutive models have been developed to explain the behavior of unsaturated soil and to address the limitations of previous frameworks (Sheng, 2011 and Toll, 1990). However, these new frameworks incorporate additional parameters that are often highly variable or difficult to determine experimentally (Lu et al., 2010).

In this paper, Bishop's effective stress concept is used in conjunction with existing hardening soil models. The collapse behavior of Piedmont residual soils found using double odometer tests on undisturbed samples was measured to be less than 1 percent collapse or no collapse at all. Based on these results, the Bishop effective stress concept can be applied to the existing hardening soil model in PLAXIS to investigate the behavior of unsaturated residual soil during excavation using a cantilever sheet pile wall.

Bishop's effective stress concept

The numerical modeling of the deformation of a sheet pile wall requires comprehensive analysis. Reasonable strength parameters and modulus values should be used for shear and volumetric deformation analyses, respectively. The shear strength parameters that account for matric suction affect both active and passive earth pressure. That is, the comprehensive deformation of the soil generates both active and passive earth pressure on the sheet pile wall. Then, the net pressure diagram on the sheet pile wall, which is generated during excavation, causes movement of the sheet pile wall. The PLAXIS computer program, which implements finite element method (FEM) analysis, has an 'advanced mode' that is intended to account for unsaturated soil behavior and was used for the numerical modeling. Inclusion of a matric suction term to determine the stress state was introduced by Bishop in 1960. He proposed the effective stress concept for unsaturated soil using the χ parameter, which accounts for the contribution of matric suction to the stress state by extending Terzahghi's principle of effective stress for saturated soils, as expressed in Equation (H.1):

$$\sigma' = (\sigma - u_a) + \chi(u_a - u_w) \tag{H.1}$$

where, $(\sigma - u_a)$ = net normal stress, $(u_a - u_w)$ = matric suction, and χ = a parameter that is a function of soil type and the degree of saturation.

Several researchers (Khalili and Khabbaz, 1998, Fredlund et al., 1996, and Lu et al., 2010) have studied the effects of matric suction on the stress state. Lu et al. (2010) introduced a closed-form equation in which the χ parameter is substituted for the effective degree of saturation (S_e) based on Van Genuchten's SWCC model (1980). Lu et al. (2010) also validated their closed-form equation based on published data. Van Genuchten also proposed a closed-form SWCC model with two fitting parameters, as shown in Equation (H.2).

$$S_e = \Theta = \frac{\theta_w - \theta_r}{\theta_s - \theta_r} = \frac{S - S_r}{1 - S_r} = \left[\frac{1}{(1 + (a\psi)^n}\right]^{1-1/n} \tag{H.2}$$

where

S_e = normalized degree of saturation, or effective degree of saturation,

S_r = degree of saturation at residual saturation condition,

θ_w = volumetric water content,

θ_s = saturated volumetric water content, and

θ_r = residual volumetric water content.

The Van Gunuchten SWCC model (1980) directly estimates the effective degree of saturation, S_e, which is incorporated into Equation (3.2) that shows the substituted χ parameter. In this case, the S_e term works to explain the contribution of matric suction to the stress state in a manner similar to the χ parameter in Bishop's effective stress concept (1960). The resulting equation is shown as Equation (H.3), as derived by Lu et al. (2010).

$$\sigma' = (\sigma - u_a) + S_e(u_a - u_w) = (\sigma - u_a) + \left[\frac{1}{(1+(a\psi)^n}\right]^{1-1/n}(u_a - u_w) \quad \text{(H.3)}$$

Unsaturated shear strength

The failure criterion in the hardening soil model thus is satisfied, and therefore, perfectly plastic yielding occurred, as described by the Mohr-Coulomb model. When the Bishop's single effective stress concept is applied to the Mohr-Coulomb shear strength equation, the shear strength model may be written in the same format as the strength model proposed by Vanapalli et al. (1996), as shown in Equation (H.4).

$$\tau = c' + (\sigma_n - u_a)\tan\phi' + (u_a - u_w)\left[(S_e)(\tan\phi')\right] \quad \text{(H.4)}$$

A research colleague, Wang, conducted laboratory and field tests to determine the SWCCs of Piedmont residual soil. Based on his analysis results, the fitting parameters may be assessed for the two soil types (Wang, 2014).

Tests on undisturbed saturated specimens were conducted by the NCDOT to determine the effective shear strength parameters. A research colleague, Tang, conducted unsaturated triaxial tests at constant matric suction with different confining pressures to determine the effective friction angle. Based on synthesis of these lab test data, the effective friction angles were found to be 30 and 27 degrees for the A-4 and A-7-5 soils, respectively. The effective cohesion is zero for the A-4 soil and 10 kPa for the A-7-5 soil. It is assumed that the friction angle is independent of the suction force.

H.2 Hardening soil model

The hardening soil model is used to account for the stress-dependent stiffness of the soil The soils below the excavation level undergo unloading, and the modulus value should be recalculated as the confining stress state changes. The hardening soil model also accounts for the matric suction changes that affect the modulus based on Bishop's effective stress concept (1960). The contribution of matric suction to the stress, as shown in Equation (H.3), is considered to be part of the effective confining pressure. Upon wetting, the decrease in

matric suction, treated as part of the effective stress, leads to a decrease in the modulus value based on the hardening soil equation, Equation (H.5).

Stress-dependent modulus value, $E_{50} = E_{50}^{ref}\left(\frac{c'\cos\phi' - \sigma'_3}{c'\cos\phi' + P^{ref}}\right)^m$ (H.5)

where E_{50} is the confining stress-dependent stiffness modulus value for primary loading, which corresponds to the secant modulus at 50 percent of the peak strength in the stress-strain curve; E_{50}^{ref} is the reference stiffness modulus value that corresponds to the reference pressure P^{ref} ($P^{ref} = 100kN/m^2$ by default setting), whereby the actual stiffness depends on the minor principal stress, σ'_3, which is the effective stress and accounts for the matric suction; and m represents the amount of stress dependency.

The horizontal effective stress is calculated from the vertical effective stress multiplied by the at-rest coefficient of lateral earth pressure. For the in situ condition, σ'_3 is calculated using Equations (H.6) and (H.7) to account for the matric suction term.

$$\sigma'_1 = (\sigma_1 - u_a) - S_e \cdot (u_a - u_w) \quad \text{(H.6)}$$

$$\sigma'_3 = K_o \times \sigma'_1 = K_o \times [(\sigma_1 - u_a) - S_e \cdot (u_a - u_w)] \quad \text{(H.7)}$$

where σ_1 can be calculated using the moist unit weight obtained from laboratory tests.

H.3 Estimation of K_o

The estimation of in situ horizontal stress is important for determining the stress-strain performance of soil, especially in the case of an excavation process. In situ testing, including PMTs and pressure cell testing, can be used to estimate the at-rest lateral earth pressure coefficient (K_o) by accounting for the matric suction profile that is based on the measured total lateral earth pressure. K_{o_ψ} was determined by considering matric suction as pore water pressure. The matric suction term $S_e(u_a - u_w)$ substitutes for u_o, as shown in Equation (H.8).

$$\frac{\sigma_h - u_o}{\sigma_v - u_o} = \frac{\sigma_h - S_e(u_a - u_w)}{\sigma_v - S_e(u_a - u_w)} = \frac{\sigma'_h}{\sigma'_v} = K_{o_\psi} \tag{H.8}$$

Figure **H-1** presents K_{o_ψ} values based on the interpretation of *in situ* tests results, which account for the matric suction profile. The total at-rest lateral earth pressure was calculated using the point of maximum curvature in the pressure curve, as obtained from PMTs (Briaud, 1992). The probe used in the PMT was inflated in small increments in the borehole and pushed back to the original at-rest condition. The thickness of the blade of the pressure cell affected the *in situ* lateral earth pressure (Sully, 1991). The total lateral earth pressure obtained from the PMTs and pressure cells shows that the total lateral earth pressure obtained from the PMTs is approximately 60 percent to 70 percent less than that obtained from the pressure cells. The reduction in total lateral earth pressure can be explained by the thickness of the device blade. These K_{o_ψ} profiles that are closest to the at-rest condition were used in the analysis because of the effect of the blade thickness.

Figure H-1 Profile based on PMT and pressure cell data

H.4 Amount of stress dependency, m

The hardening soil model, which describes the relationship between stiffness and confining pressure, was used in this analysis. The power *m*, which indicates the amount of stress dependency, can be determined from saturated consolidated undrained tests conducted by the NCDOT. Figure **H-2** shows the E_{50} as a function of the stress level in the double log scale plots. The slope of the regression line indicates that the amount of stress dependency, *m*, is approximately 0.8.

In order to determine the confining-stress-dependent stiffness modulus (E50), the appropriate reference stiffness modulus, E_{50}^{ref}, can be backcalculated from the in situ test results, which provide the elastic modulus value and account for the matric suction profile.

Figure H-2 m-values determined from saturated triaxial tests

H.5 E_{50}^{ref} determined for each layer

From the unsaturated triaxial tests results, the E50 values could be determined from the stress-strain curves and then compared with the measured EPMT values at the same depth and in situ condition. As shown in Figure H-3, based on regression analysis with 11 points (with 1 point excluded), it can be assumed that $E_{50} = 0.76 \cdot E_{PMT}$.

From this assumption, the E_{50}^{ref} value can be backcalculated for use as a parameter in PLAXIS analysis using Equation (H.9).

$$E_{50}{}^{ref} = 0.76 \cdot \frac{E_{PMT}}{\left(\frac{c'\cos\phi' - \sigma'_3}{c'\cos\phi' + P^{ref}}\right)^m} \tag{H.9}$$

The σ'_3 term in Equation (3.10) accounts for the matric suction value.

Figure H-3 Comparison between EPMT and E50

H.6 Optimization process to estimate unloading/reloading modulus value

The unloading/reloading modulus value, E_{ur}, which is a critical parameter, is defined as the ratio $E_{ur}^{ref} / E_{50}^{ref}$. The ratio $E_{ur}^{ref} / E_{50}^{ref}$ typically is assumed to be 3.0 to 4.0 for sandy soils (Duncan et al., 1980 and Schanz and Vermeer, 1998) or 5.6 to 12.7 (average value of 8.6) for clayey soils (Reul and Gebreselassie, 2006). However, in order to determine the appropriate ratio, an optimization process must be conducted based on a comparison of the measured data and the results obtained from numerical modeling.

For this study, the measured displacements obtained from the inclinometer tests at 0.6 m, 1.5 m, 2.7 m, and 4 m from the sheet pile wall, the sheet pile wall displacements, and the change in total lateral earth pressure after the first stage of excavation (4.6 m) all were compared in order to estimate the ratio, because the small strain level of deformation took place after the 22-ft excavation. The optimization process was employed to find the least amount of error between the measured data and the results of the numerical modeling.

Several ratios, $F = E_{ur}^{ref} / E_{50}^{ref}$, were applied to determine the appropriate E_{ur} values. To combine the errors from the different measurements, the error term was normalized with respect to the maximum value from each error, as shown in Equation (H.10). In this case, the errors ranged from 0 to 1.0, and the same weight was applied.

$$(Error)^2 = \sum \left(\frac{\sum_{i=1}^{n} \left(\delta_{x_I} - \delta_{x_FEM} \right)^2}{Max_error} \right) \tag{H.10}$$

where δ_{x_I} are the measured data obtained from the inclinometers, LiDAR scans, and pressure cells after the 4.6 m excavation, and δ_{x_FEM} is the result obtained from numerical modeling.

As shown in Figure H-4, the results indicate that a ratio of 6.0 is appropriate for the soil in question. This value falls within the range between sand and clay material. The ratio of 6.0 was applied to the soil profile to estimate the unloading/reloading modulus value.

Figure H-4 Results of optimization analysis

H.7 Interface properties

After the 6.1 m excavation in front of the sheet pile wall, separation between the soil and the wall was observed. Interface properties were used to simulate the interaction between the sheet pile wall and soil in order to explain the observed gap. It was assumed that the interface, which is the boundary between the sheet pile wall and the soil, would not have a suction value, because the soil cannot pull the sheet pile wall during the excavation process. The SWCC parameters for sandy soil were applied to the interface properties in order to diminish the effect of the suction force at the interface. The level at which plastic slippage occurs is controlled directly by the strength properties and the reduction factor (R_{inter}) of the relevant material set. Thus, the material set for the interface should be applied directly. The reduction factor of 0.67 was used to decrease the strength at the interface in order to simulate the real soil-structure interaction at the interface that is weaker and more flexible than the

surrounding soil. The average modulus value of the soil was applied to the interface to simulate the relative displacement perpendicular to the sheet pile wall.

It is assumed that the interface, which is the boundary of the sheet pile wall and soil, does not have suction. To diminish the effect of suction force in the interface SWCC parameter of sand were applied to the interface properties

Figure H-5 SWCC of the interface property

H.8 Infiltration and rainfall infiltration analysis

Infiltration analysis

Researchers have suggested empirical relationships between permeability and SWCCs to account for the effects of matric suction on permeability. Van Genuchten (1980) and Fredlund et al. (1994) proposed the most commonly used of these empirical equations. Van Gunuchten (1980) proposed a closed-form equation to describe the hydraulic conductivity of unsaturated soil as a function of matric suction and proposed a correlation between the SWCC and permeability. To this end, he used fitting parameters, a and n, which could be adopted from his SWCC equation, to estimate the permeability of unsaturated soils, as shown in Equation (3.1).

$$k_r(\psi) = \frac{\left\{1-(a\psi)^{(n-1)}[1+(a\psi)^n]^{-m}\right\}^2}{[1-(a\psi)^n]^{m/2}}, \quad (m = 1 - 1/n) \tag{H.11}$$

Where k_r = relative coefficient of permeability (= $k(\psi)/k_s$),

k_s = saturated hydraulic conductivity,

ψ = matric suction (= $(u_a - u_w)$), and

a and n are fitting parameters.

The Van Genuchten approach (1980) is built into PLAXIS FLOW and is used in this study to estimate rainfall infiltration.

Rainfall infiltration

Daily data describing the precipitation and evaporation rate from April 10, 2013 to February 20, 2014 were applied in seepage analysis to predict the suction profile. The net precipitation data should be considered as a function of the precipitation, evaporation, and runoff factor, as shown in Equation (H.11).

$$I = P - E - aP \tag{H.11}$$

where I is the net precipitation, P is precipitation, E is evaporation, and a is the runoff coefficient.

The evaporation rates were estimated using the mass-transfer approach (Dalton-type equation) based on recorded weather information (e.g., wind speed, surface temperature, and relative humidity). Brutaert (1982) suggested Equation (H.12) to estimate the evaporation rate from a free water surface (Dignman, 2015).

$$E = 1.26 \times 10^{-3} \cdot v_a \cdot (e_s - e_a) \tag{H.12}$$

where v_a is the wind speed, e_s is the saturation vapor pressure, and e_a is the vapor pressure. e_s and e_a are calculated based on the temperature and relative humidity data that correspond to the average daily information. The recorded environmental data and calculated daily evaporate rate are summarized in Table H-1.

The initial matric suction profile was determined using tensiometers around April 10, 2013. The FTC sensors were installed and used to measure the first data points on June 27, 2013. The FTC sensors were located in the A-4 soil area (BH2) where cracks were observed. The final matric suction profile was measured on February 20, 2014. Using the measured initial and final suction profiles in the A-7-5 soils (BH3), the net precipitation data could be estimated using the runoff coefficient as a calibration factor to account for the incline, geometry, and condition of the ground surface. The daily evaporation rate also was calibrated by matching the measured data and numerical analysis results. Based on the calibration process, the parameter *a* could be determined, and subsequently, the net precipitation data could be calculated. Figure H-6 shows the net precipitation daily data with the runoff coefficient of 0.2.

Table H-1 Evaporation Rates Obtained from Recorded Environment Information

Year	Month	Days	v_a (m/s)	T_s (Celsius)	W_a (%)	e_s (kPa)	e_a (kPa)	**E (mm/day)**
2013	April	30	2.5	15.2	60	1.73	1.04	**2.18**
2013	May	31	2.4	18.3	69	2.11	1.45	**1.98**
2013	June	30	2.2	22.9	76	2.80	2.13	**1.86**
2013	July	31	1.8	24.3	79	3.05	2.41	**1.45**
2013	August	31	1.6	22.8	78	2.78	2.17	**1.23**

2013	September	30	1.5	20.0	74	2.34	1.73	**1.15**
2013	October	31	1.7	15.7	73	1.79	1.30	**1.03**
2013	November	30	2.1	8.0	59	1.07	0.63	**1.17**
2013	December	31	2.2	7.2	65	1.02	0.66	**0.99**
2014	January	31	2.2	1.1	54	0.66	0.36	**0.84**
2014	February	28	2.4	5.7	57	0.92	0.52	**1.19**

*T_s is the temperature and W_a is the relative humidity.

Figure H-6 Net precipitation data

The changes in the matric suction profile in front of the sheet pile wall were taken into account in the analysis because the reduction of matric suction caused a decrease in the modulus value (for in front of the sheet pile wall) during excavation. Numerical analyses were conducted to estimate the matric suction change over time. During the excavation process, it was hard to consider the effects of the changes in the matric suction profile; it was simpler to consider the change after each stage of excavation. The developed matric suction values obtained from the seepage analysis were applied to the deformation analysis manually, as shown in **Figure H-7.** The suction profiles generated from the seepage analysis of each location were assigned manually to the deformation analysis as a decoupled analysis.

The suction changes caused a decrease in the modulus values and an increase in the mobilized shear deformation over time.

Figure H-7 Flow chart for analysis process

H.10 Soil properties in the sheet pile area

Layer #	Depth (m)	E (Mpa)	Σv (kPa)	σ'v (kPa)	Ko	σ'h (kPa)	ua-uw (kPa)	(ua-uw)*Se (kPa)	c * cot(pi) kPa	E50 ref (Mpa)	Eur ref (Mpa)	SWCC a (1/kPa)	SWCC N	SWCC m (=1-1/n)	SWCC Se (ψ)	SWCC SWCC	Soil type
1	0.6	12	7	44	2.1	92	95	37	0	13	77	0.034	1.771	0.435	0.385	ST28	A-5
2	1.2	12	15	51	2.1	107	95	37	0	11	68	0.034	1.771	0.435	0.385	ST28	A-5
	1.8	12	22	58	2.1	123	95	37	0	10	61	0.034	1.771	0.435	0.385	ST28	A-5
3	2.4	13	29	66	1.2	79	95	37	0	16	94	0.034	1.771	0.435	0.385	ST28	A-5
	3.0	13	36	73	1.2	88	95	37	0	14	87	0.034	1.771	0.435	0.385	ST28	A-5
4	3.7	13	46	81	1.2	97	85	35	0	13	80	0.034	1.771	0.435	0.415	ST28	A-5
5	4.3	9	56	89	1	89	76	34	0	10	59	0.034	1.771	0.435	0.447	ST28	A-5
	4.9	9	65	99	1	99	76	34	0	9	54	0.034	1.771	0.435	0.447	ST28	A-5
6	5.5	13	75	107	0.8	85	64.5	32	0	15	89	0.034	1.771	0.435	0.495	ST28	A-5
	6.1	13	84	116	0.8	93	64.5	32	0	14	83	0.034	1.771	0.435	0.495	ST28	A-5
	6.7	13	94	126	0.8	101	64.5	32	0	13	78	0.034	1.771	0.435	0.495	ST28	A-5
7	7.3	6	103	126	0.7	88	35.5	22	0	7	40	0.05	1.589	0.371	0.629	ST32	A-5
	7.9	6	115	138	0.7	96	35.5	22	0	6	37	0.05	1.589	0.371	0.629	ST32	A-5
8	8.5	7	124	133	0.42	56	9.6	9	33	10	50	0.05	1.589	0.371	0.905	ST32	A-5
	9.1	7	135	144	0.42	60	9.6	9	33	20	60	0.05	1.589	0.371	0.905	ST32	A-5
	9.8	7	146	155	0.42	65	9.6	9	33	19	57	0.05	1.589	0.371	0.905	ST32	A-5
9	0.6	12	10	86	2.1	181	184	76	20	8	24	0.078	1.328	0.247	0.414	ST70	A-7-5
10	1.2	12	20	96	2.1	201	184	76	20	7	22	0.078	1.328	0.247	0.414	ST70	A-7-5
	1.8	12	29	106	2.1	222	184	76	20	7	21	0.078	1.328	0.247	0.414	ST70	A-7-5
11	2.4	13	41	113	1.2	136	170	72	20	11	32	0.078	1.328	0.247	0.425	ST70	A-7-5
	3.0	13	52	125	1.2	150	170	72	20	10	30	0.078	1.328	0.247	0.425	ST70	A-7-5
12	3.7	13	64	126	1.2	151	136	62	20	10	29	0.078	1.328	0.247	0.456	ST70	A-7-5
13	4.3	9	75	123	1	123	93	48	20	8	23	0.078	1.328	0.247	0.513	ST70	A-7-5
	4.9	9	86	134	1	134	93	48	20	7	22	0.078	1.328	0.247	0.513	ST70	A-7-5
14	8.5	7	127	147	0.42	62	28	20	20	10	57	0.078	1.328	0.247	0.718	ST70	A-7-5
	9.1	7	139	159	0.42	67	28	20	20	9	54	0.078	1.328	0.247	0.718	ST70	A-7-5
	9.8	7	151	171	0.42	72	28	20	20	9	52	0.078	1.328	0.247	0.718	ST70	A-7-5
15	10.4	5	163	179	0.33	59	22.5	16	33	7	40	0.065	1.511	0.338	0.708	ST34	A-5
	11.0	5	175	191	0.33	63	22.5	16	33	6	39	0.065	1.511	0.338	0.708	ST34	A-5
	11.6	5	187	202	0.33	67	22.5	16	33	6	38	0.065	1.511	0.338	0.708	ST34	A-5
	12.2	5	198	214	0.33	71	22.5	16	33	6	37	0.065	1.511	0.338	0.708	ST34	A-5

H.11 Sheet pile properties

The PZC-13 steel piles were installed for cantilever sheet pile wall

(1) Dimensions and properties of PZC-13

Section	Width	Height	Web Thickness	Flange Thickness	Weight		Moment of Inertia		Section Modulus		Nominal Coating Area
	in.	in.	in.	in.	lb / lft	lb / ft²	in⁴	in⁴ / wft	in³	in³ / wft	ft² / lft
	mm	mm	mm	mm	kg / lm	kg / m²	cm⁴	cm⁴ / wm	cm³	cm³ / wm	m² / lm
PZC 12	27.88	12.52	0.335	0.335	46.4	20.0	326.6	140.6	52.0	22.4	5.60
	708	318	8.5	8.5	69.1	97.6	13,595	19,202	851	1,202	1.71
PZC 13	**27.88**	**12.56**	**0.375**	**0.375**	**50.4**	**21.7**	**353.0**	**152.0**	**56.2**	**24.2**	**5.60**
	708	319	9.5	9.5	75.1	106.0	14,694	20,753	920	1,300	1.71
PZC 14	27.88	12.60	0.420	0.420	55.0	23.7	382.7	164.8	60.5	26.0	5.60
	708	320	10.7	10.7	81.8	115.5	15,930	22,499	991	1,400	1.71

(2) Properties of sheet pile wall in numerical modeling

Parameter	Symbol	Value	Unit
Material model	Model	Linear elastic	-
Normal stiffness	EA	2.7×10^6	kN/m
Flexural rigidity	EI	4.1×10^4	kN- m^2/m
Weight	w	0.57	kN/m/m
Poisson's ratio	ν	0.15	-

*Sheet pile wall is simulated using material properties of Plate type.

Appendix I. Test data from NCDOT's lab

The following pages are the test data provided by the NCDOT soils lab. Samples from a total of 33 Shelby tubes were tested.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. U-2412B

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project 39406.1.1 **County** GUILFORD **Owner**

Date: Sampled 3/22/13 **Received** 4/30/13 **Reported** 5/2/13

Sampled from **By** NEIL ROBERSON

Submitted by SURIYATI B S 1995 **Standard Specifications**

785171 TO 785173
5/14/13

TEST RESULTS

Proj. Sample No.		ST-1#1	ST-1#2	ST-1#3			
Lab. Sample No.		785171	785172	785173			
Retained #4 Sieve	%	-	-	-			
Passing #10 Sieve	%	100	100	100			
Passing #40 Sieve	%	100	100	96			
Passing #200 Sieve	%	89	88	78			

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	1.8	2.0	7.3			
Fine Sand Ret - #270	%	13.6	16.5	22.0			
Silt 0.05 - 0.005 mm	%	41.9	53.0	48.4			
Clay < 0.005 mm	%	42.7	28.5	22.4			
T-#		T-5668	T-5668	T-5668			
Specific Gravity		2.734	2.723	2.694			

L. L.		58	64	54			
P. I.		16	15	12			
AASHTO Classification		A-7-5(20)	A-7-5(21)	A-7-5(13)			
Station		405+70	405+70	405+70			
Offset		3' RT	3' RT	3' RT			
Alignment		L	L	L			
Location							
Depth (Ft)		10.00	10.00	10.00			
	to	12.00	12.00	12.00			
Final Moisture (%)		52.76	57.08	50.07			

cc: NEIL ROBERSON
SURIYATI B S

Soils Engineer

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	27.75	38.13	**Plastic Limits:**	0	
Dry Density (pcf):	69.83	85.83	**Plasticity Index (%):**	0	
Saturation (%):	52.98	106.77			
Void Ratio:	1.4115	0.9619	**Specific Gravity:**	2.701	Measured

Soil Description: Orange colored clay

Project Number: 39406.1.1 **Depth:** 10.0 - 12.0 ft

Sample Number: ST-1 **Boring Number:**

Project: U-2412B

Client: T-5668

Location: Guilford County (Sta. 405 + 70)

Remarks:
Solid Height 0.41652 inches Est.
Blows/Ft= NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	27.75	38.13	**Plastic Limits:**	0	
Dry Density (pcf):	69.83	85.83	**Plasticity Index (%):**	0	
Saturation (%):	52.98	106.77			
Void Ratio:	1.4115	0.9619	**Specific Gravity:**	2.701	Measured

Soil Description: Orange colored clay

Project Number: 39406.1.1 **Depth:** 10.0 - 12.0 ft

Sample Number: ST-1 **Boring Number:**

Project: U-2412B

Client: T-5668

Location: Guilford County (Sta. 405 + 70)

Remarks:
Solid Height 0.41652 inches Est.
Blows/Ft= NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	27.75	38.13	**Plastic Limits:**	0	
Dry Density (pcf):	69.83	85.83	**Plasticity Index (%):**	0	
Saturation (%):	52.98	106.77			
Void Ratio:	1.4115	0.9619	**Specific Gravity:**	2.701	Measured

Soil Description: Orange colored clay

Project Number: 39406.1.1 **Depth:** 10.0 - 12.0 ft

Sample Number: ST-1 **Boring Number:**

Project: U-2412B

Client: T-5668

Location: Guilford County (Sta. 405 + 70)

Remarks:
Solid Height 0.41652 inches Est. Blows/Ft= NA

Consolidation Test Results
Summary

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County (Sta. 405 + 70)
Job Number: T-5668

Sample Number: ST-1 **Soil Description:**
Boring Number: Orange colored clay
Depth: 10.0 - 12.0 ft **Remarks:** **Test Number:**
Sample Type: Undisturbed Solid Height 0.41652 inches Est. Blows/Ft= NA **Test Date:**

Index	Load Sequence (tsf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	1.0031	0.5871	0.00	1.4115	0.000		0.000	
1	0.063	0.0009	1.0022	0.5862	0.09	1.4093	0.123		6344.559	
2	0.125	0.0028	1.0003	0.5843	0.28	1.4047	0.250		3097.058	
3	0.250	0.0069	0.9962	0.5802	0.69	1.3949	2.066		371.699	
4	0.500	0.0105	0.9926	0.5766	1.05	1.3862	0.073		10415.166	
5	1.000	0.0173	0.9858	0.5698	1.72	1.3699	0.360		2088.834	
6	2.000	0.0380	0.9651	0.5491	3.79	1.3201	1.891		381.218	
7	4.000	0.0938	0.9093	0.4933	9.35	1.1860	0.592		1081.288	
8	2.000	0.0906	0.9125	0.4965	9.03	1.1937	0.000		0.000	
9	1.000	0.0863	0.9168	0.5008	8.60	1.2040	0.000		0.000	
10	0.500	0.0808	0.9223	0.5063	8.06	1.2172	0.000		0.000	
11	1.000	0.0825	0.9206	0.5046	8.22	1.2131	0.000		0.000	
12	2.000	0.0857	0.9174	0.5014	8.54	1.2054	0.000		0.000	
13	4.000	0.0974	0.9057	0.4897	9.71	1.1773	0.000		0.000	
14	8.000	0.1675	0.8356	0.4196	16.70	1.0088	0.675		800.783	
15	16.000	0.2465	0.7566	0.3406	24.57	0.8189	1.859		238.226	
16	4.000	0.2378	0.7653	0.3493	23.71	0.8398	0.000		0.000	
17	0.016	0.1870	0.8161	0.4001	18.64	0.9619	0.000		0.000	

Tested By: **Checked By:**

Consolidation Test
Consolidation Specimen Information

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County (Sta. 405 + 70)
Job Number: T-5668 **Test Date:**

Sample Number: ST-1 **Soil Description:**
Boring Number: Orange colored clay
Depth: 10.0 - 12.0 ft **Remarks:**
Sample Type: Undisturbed Solid Height 0.41652 inches Est. Blows/Ft= NA

Test Number:
Liquid Limit: 0.0000 **Initial Void Ratio:** 1.4115 **Initial Height (in):** 1.0031
Plastic Limit: 0.0000 **Plasticity Index (%):** 0.0000 **Initial Diameter (in):** 2.4998
Specific Gravity: 2.7010 Measured **Weight of Ring (g):** 111.1800

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	115.28	124.65
Dry Soil + Container (g)	90.24	90.24
Weight of Container (g)	0.00	0.00
Moisture Content (%)	27.75	38.13
Void Ratio	1.4115	0.9619
Saturation (%)	52.98	106.77
Dry Density (pcf)	69.83	85.83

Tested By: **Checked By:**

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Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date

Tested By:

Effective Stress at Maximum Deviator Stress Criterion

Deviator Stress Vs. Axial Strain

Initial	Specimen A	B	C	D
Water Content (%)	32.6	32.5	27.4	
Dry Density (pcf)	69.8	67.0	71.2	
Saturation (%)	61.57	57.50	54.11	
Void Ratio	1.439	1.532	1.355	
Diameter (in)	2.842	2.848	2.852	
Height (in)	5.923	5.991	5.972	
Specific Gravity	2.73	2.72	2.69	
Liquid Limit	0	0	0	
Plastic Limit	0	0	0	
After Consolidation	**A**	**B**	**C**	**D**
B-Value	0.00	0.00	0.00	
Water Content (%)	32.6	33.0	28.6	
Dry Density (pcf)	71.08	67.85	72.77	
Saturation (%)	100.00	100.00	100.00	
Void Ratio	1.401	1.505	1.311	
Effective Stress (psi)	3.0	6.0	12.0	
Back Press. (psi)	80.5	80.5	80.4	
Rate of Strain	0.009	0.009	0.009	

Maximium Deviator Stress Criterion	
C (psi)	0.0
C' (psi)	0.0
Ø (deg)	0.0
Ø' (deg)	0.0

After Shear	A	B	C	D
σ'1 at Failure (psi)	7.76	15.47	20.80	
σ'3 at Failure (psi)	2.31	4.28	5.27	

Project:	U-2412B
Location:	Guilford County (Sta. 405 + 70)
Project Number:	39406.1.1
Boring Number:	
Sample Number:	ST-1
Depth:	10.0 - 12.0 ft
Sample Type:	Undisturbed
Description:	
Test Type	Consolidated Undrained
Remarks	

Failure Photographs (not to scale)

ncdot

Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date:

Tested By:

Deviator Stress vs. Axial Strain

Principal Stress Ratio vs. Axial Strain

Change in Pore Pressure vs. Axial Strain
Change in Pore Pressure (psi)
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
0.000
5.000
10.000
15.000
20.000
25.000
Axial Strain (%)
Specimen A
Specimen B
Specimen C
Specimen D

Mohr Stress Circles at Maximum Deviator Stress Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at Maximum Principal Stress Ratio Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at 15% Axial Strain Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)
15.0
10.0
5.0
0.0
Q (psi)
0.0
5.0
10.0
15.0
P' (psi)
Specimen A
Specimen B
Specimen C
Specimen D
Tangent Line

Stress Paths (Total)
(C' = 0.0 Ø' = 0.0)
25.0
20.0
15.0
10.0
5.0
0.0
Q (psi)
0.0
5.0
10.0
15.0
20.0
25.0
P (psi)

Specimen A Shear Data

CU Triaxial Test

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File Location
T-5668.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5668
Sample Location: Guilford County (Sta. 405 + 70)
Sample Description: Orange colored clay
Remarks: Some roots embedded within sample.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.734
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.842	2.838	
Height (in)	5.923	5.827	
Weight (grams)	912.00		1051.00
Moisture (%)	32.56		52.76
Dry Density (pcf)	69.78	71.08	
Saturation (%)	61.57	100.00	
Void Ratio	1.439	1.401	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 83.500
Effective Confining Stress (psi): 3.0
Corrected Peak Deviator Stress (psi): 5.447 at reading number: 265

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	32.8	0.163	80.5	0.0	6.33	0.000	0.000	0.000	3.0	3.0	3.0	3.0	1.00	0.00	3.0	0.0	3.0
1	39.0	0.166	80.8	0.3	6.33	0.055	0.975	0.953	3.9	3.0	3.6	2.7	1.36	0.31	3.4	0.5	3.1
2	41.1	0.171	80.9	0.4	6.34	0.134	1.306	1.252	4.2	3.0	3.8	2.6	1.49	0.30	3.6	0.6	3.2
3	42.5	0.175	81.2	0.6	6.34	0.213	1.527	1.441	4.4	3.0	3.8	2.3	1.62	0.43	3.7	0.7	3.1
4	42.5	0.180	81.2	0.7	6.35	0.292	1.527	1.409	4.4	3.0	3.7	2.3	1.63	0.50	3.7	0.7	3.0
5	42.6	0.184	81.3	0.8	6.35	0.363	1.545	1.399	4.4	3.0	3.6	2.2	1.64	0.54	3.7	0.7	2.9
6	43.2	0.189	81.4	0.8	6.36	0.442	1.637	1.459	4.4	3.0	3.6	2.1	1.69	0.58	3.7	0.7	2.8
7	44.4	0.193	81.5	0.9	6.36	0.513	1.821	1.613	4.6	3.0	3.6	2.0	1.80	0.58	3.8	0.8	2.8
8	44.2	0.197	81.5	1.0	6.37	0.592	1.803	1.563	4.5	3.0	3.6	2.0	1.79	0.62	3.7	0.8	2.8
9	44.7	0.201	81.5	1.0	6.37	0.663	1.876	1.607	4.6	3.0	3.6	2.0	1.82	0.62	3.8	0.8	2.8
10	44.8	0.206	81.6	1.1	6.38	0.742	1.895	1.593	4.5	3.0	3.5	1.9	1.84	0.66	3.8	0.8	2.7
11	45.6	0.210	81.7	1.1	6.38	0.813	2.024	1.692	4.6	3.0	3.5	1.8	1.92	0.66	3.8	0.8	2.7
12	45.6	0.214	81.7	1.1	6.38	0.884	2.024	1.663	4.6	3.0	3.5	1.8	1.92	0.69	3.8	0.8	2.6
13	44.7	0.218	81.7	1.2	6.39	0.955	1.876	1.489	4.4	3.0	3.3	1.8	1.83	0.79	3.7	0.7	2.5
14	46.3	0.223	81.7	1.2	6.39	1.026	2.134	1.715	4.7	3.0	3.5	1.8	1.98	0.70	3.8	0.9	2.6
15	46.0	0.227	81.8	1.3	6.40	1.097	2.079	1.631	4.6	3.0	3.3	1.7	1.96	0.77	3.8	0.8	2.5
16	46.9	0.231	81.8	1.3	6.40	1.168	2.226	1.747	4.7	3.0	3.4	1.7	2.03	0.72	3.8	0.9	2.6
17	46.7	0.235	81.7	1.2	6.41	1.239	2.189	1.682	4.6	3.0	3.4	1.8	1.96	0.71	3.8	0.8	2.6
18	46.6	0.240	81.9	1.3	6.41	1.318	2.171	1.632	4.6	3.0	3.2	1.6	2.02	0.83	3.8	0.8	2.4

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	46.2	0.243	81.9	1.3	6.42	1.381	2.116	1.551	4.5	3.0	3.2	1.6	1.97	0.87	3.7	0.8	2.4
20	47.1	0.248	81.9	1.3	6.42	1.460	2.263	1.664	4.6	3.0	3.3	1.6	2.04	0.81	3.8	0.8	2.4
21	47.3	0.251	81.9	1.4	6.43	1.523	2.281	1.656	4.6	3.0	3.2	1.6	2.05	0.83	3.8	0.8	2.4
22	47.8	0.256	82.0	1.4	6.43	1.594	2.373	1.718	4.7	3.0	3.3	1.5	2.11	0.82	3.8	0.9	2.4
23	46.9	0.260	82.0	1.4	6.44	1.665	2.226	1.544	4.5	3.0	3.1	1.5	2.00	0.91	3.7	0.8	2.3
24	47.8	0.264	81.9	1.4	6.44	1.744	2.373	1.656	4.6	3.0	3.2	1.6	2.05	0.83	3.8	0.8	2.4
25	48.2	0.269	82.0	1.4	6.45	1.823	2.428	1.678	4.6	3.0	3.2	1.5	2.08	0.84	3.8	0.8	2.4
26	48.7	0.273	82.0	1.5	6.45	1.894	2.502	1.721	4.7	3.0	3.2	1.5	2.15	0.85	3.8	0.9	2.4
27	48.1	0.277	82.0	1.4	6.45	1.965	2.410	1.601	4.6	3.0	3.1	1.5	2.05	0.90	3.8	0.8	2.3
28	48.3	0.281	82.0	1.5	6.46	2.036	2.447	1.622	4.6	3.0	3.1	1.5	2.09	0.90	3.8	0.8	2.3
29	48.1	0.286	82.0	1.5	6.46	2.107	2.410	1.584	4.5	3.0	3.0	1.5	2.08	0.94	3.7	0.8	2.3
30	49.0	0.290	82.0	1.5	6.47	2.178	2.557	1.726	4.7	3.0	3.2	1.5	2.18	0.86	3.8	0.9	2.3
31	49.5	0.294	82.0	1.5	6.47	2.257	2.631	1.796	4.7	3.0	3.3	1.5	2.23	0.83	3.9	0.9	2.4
32	49.9	0.299	82.0	1.4	6.48	2.336	2.704	1.866	4.8	3.0	3.4	1.5	2.20	0.75	3.9	0.9	2.5
33	48.8	0.304	82.1	1.6	6.49	2.422	2.520	1.684	4.6	3.0	3.1	1.4	2.20	0.92	3.8	0.8	2.2
34	49.6	0.309	82.1	1.5	6.49	2.501	2.649	1.808	4.8	3.0	3.2	1.4	2.26	0.84	3.9	0.9	2.3
35	49.5	0.313	82.1	1.5	6.50	2.580	2.631	1.788	4.7	3.0	3.2	1.4	2.25	0.85	3.8	0.9	2.3
36	49.4	0.318	82.1	1.6	6.50	2.667	2.612	1.677	4.6	3.0	3.1	1.4	2.20	0.92	3.8	0.8	2.2
37	49.4	0.322	82.1	1.6	6.51	2.738	2.612	1.673	4.6	3.0	3.1	1.4	2.19	0.93	3.8	0.8	2.2
38	49.8	0.327	82.1	1.6	6.51	2.817	2.686	1.740	4.7	3.0	3.1	1.4	2.27	0.91	3.8	0.9	2.2
39	50.1	0.331	82.1	1.5	6.52	2.888	2.723	1.771	4.7	3.0	3.2	1.4	2.24	0.86	3.8	0.9	2.3
40	49.6	0.336	82.1	1.6	6.52	2.967	2.649	1.695	4.6	3.0	3.1	1.4	2.21	0.92	3.8	0.8	2.3
41	49.7	0.340	82.1	1.6	6.53	3.038	2.668	1.709	4.7	3.0	3.1	1.4	2.24	0.92	3.8	0.9	2.2
42	50.4	0.344	82.1	1.6	6.53	3.117	2.778	1.811	4.8	3.0	3.2	1.4	2.29	0.86	3.9	0.9	2.3
43	50.4	0.349	82.1	1.6	6.54	3.188	2.778	1.806	4.8	3.0	3.2	1.4	2.32	0.87	3.9	0.9	2.3
44	50.6	0.353	82.1	1.6	6.54	3.267	2.815	1.837	4.8	3.0	3.2	1.4	2.34	0.86	3.9	0.9	2.3
45	51.9	0.358	82.2	1.6	6.55	3.346	3.017	2.028	5.0	3.0	3.4	1.3	2.51	0.79	4.0	1.0	2.4
46	51.2	0.362	82.2	1.6	6.55	3.424	2.907	1.916	4.9	3.0	3.3	1.3	2.43	0.84	3.9	1.0	2.3
47	51.1	0.367	82.0	1.5	6.56	3.503	2.888	1.894	4.8	3.0	3.4	1.5	2.30	0.79	3.9	0.9	2.4
48	51.5	0.371	82.2	1.6	6.56	3.582	2.943	1.942	4.9	3.0	3.3	1.3	2.48	0.84	3.9	1.0	2.3
49	51.6	0.376	82.2	1.6	6.57	3.653	2.962	1.955	4.9	3.0	3.3	1.3	2.45	0.82	3.9	1.0	2.3
50	51.6	0.380	82.1	1.6	6.57	3.732	2.962	1.950	4.9	3.0	3.3	1.4	2.42	0.81	3.9	1.0	2.3
51	52.2	0.385	82.2	1.6	6.58	3.811	3.054	2.034	5.0	3.0	3.4	1.3	2.51	0.79	4.0	1.0	2.4
52	52.2	0.389	82.2	1.6	6.58	3.882	3.054	2.029	5.0	3.0	3.4	1.3	2.51	0.79	4.0	1.0	2.4
53	52.4	0.394	82.2	1.6	6.59	3.961	3.091	2.059	5.0	3.0	3.4	1.3	2.53	0.78	4.0	1.0	2.4
54	52.2	0.398	82.1	1.6	6.59	4.032	3.054	2.019	5.0	3.0	3.4	1.4	2.47	0.78	4.0	1.0	2.4
55	52.4	0.402	82.2	1.6	6.60	4.111	3.091	2.050	5.0	3.0	3.4	1.3	2.53	0.79	4.0	1.0	2.4
56	52.3	0.407	82.2	1.6	6.60	4.190	3.072	2.027	5.0	3.0	3.3	1.3	2.54	0.81	4.0	1.0	2.3
57	52.7	0.411	82.2	1.6	6.61	4.269	3.146	2.092	5.0	3.0	3.4	1.3	2.56	0.77	4.0	1.0	2.4
58	53.3	0.416	82.2	1.6	6.62	4.340	3.238	2.175	5.1	3.0	3.5	1.3	2.62	0.74	4.0	1.1	2.4
59	53.7	0.420	82.2	1.6	6.62	4.419	3.293	2.223	5.2	3.0	3.5	1.3	2.69	0.74	4.1	1.1	2.4

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	53.1	0.424	82.2	1.6	6.63	4.490	3.201	2.130	5.1	3.0	3.4	1.3	2.62	0.77	4.0	1.1	2.4
61	54.1	0.429	82.2	1.6	6.63	4.561	3.367	2.284	5.2	3.0	3.6	1.3	2.74	0.72	4.1	1.1	2.5
62	53.6	0.433	82.1	1.5	6.64	4.640	3.275	2.191	5.1	3.0	3.6	1.4	2.53	0.69	4.0	1.1	2.5
63	52.9	0.437	82.2	1.6	6.64	4.711	3.164	2.081	5.0	3.0	3.4	1.3	2.58	0.79	4.0	1.0	2.4
64	53.6	0.441	82.2	1.6	6.65	4.782	3.275	2.181	5.1	3.0	3.5	1.3	2.66	0.75	4.0	1.1	2.4
65	53.4	0.446	82.2	1.6	6.65	4.860	3.256	2.159	5.1	3.0	3.5	1.3	2.61	0.75	4.0	1.1	2.4
66	53.4	0.450	82.2	1.6	6.66	4.924	3.256	2.154	5.1	3.0	3.5	1.3	2.64	0.76	4.0	1.1	2.4
67	53.7	0.454	82.2	1.6	6.66	5.002	3.293	2.184	5.1	3.0	3.5	1.3	2.66	0.75	4.0	1.1	2.4
68	54.8	0.458	82.2	1.6	6.67	5.073	3.477	2.354	5.3	3.0	3.7	1.3	2.79	0.70	4.1	1.2	2.5
69	53.9	0.463	82.2	1.6	6.67	5.145	3.330	2.209	5.2	3.0	3.6	1.3	2.64	0.73	4.1	1.1	2.4
70	54.2	0.467	82.1	1.6	6.68	5.223	3.385	2.256	5.2	3.0	3.6	1.4	2.64	0.70	4.1	1.1	2.5
71	53.8	0.471	82.2	1.6	6.68	5.294	3.311	2.182	5.1	3.0	3.5	1.3	2.66	0.75	4.0	1.1	2.4
72	54.5	0.476	82.2	1.6	6.69	5.373	3.422	2.281	5.2	3.0	3.6	1.3	2.70	0.71	4.1	1.1	2.5
73	55.3	0.480	82.2	1.6	6.69	5.444	3.551	2.398	5.4	3.0	3.7	1.3	2.78	0.67	4.2	1.2	2.5
74	54.9	0.485	82.2	1.6	6.70	5.523	3.495	2.340	5.3	3.0	3.7	1.3	2.78	0.70	4.1	1.2	2.5
75	55.5	0.489	82.2	1.6	6.70	5.602	3.587	2.422	5.4	3.0	3.7	1.3	2.84	0.68	4.2	1.2	2.5
76	55.4	0.494	82.2	1.6	6.71	5.681	3.569	2.399	5.4	3.0	3.7	1.3	2.82	0.68	4.2	1.2	2.5
77	54.9	0.499	82.1	1.6	6.72	5.768	3.495	2.324	5.3	3.0	3.7	1.4	2.66	0.67	4.1	1.2	2.6
78	55.2	0.503	82.2	1.6	6.72	5.847	3.532	2.353	5.3	3.0	3.7	1.3	2.79	0.70	4.1	1.2	2.5
79	55.2	0.508	82.2	1.6	6.73	5.926	3.532	2.347	5.3	3.0	3.7	1.3	2.79	0.70	4.1	1.2	2.5
80	56.0	0.513	82.1	1.6	6.73	6.005	3.661	2.463	5.4	3.0	3.8	1.4	2.79	0.64	4.2	1.2	2.6
81	56.5	0.518	82.2	1.6	6.74	6.091	3.735	2.526	5.5	3.0	3.9	1.3	2.88	0.64	4.2	1.3	2.6
82	56.5	0.522	82.2	1.6	6.74	6.170	3.735	2.520	5.5	3.0	3.9	1.3	2.88	0.64	4.2	1.3	2.6
83	56.0	0.526	82.2	1.6	6.75	6.241	3.661	2.446	5.4	3.0	3.8	1.3	2.82	0.66	4.2	1.2	2.6
84	55.9	0.531	82.1	1.6	6.75	6.320	3.643	2.424	5.4	3.0	3.8	1.4	2.76	0.65	4.2	1.2	2.6
85	56.1	0.535	82.1	1.6	6.76	6.391	3.679	2.453	5.4	3.0	3.8	1.4	2.79	0.64	4.2	1.2	2.6
86	56.2	0.540	82.2	1.6	6.77	6.470	3.698	2.465	5.4	3.0	3.8	1.3	2.83	0.65	4.2	1.2	2.6
87	56.5	0.544	82.1	1.6	6.77	6.549	3.735	2.493	5.4	3.0	3.9	1.4	2.82	0.63	4.2	1.2	2.6
88	57.4	0.549	82.1	1.6	6.78	6.628	3.882	2.625	5.6	3.0	4.0	1.4	2.91	0.60	4.3	1.3	2.7
89	56.3	0.553	82.2	1.6	6.78	6.699	3.716	2.466	5.4	3.0	3.8	1.3	2.83	0.65	4.2	1.2	2.6
90	56.9	0.558	82.4	1.8	6.79	6.786	3.808	2.545	5.5	3.0	3.7	1.1	3.29	0.72	4.2	1.3	2.4
91	56.8	0.562	82.1	1.6	6.79	6.857	3.790	2.523	5.5	3.0	3.9	1.4	2.84	0.63	4.2	1.3	2.6
92	57.0	0.567	82.0	1.5	6.80	6.936	3.827	2.551	5.5	3.0	4.0	1.5	2.75	0.59	4.2	1.3	2.7
93	57.4	0.571	82.2	1.6	6.81	7.015	3.882	2.597	5.6	3.0	3.9	1.3	2.93	0.62	4.3	1.3	2.6
94	57.2	0.576	82.1	1.6	6.81	7.086	3.845	2.558	5.5	3.0	3.9	1.4	2.86	0.62	4.2	1.3	2.7
95	57.7	0.580	82.1	1.6	6.82	7.164	3.937	2.637	5.6	3.0	4.0	1.4	2.92	0.60	4.3	1.3	2.7
96	57.2	0.585	82.1	1.6	6.82	7.243	3.845	2.546	5.5	3.0	3.9	1.4	2.85	0.62	4.2	1.3	2.6
97	58.0	0.589	82.1	1.6	6.83	7.314	3.974	2.661	5.6	3.0	4.0	1.4	2.94	0.59	4.3	1.3	2.7
98	57.7	0.594	82.1	1.6	6.83	7.393	3.937	2.621	5.6	3.0	4.0	1.4	2.91	0.60	4.3	1.3	2.7
99	58.0	0.598	82.1	1.5	6.84	7.472	3.974	2.649	5.6	3.0	4.1	1.4	2.85	0.57	4.3	1.3	2.8
100	58.2	0.602	82.1	1.6	6.84	7.543	4.010	2.678	5.6	3.0	4.1	1.4	2.95	0.59	4.3	1.3	2.7

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	58.2	0.607	82.1	1.6	6.85	7.622	4.010	2.672	5.6	3.0	4.0	1.4	2.95	0.59	4.3	1.3	2.7
102	58.7	0.611	82.1	1.6	6.86	7.693	4.084	2.735	5.7	3.0	4.1	1.4	2.95	0.57	4.3	1.4	2.8
103	58.8	0.616	82.1	1.6	6.86	7.772	4.102	2.746	5.7	3.0	4.1	1.4	2.96	0.56	4.3	1.4	2.8
104	59.1	0.620	82.1	1.6	6.87	7.843	4.158	2.791	5.7	3.0	4.2	1.4	3.03	0.57	4.3	1.4	2.8
105	59.5	0.624	82.1	1.6	6.87	7.914	4.213	2.837	5.8	3.0	4.2	1.4	3.07	0.56	4.4	1.4	2.8
106	59.4	0.629	82.1	1.5	6.88	7.993	4.194	2.814	5.8	3.0	4.2	1.4	2.97	0.54	4.4	1.4	2.8
107	59.3	0.633	82.0	1.5	6.88	8.064	4.176	2.792	5.7	3.0	4.3	1.5	2.87	0.52	4.3	1.4	2.9
108	59.6	0.637	82.1	1.6	6.89	8.143	4.231	2.836	5.8	3.0	4.2	1.4	3.02	0.55	4.4	1.4	2.8
109	60.2	0.641	82.1	1.5	6.89	8.214	4.323	2.915	5.9	3.0	4.3	1.4	3.04	0.52	4.4	1.5	2.9
110	59.5	0.646	82.1	1.5	6.90	8.285	4.213	2.809	5.8	3.0	4.2	1.4	2.96	0.54	4.4	1.4	2.8
111	60.4	0.650	82.1	1.6	6.91	8.364	4.360	2.937	5.9	3.0	4.3	1.4	3.09	0.53	4.4	1.5	2.9
112	61.0	0.654	82.1	1.6	6.91	8.435	4.452	3.016	6.0	3.0	4.4	1.4	3.15	0.51	4.5	1.5	2.9
113	60.0	0.659	82.1	1.5	6.92	8.514	4.286	2.858	5.8	3.0	4.3	1.4	3.00	0.53	4.4	1.4	2.9
114	61.0	0.663	82.0	1.5	6.92	8.585	4.452	3.004	6.0	3.0	4.5	1.5	3.02	0.49	4.5	1.5	3.0
115	60.7	0.667	82.1	1.5	6.93	8.656	4.397	2.948	5.9	3.0	4.4	1.4	3.06	0.52	4.4	1.5	2.9
116	61.2	0.672	82.1	1.5	6.93	8.735	4.489	3.026	6.0	3.0	4.5	1.4	3.11	0.50	4.5	1.5	2.9
117	61.6	0.676	82.0	1.5	6.94	8.806	4.544	3.071	6.0	3.0	4.5	1.5	3.10	0.49	4.5	1.5	3.0
118	60.9	0.680	82.0	1.5	6.95	8.885	4.434	2.964	5.9	3.0	4.4	1.5	3.03	0.50	4.4	1.5	2.9
119	61.8	0.685	82.1	1.5	6.95	8.956	4.581	3.093	6.0	3.0	4.5	1.4	3.16	0.49	4.5	1.5	3.0
120	61.7	0.689	82.1	1.5	6.96	9.034	4.562	3.070	6.0	3.0	4.5	1.4	3.14	0.50	4.5	1.5	3.0
121	61.6	0.694	82.0	1.5	6.96	9.113	4.544	3.047	6.0	3.0	4.5	1.5	3.09	0.49	4.5	1.5	3.0
122	61.8	0.698	81.9	1.4	6.97	9.192	4.581	3.074	6.0	3.0	4.7	1.6	2.95	0.45	4.5	1.5	3.1
123	61.9	0.703	82.1	1.5	6.97	9.271	4.599	3.084	6.0	3.0	4.5	1.4	3.15	0.49	4.5	1.5	3.0
124	62.0	0.707	82.0	1.5	6.98	9.342	4.618	3.095	6.0	3.0	4.6	1.5	3.12	0.48	4.5	1.5	3.0
125	62.0	0.712	82.0	1.5	6.99	9.421	4.618	3.089	6.0	3.0	4.6	1.5	3.07	0.47	4.5	1.5	3.0
126	62.7	0.716	82.0	1.5	6.99	9.500	4.728	3.182	6.1	3.0	4.7	1.5	3.14	0.46	4.5	1.6	3.1
127	63.1	0.720	82.0	1.5	7.00	9.571	4.783	3.227	6.2	3.0	4.7	1.5	3.21	0.46	4.6	1.6	3.1
128	61.8	0.725	82.0	1.5	7.00	9.650	4.581	3.037	6.0	3.0	4.5	1.5	3.04	0.48	4.5	1.5	3.0
129	62.6	0.730	81.9	1.4	7.01	9.729	4.710	3.147	6.1	3.0	4.7	1.6	2.99	0.44	4.5	1.6	3.2
130	62.3	0.734	82.0	1.5	7.02	9.800	4.654	3.092	6.0	3.0	4.6	1.5	3.07	0.47	4.5	1.5	3.0
131	62.9	0.738	82.0	1.5	7.02	9.879	4.746	3.168	6.1	3.0	4.7	1.5	3.13	0.46	4.5	1.6	3.1
132	63.0	0.743	82.0	1.4	7.03	9.958	4.765	3.178	6.1	3.0	4.7	1.5	3.09	0.45	4.5	1.6	3.1
133	63.3	0.748	82.0	1.4	7.03	10.037	4.820	3.222	6.2	3.0	4.7	1.5	3.12	0.45	4.6	1.6	3.1
134	64.0	0.752	82.0	1.4	7.04	10.115	4.930	3.314	6.3	3.0	4.8	1.5	3.18	0.43	4.6	1.7	3.2
135	63.8	0.756	82.0	1.4	7.05	10.186	4.894	3.275	6.2	3.0	4.8	1.5	3.16	0.44	4.6	1.6	3.2
136	64.0	0.761	81.9	1.4	7.05	10.265	4.930	3.302	6.3	3.0	4.9	1.6	3.09	0.42	4.6	1.7	3.2
137	64.8	0.766	82.0	1.4	7.06	10.344	5.059	3.411	6.4	3.0	5.0	1.5	3.20	0.41	4.7	1.7	3.3
138	64.5	0.770	82.0	1.4	7.06	10.423	5.004	3.355	6.3	3.0	4.9	1.5	3.21	0.43	4.6	1.7	3.2
139	65.1	0.775	82.0	1.4	7.07	10.502	5.096	3.430	6.4	3.0	5.0	1.5	3.21	0.41	4.7	1.7	3.3
140	64.8	0.779	82.0	1.4	7.08	10.573	5.059	3.392	6.3	3.0	4.9	1.5	3.19	0.41	4.6	1.7	3.2
141	64.8	0.784	82.0	1.4	7.08	10.660	5.059	3.384	6.3	3.0	4.9	1.5	3.19	0.42	4.6	1.7	3.2

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	64.8	0.788	82.0	1.4	7.09	10.731	5.059	3.378	6.3	3.0	4.9	1.5	3.18	0.42	4.6	1.7	3.2
143	65.5	0.793	82.0	1.4	7.09	10.810	5.169	3.470	6.4	3.0	5.0	1.5	3.24	0.40	4.7	1.7	3.3
144	65.5	0.797	81.8	1.3	7.10	10.889	5.169	3.463	6.4	3.0	5.1	1.7	3.08	0.37	4.7	1.7	3.4
145	66.4	0.801	82.0	1.4	7.11	10.960	5.298	3.572	6.5	3.0	5.1	1.5	3.31	0.39	4.7	1.8	3.3
146	66.2	0.806	81.9	1.4	7.11	11.039	5.280	3.549	6.5	3.0	5.1	1.6	3.25	0.39	4.7	1.8	3.4
147	65.9	0.810	81.9	1.3	7.12	11.110	5.225	3.493	6.4	3.0	5.1	1.6	3.17	0.39	4.7	1.7	3.4
148	66.8	0.815	81.9	1.4	7.13	11.189	5.372	3.617	6.6	3.0	5.2	1.6	3.29	0.38	4.8	1.8	3.4
149	65.9	0.819	81.9	1.4	7.13	11.260	5.225	3.481	6.4	3.0	5.1	1.6	3.21	0.40	4.7	1.7	3.3
150	66.8	0.823	81.9	1.4	7.14	11.331	5.372	3.605	6.6	3.0	5.2	1.6	3.28	0.38	4.8	1.8	3.4
151	67.2	0.828	81.8	1.3	7.14	11.409	5.427	3.647	6.6	3.0	5.3	1.7	3.19	0.35	4.8	1.8	3.5
152	66.9	0.832	81.9	1.4	7.15	11.480	5.390	3.608	6.6	3.0	5.2	1.6	3.29	0.38	4.8	1.8	3.4
153	67.4	0.836	81.9	1.3	7.15	11.551	5.464	3.667	6.6	3.0	5.3	1.6	3.28	0.37	4.8	1.8	3.4
154	66.6	0.840	81.9	1.3	7.16	11.630	5.335	3.546	6.5	3.0	5.2	1.6	3.17	0.37	4.7	1.8	3.4
155	67.6	0.845	81.9	1.3	7.17	11.701	5.501	3.686	6.6	3.0	5.3	1.6	3.29	0.37	4.8	1.8	3.5
156	67.3	0.849	81.9	1.3	7.17	11.772	5.445	3.631	6.6	3.0	5.2	1.6	3.26	0.37	4.8	1.8	3.4
157	67.3	0.853	81.9	1.3	7.18	11.851	5.445	3.624	6.6	3.0	5.2	1.6	3.25	0.37	4.8	1.8	3.4
158	67.9	0.857	81.9	1.3	7.18	11.922	5.537	3.699	6.7	3.0	5.3	1.6	3.26	0.36	4.8	1.8	3.5
159	68.0	0.862	81.8	1.2	7.19	12.001	5.556	3.708	6.7	3.0	5.4	1.7	3.15	0.33	4.8	1.9	3.6
160	68.0	0.866	81.9	1.3	7.20	12.072	5.556	3.702	6.7	3.0	5.3	1.6	3.30	0.36	4.8	1.9	3.5
161	68.2	0.871	81.9	1.3	7.20	12.151	5.593	3.727	6.7	3.0	5.4	1.6	3.28	0.35	4.8	1.9	3.5
162	68.7	0.875	81.8	1.3	7.21	12.230	5.666	3.785	6.7	3.0	5.5	1.7	3.27	0.34	4.8	1.9	3.6
163	69.4	0.880	81.8	1.3	7.22	12.301	5.777	3.875	6.8	3.0	5.5	1.7	3.33	0.33	4.9	1.9	3.6
164	69.3	0.884	81.9	1.3	7.22	12.380	5.758	3.852	6.8	3.0	5.5	1.6	3.35	0.34	4.9	1.9	3.6
165	69.0	0.889	81.8	1.3	7.23	12.459	5.721	3.812	6.8	3.0	5.5	1.7	3.29	0.34	4.9	1.9	3.6
166	69.3	0.893	81.7	1.2	7.24	12.538	5.758	3.837	6.8	3.0	5.6	1.8	3.19	0.31	4.9	1.9	3.7
167	69.3	0.898	81.8	1.3	7.24	12.617	5.758	3.830	6.8	3.0	5.5	1.7	3.30	0.34	4.9	1.9	3.6
168	68.6	0.903	81.8	1.3	7.25	12.696	5.648	3.726	6.7	3.0	5.4	1.7	3.24	0.35	4.8	1.9	3.5
169	69.8	0.907	81.8	1.3	7.25	12.774	5.850	3.896	6.8	3.0	5.6	1.7	3.30	0.32	4.9	1.9	3.6
170	69.7	0.912	81.8	1.3	7.26	12.853	5.832	3.872	6.8	3.0	5.6	1.7	3.28	0.33	4.9	1.9	3.6
171	70.0	0.916	81.8	1.3	7.27	12.932	5.869	3.897	6.9	3.0	5.6	1.7	3.30	0.32	4.9	1.9	3.6
172	70.2	0.921	81.8	1.3	7.27	13.011	5.905	3.922	6.9	3.0	5.6	1.7	3.31	0.32	4.9	2.0	3.7
173	70.4	0.926	81.8	1.2	7.28	13.090	5.942	3.947	6.9	3.0	5.7	1.7	3.29	0.31	4.9	2.0	3.7
174	70.7	0.930	81.7	1.2	7.29	13.161	5.979	3.972	6.9	3.0	5.8	1.8	3.23	0.29	4.9	2.0	3.8
175	70.4	0.934	81.8	1.3	7.29	13.232	5.942	3.933	6.9	3.0	5.6	1.7	3.32	0.32	4.9	2.0	3.7
176	70.8	0.938	81.8	1.2	7.30	13.311	5.997	3.974	6.9	3.0	5.7	1.7	3.30	0.31	4.9	2.0	3.7
177	70.9	0.943	81.7	1.2	7.31	13.390	6.016	3.982	6.9	3.0	5.7	1.8	3.27	0.30	4.9	2.0	3.7
178	71.5	0.947	81.8	1.2	7.31	13.461	6.108	4.055	7.0	3.0	5.8	1.7	3.35	0.30	5.0	2.0	3.8
179	71.5	0.952	81.8	1.2	7.32	13.540	6.108	4.048	7.0	3.0	5.8	1.7	3.35	0.30	5.0	2.0	3.7
180	71.8	0.956	81.7	1.2	7.33	13.619	6.163	4.088	7.0	3.0	5.8	1.8	3.33	0.29	5.0	2.0	3.8
181	72.1	0.960	81.7	1.1	7.33	13.690	6.200	4.113	7.1	3.0	6.0	1.8	3.23	0.27	5.0	2.1	3.9
182	72.2	0.965	81.8	1.2	7.34	13.769	6.218	4.121	7.1	3.0	5.8	1.7	3.39	0.30	5.0	2.1	3.8

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	72.6	0.969	81.7	1.2	7.34	13.840	6.292	4.178	7.1	3.0	5.9	1.8	3.38	0.29	5.0	2.1	3.8
184	72.4	0.974	81.7	1.2	7.35	13.919	6.255	4.138	7.1	3.0	5.9	1.8	3.32	0.28	5.0	2.1	3.9
185	72.8	0.978	81.7	1.2	7.36	13.997	6.310	4.178	7.1	3.0	6.0	1.8	3.34	0.28	5.0	2.1	3.9
186	72.9	0.983	81.7	1.2	7.36	14.076	6.328	4.187	7.1	3.0	6.0	1.8	3.35	0.28	5.0	2.1	3.9
187	73.1	0.987	81.7	1.2	7.37	14.147	6.365	4.211	7.2	3.0	6.0	1.8	3.36	0.28	5.1	2.1	3.9
188	72.8	0.992	81.7	1.1	7.38	14.226	6.310	4.156	7.1	3.0	6.0	1.8	3.26	0.27	5.0	2.1	3.9
189	73.3	0.996	81.7	1.2	7.38	14.305	6.402	4.227	7.2	3.0	6.0	1.8	3.37	0.28	5.1	2.1	3.9
190	73.5	1.001	81.7	1.2	7.39	14.384	6.420	4.235	7.2	3.0	6.0	1.8	3.38	0.28	5.1	2.1	3.9
191	74.5	1.006	81.7	1.1	7.40	14.463	6.586	4.369	7.3	3.0	6.2	1.8	3.41	0.26	5.1	2.2	4.0
192	73.5	1.010	81.7	1.1	7.40	14.534	6.420	4.221	7.2	3.0	6.0	1.8	3.33	0.27	5.1	2.1	3.9
193	74.7	1.014	81.7	1.1	7.41	14.613	6.623	4.386	7.3	3.0	6.2	1.8	3.42	0.26	5.1	2.2	4.0
194	75.0	1.018	81.7	1.1	7.42	14.684	6.660	4.410	7.4	3.0	6.2	1.8	3.43	0.26	5.2	2.2	4.0
195	73.8	1.023	81.7	1.1	7.42	14.763	6.476	4.245	7.2	3.0	6.1	1.8	3.31	0.26	5.1	2.1	4.0
196	74.6	1.027	81.6	1.0	7.43	14.834	6.604	4.348	7.3	3.0	6.3	1.9	3.25	0.24	5.1	2.2	4.1
197	75.6	1.031	81.7	1.1	7.44	14.905	6.752	4.466	7.4	3.0	6.3	1.8	3.46	0.26	5.2	2.2	4.0
198	75.3	1.036	81.7	1.1	7.44	14.984	6.715	4.427	7.4	3.0	6.3	1.8	3.40	0.25	5.2	2.2	4.1
199	75.4	1.040	81.6	1.1	7.45	15.063	6.733	4.435	7.4	3.0	6.3	1.9	3.37	0.24	5.2	2.2	4.1
200	75.4	1.045	81.6	1.1	7.46	15.134	6.733	4.427	7.4	3.0	6.3	1.9	3.37	0.24	5.2	2.2	4.1
201	76.0	1.049	81.7	1.1	7.46	15.205	6.825	4.498	7.5	3.0	6.3	1.8	3.44	0.25	5.2	2.2	4.1
202	75.7	1.053	81.6	1.1	7.47	15.284	6.770	4.443	7.4	3.0	6.3	1.9	3.38	0.24	5.2	2.2	4.1
203	75.9	1.057	81.6	1.0	7.48	15.355	6.807	4.467	7.4	3.0	6.4	1.9	3.32	0.23	5.2	2.2	4.2
204	76.7	1.062	81.6	1.1	7.48	15.426	6.936	4.569	7.5	3.0	6.4	1.9	3.44	0.24	5.2	2.3	4.2
205	76.3	1.066	81.6	1.1	7.49	15.497	6.862	4.499	7.5	3.0	6.4	1.9	3.41	0.24	5.2	2.2	4.1
206	76.8	1.070	81.6	1.1	7.50	15.576	6.954	4.569	7.5	3.0	6.5	1.9	3.40	0.23	5.2	2.3	4.2
207	76.3	1.074	81.6	1.1	7.50	15.647	6.862	4.484	7.4	3.0	6.4	1.9	3.36	0.23	5.2	2.2	4.1
208	76.7	1.079	81.6	1.1	7.51	15.725	6.936	4.538	7.5	3.0	6.4	1.9	3.39	0.23	5.2	2.3	4.2
209	76.9	1.083	81.6	1.1	7.52	15.796	6.972	4.562	7.5	3.0	6.5	1.9	3.40	0.23	5.2	2.3	4.2
210	77.8	1.088	81.6	1.0	7.52	15.875	7.101	4.662	7.6	3.0	6.6	1.9	3.42	0.22	5.3	2.3	4.3
211	78.3	1.092	81.5	0.9	7.53	15.954	7.193	4.731	7.7	3.0	6.8	2.0	3.31	0.19	5.3	2.4	4.4
212	78.0	1.097	81.6	1.1	7.54	16.025	7.138	4.677	7.6	3.0	6.6	1.9	3.46	0.23	5.3	2.3	4.2
213	77.8	1.102	81.5	1.0	7.54	16.112	7.101	4.637	7.6	3.0	6.6	2.0	3.37	0.21	5.3	2.3	4.3
214	78.3	1.106	81.5	1.0	7.55	16.183	7.193	4.707	7.7	3.0	6.7	2.0	3.40	0.21	5.3	2.4	4.3
215	78.3	1.110	81.5	1.0	7.56	16.262	7.193	4.698	7.7	3.0	6.7	2.0	3.40	0.21	5.3	2.3	4.3
216	78.2	1.115	81.5	1.0	7.56	16.341	7.175	4.675	7.6	3.0	6.6	2.0	3.39	0.21	5.3	2.3	4.3
217	78.3	1.120	81.5	1.0	7.57	16.420	7.193	4.682	7.6	3.0	6.6	2.0	3.39	0.21	5.3	2.3	4.3
218	78.6	1.124	81.5	0.9	7.58	16.491	7.230	4.705	7.7	3.0	6.8	2.0	3.30	0.19	5.3	2.4	4.4
219	78.2	1.128	81.5	1.0	7.58	16.570	7.175	4.650	7.6	3.0	6.6	2.0	3.37	0.21	5.3	2.3	4.3
220	78.9	1.133	81.5	1.0	7.59	16.649	7.285	4.734	7.7	3.0	6.7	2.0	3.38	0.20	5.3	2.4	4.4
221	78.9	1.137	81.5	0.9	7.60	16.720	7.285	4.727	7.7	3.0	6.7	2.0	3.34	0.20	5.3	2.4	4.4
222	79.4	1.142	81.5	0.9	7.61	16.799	7.359	4.779	7.7	3.0	6.8	2.0	3.37	0.20	5.3	2.4	4.4
223	79.4	1.146	81.5	0.9	7.61	16.877	7.359	4.771	7.7	3.0	6.8	2.0	3.37	0.20	5.3	2.4	4.4

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	79.5	1.151	81.5	0.9	7.62	16.956	7.377	4.778	7.7	3.0	6.8	2.0	3.37	0.20	5.3	2.4	4.4
225	80.6	1.155	81.4	0.9	7.63	17.027	7.543	4.907	7.9	3.0	7.0	2.1	3.36	0.18	5.4	2.5	4.5
226	80.6	1.160	81.5	0.9	7.63	17.106	7.543	4.899	7.9	3.0	6.9	2.0	3.39	0.19	5.4	2.4	4.5
227	80.9	1.164	81.5	0.9	7.64	17.185	7.598	4.936	7.9	3.0	7.0	2.0	3.45	0.19	5.4	2.5	4.5
228	80.6	1.169	81.4	0.9	7.65	17.264	7.543	4.882	7.8	3.0	7.0	2.1	3.35	0.18	5.4	2.4	4.5
229	80.8	1.173	81.4	0.9	7.66	17.343	7.579	4.903	7.9	3.0	7.0	2.1	3.36	0.18	5.4	2.5	4.5
230	81.1	1.177	81.4	0.9	7.66	17.414	7.635	4.941	7.9	3.0	7.0	2.1	3.38	0.18	5.4	2.5	4.5
231	81.4	1.182	81.4	0.9	7.67	17.493	7.671	4.963	7.9	3.0	7.0	2.1	3.39	0.18	5.4	2.5	4.6
232	81.6	1.187	81.4	0.9	7.68	17.572	7.708	4.984	7.9	3.0	7.1	2.1	3.40	0.18	5.4	2.5	4.6
233	82.0	1.191	81.3	0.8	7.68	17.643	7.763	5.022	8.0	3.0	7.2	2.2	3.32	0.16	5.5	2.5	4.7
234	81.8	1.195	81.4	0.9	7.69	17.722	7.745	4.998	8.0	3.0	7.1	2.1	3.41	0.18	5.5	2.5	4.6
235	82.0	1.200	81.4	0.8	7.70	17.801	7.763	5.004	8.0	3.0	7.1	2.1	3.38	0.17	5.5	2.5	4.6
236	82.3	1.204	81.4	0.8	7.71	17.872	7.819	5.042	8.0	3.0	7.2	2.1	3.36	0.16	5.5	2.5	4.7
237	82.3	1.208	81.4	0.8	7.71	17.943	7.819	5.034	8.0	3.0	7.1	2.1	3.39	0.17	5.5	2.5	4.6
238	82.8	1.212	81.4	0.8	7.72	18.014	7.892	5.086	8.0	3.0	7.2	2.1	3.42	0.17	5.5	2.5	4.6
239	82.4	1.217	81.4	0.8	7.73	18.093	7.837	5.032	8.0	3.0	7.2	2.1	3.36	0.16	5.5	2.5	4.7
240	82.7	1.221	81.3	0.8	7.73	18.164	7.874	5.054	8.0	3.0	7.2	2.2	3.34	0.16	5.5	2.5	4.7
241	82.8	1.226	81.3	0.8	7.74	18.242	7.892	5.060	8.0	3.0	7.2	2.2	3.34	0.16	5.5	2.5	4.7
242	83.6	1.230	81.4	0.8	7.75	18.313	8.021	5.158	8.1	3.0	7.3	2.1	3.42	0.16	5.5	2.6	4.7
243	83.7	1.234	81.3	0.8	7.75	18.384	8.039	5.165	8.1	3.0	7.4	2.2	3.36	0.15	5.5	2.6	4.8
244	83.5	1.239	81.3	0.8	7.76	18.463	8.003	5.126	8.1	3.0	7.3	2.2	3.34	0.15	5.5	2.6	4.8
245	83.5	1.243	81.3	0.8	7.77	18.534	8.003	5.117	8.1	3.0	7.3	2.2	3.37	0.15	5.5	2.6	4.7
246	83.5	1.247	81.3	0.8	7.78	18.613	8.003	5.108	8.1	3.0	7.3	2.2	3.36	0.15	5.5	2.6	4.7
247	83.9	1.251	81.3	0.8	7.78	18.684	8.076	5.160	8.1	3.0	7.4	2.2	3.35	0.15	5.5	2.6	4.8
248	84.3	1.256	81.2	0.6	7.79	18.755	8.131	5.197	8.2	3.0	7.5	2.3	3.25	0.12	5.6	2.6	4.9
249	84.5	1.260	81.3	0.8	7.80	18.834	8.168	5.218	8.2	3.0	7.4	2.2	3.38	0.15	5.6	2.6	4.8
250	85.0	1.265	81.3	0.7	7.80	18.913	8.242	5.268	8.2	3.0	7.5	2.2	3.37	0.14	5.6	2.6	4.9
251	85.6	1.269	81.2	0.7	7.81	18.984	8.334	5.335	8.3	3.0	7.6	2.3	3.37	0.13	5.6	2.7	4.9
252	85.2	1.274	81.2	0.7	7.82	19.063	8.279	5.281	8.2	3.0	7.5	2.3	3.35	0.13	5.6	2.6	4.9
253	85.6	1.278	81.3	0.7	7.83	19.142	8.334	5.316	8.3	3.0	7.5	2.2	3.39	0.14	5.6	2.7	4.9
254	85.7	1.283	81.3	0.7	7.83	19.221	8.352	5.322	8.3	3.0	7.5	2.2	3.40	0.14	5.6	2.7	4.9
255	86.0	1.287	81.2	0.7	7.84	19.300	8.407	5.357	8.3	3.0	7.6	2.3	3.35	0.13	5.6	2.7	5.0
256	85.3	1.292	81.2	0.7	7.85	19.379	8.297	5.259	8.2	3.0	7.5	2.3	3.31	0.13	5.6	2.6	4.9
257	86.6	1.297	81.2	0.7	7.86	19.458	8.499	5.412	8.4	3.0	7.7	2.3	3.40	0.13	5.7	2.7	5.0
258	86.3	1.301	81.2	0.7	7.86	19.529	8.444	5.360	8.3	3.0	7.6	2.3	3.35	0.13	5.6	2.7	5.0
259	86.1	1.305	81.2	0.7	7.87	19.607	8.426	5.335	8.3	3.0	7.6	2.3	3.34	0.13	5.6	2.7	4.9
260	86.6	1.310	81.2	0.7	7.88	19.686	8.499	5.385	8.3	3.0	7.7	2.3	3.36	0.13	5.6	2.7	5.0
261	86.5	1.314	81.2	0.7	7.89	19.765	8.481	5.361	8.3	3.0	7.6	2.3	3.35	0.13	5.6	2.7	5.0
262	86.5	1.319	81.2	0.6	7.89	19.836	8.481	5.353	8.3	3.0	7.7	2.3	3.32	0.12	5.6	2.7	5.0
263	86.8	1.323	81.1	0.6	7.90	19.915	8.536	5.387	8.3	3.0	7.8	2.4	3.25	0.10	5.6	2.7	5.1
264	87.0	1.327	81.2	0.7	7.91	19.986	8.554	5.394	8.3	3.0	7.7	2.3	3.37	0.12	5.7	2.7	5.0

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
265	87.4	1.330	81.2	0.6	7.91	20.034	8.628	5.447	8.4	3.0	7.8	2.3	3.36	0.12	5.7	2.7	5.0

Specimen B Shear Data

CU Triaxial Test

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File Location
T-5668.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5668
Sample Location: Guilford County (Sta. 405 + 70)
Sample Description: Orange colored clay
Remarks: 23° shear plane with slicken side at the tip of the shear plane.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.723
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.848	2.836	
Height (in)	5.991	5.962	
Weight (grams)	889.00		1054.00
Moisture (%)	32.49		57.08
Dry Density (pcf)	66.96	67.85	
Saturation (%)	57.50	100.00	
Void Ratio	1.532	1.505	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 86.500
Effective Confining Stress (psi): 6.0
Corrected Peak Deviator Stress (psi): 11.193 at reading number: 126

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	38.6	0.087	80.5	0.0	6.32	0.000	0.000	0.000	6.0	6.0	6.0	6.0	1.00	0.00	6.0	0.0	6.0
1	61.9	0.091	81.3	0.8	6.32	0.067	3.677	3.648	9.7	6.0	8.9	5.2	1.70	0.22	7.8	1.8	7.0
2	68.9	0.095	81.7	1.2	6.33	0.144	4.787	4.724	10.7	6.0	9.5	4.8	1.98	0.25	8.4	2.4	7.2
3	74.0	0.099	82.0	1.5	6.33	0.212	5.588	5.494	11.5	6.0	10.0	4.5	2.22	0.27	8.8	2.7	7.3
4	78.2	0.104	82.2	1.7	6.34	0.289	6.262	6.132	12.1	6.0	10.5	4.3	2.41	0.27	9.1	3.1	7.4
5	81.4	0.108	82.3	1.8	6.34	0.366	6.771	6.605	12.6	6.0	10.8	4.2	2.58	0.27	9.3	3.3	7.5
6	84.5	0.112	82.5	2.0	6.35	0.433	7.263	7.063	13.1	6.0	11.1	4.0	2.75	0.28	9.5	3.5	7.6
7	87.6	0.117	82.5	2.0	6.35	0.510	7.754	7.517	13.5	6.0	11.5	4.0	2.90	0.27	9.8	3.8	7.7
8	89.8	0.122	82.6	2.1	6.36	0.587	8.100	7.825	13.8	6.0	11.7	3.9	3.01	0.27	9.9	3.9	7.8
9	91.9	0.126	82.7	2.2	6.36	0.664	8.428	8.114	14.1	6.0	12.0	3.8	3.11	0.27	10.1	4.1	7.9
10	93.9	0.130	82.7	2.2	6.37	0.732	8.737	8.390	14.4	6.0	12.2	3.8	3.20	0.26	10.2	4.2	8.0
11	94.8	0.135	82.7	2.2	6.37	0.809	8.883	8.497	14.5	6.0	12.3	3.8	3.25	0.26	10.3	4.2	8.0
12	95.9	0.140	82.7	2.2	6.38	0.895	9.065	8.636	14.6	6.0	12.4	3.8	3.28	0.26	10.3	4.3	8.1
13	97.3	0.145	82.7	2.2	6.38	0.972	9.283	8.816	14.8	6.0	12.6	3.8	3.35	0.26	10.4	4.4	8.2
14	98.9	0.149	82.8	2.3	6.39	1.049	9.538	9.031	15.0	6.0	12.8	3.7	3.42	0.25	10.5	4.5	8.2
15	100.6	0.153	82.7	2.2	6.39	1.117	9.811	9.269	15.3	6.0	13.0	3.8	3.47	0.24	10.6	4.6	8.4
16	101.6	0.157	82.7	2.2	6.39	1.184	9.957	9.380	15.4	6.0	13.1	3.8	3.50	0.24	10.7	4.7	8.4
17	102.6	0.161	82.7	2.2	6.40	1.251	10.120	9.509	15.5	6.0	13.3	3.8	3.53	0.24	10.8	4.8	8.5
18	103.2	0.166	82.7	2.2	6.40	1.328	10.212	9.561	15.6	6.0	13.3	3.8	3.55	0.24	10.8	4.8	8.5

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	104.7	0.170	82.7	2.2	6.41	1.396	10.448	9.761	15.8	6.0	13.5	3.8	3.58	0.23	10.9	4.9	8.7
20	105.6	0.174	82.7	2.2	6.41	1.463	10.594	9.871	15.9	6.0	13.7	3.8	3.59	0.22	10.9	4.9	8.7
21	106.2	0.178	82.7	2.2	6.42	1.530	10.685	9.928	15.9	6.0	13.7	3.8	3.62	0.22	11.0	5.0	8.7
22	107.1	0.182	82.7	2.2	6.42	1.598	10.830	10.038	16.0	6.0	13.9	3.8	3.63	0.22	11.0	5.0	8.8
23	107.5	0.187	82.7	2.2	6.43	1.675	10.903	10.071	16.1	6.0	13.9	3.8	3.64	0.22	11.0	5.0	8.8
24	107.5	0.191	82.7	2.2	6.43	1.742	10.903	10.038	16.0	6.0	13.9	3.8	3.63	0.22	11.0	5.0	8.8
25	107.5	0.195	82.7	2.2	6.44	1.810	10.903	10.004	16.0	6.0	13.8	3.8	3.60	0.22	11.0	5.0	8.8
26	108.4	0.199	82.7	2.2	6.44	1.877	11.031	10.096	16.1	6.0	13.9	3.8	3.63	0.21	11.1	5.0	8.9
27	108.7	0.203	82.6	2.1	6.45	1.954	11.085	10.111	16.1	6.0	14.0	3.9	3.61	0.21	11.1	5.1	8.9
28	109.2	0.208	82.6	2.1	6.45	2.031	11.158	10.156	16.2	6.0	14.0	3.9	3.62	0.21	11.1	5.1	9.0
29	109.5	0.212	82.6	2.1	6.45	2.098	11.213	10.202	16.2	6.0	14.1	3.9	3.63	0.21	11.1	5.1	9.0
30	109.7	0.216	82.6	2.1	6.46	2.175	11.249	10.229	16.2	6.0	14.1	3.9	3.64	0.21	11.1	5.1	9.0
31	110.2	0.220	82.6	2.1	6.46	2.243	11.322	10.292	16.3	6.0	14.2	3.9	3.66	0.21	11.1	5.1	9.0
32	110.0	0.225	82.6	2.1	6.47	2.320	11.285	10.248	16.3	6.0	14.1	3.9	3.65	0.21	11.1	5.1	9.0
33	110.0	0.230	82.6	2.1	6.47	2.397	11.285	10.239	16.2	6.0	14.1	3.9	3.62	0.21	11.1	5.1	9.0
34	110.4	0.234	82.6	2.1	6.48	2.474	11.358	10.302	16.3	6.0	14.2	3.9	3.64	0.20	11.2	5.2	9.1
35	110.5	0.239	82.6	2.1	6.48	2.551	11.376	10.311	16.3	6.0	14.2	3.9	3.62	0.20	11.2	5.2	9.1
36	110.8	0.243	82.6	2.1	6.49	2.628	11.413	10.337	16.3	6.0	14.2	3.9	3.65	0.20	11.2	5.2	9.1
37	110.5	0.248	82.6	2.1	6.50	2.714	11.376	10.292	16.3	6.0	14.2	3.9	3.64	0.20	11.1	5.1	9.0
38	111.0	0.253	82.6	2.1	6.50	2.791	11.449	10.354	16.4	6.0	14.3	3.9	3.63	0.20	11.2	5.2	9.1
39	110.9	0.258	82.6	2.1	6.51	2.878	11.431	10.326	16.3	6.0	14.2	3.9	3.65	0.20	11.2	5.2	9.1
40	111.0	0.263	82.6	2.1	6.51	2.955	11.449	10.335	16.3	6.0	14.2	3.9	3.65	0.20	11.2	5.2	9.1
41	111.0	0.268	82.6	2.1	6.52	3.042	11.449	10.325	16.3	6.0	14.3	3.9	3.63	0.20	11.2	5.2	9.1
42	110.9	0.273	82.6	2.1	6.52	3.119	11.431	10.299	16.3	6.0	14.2	3.9	3.62	0.20	11.2	5.1	9.1
43	110.5	0.277	82.6	2.1	6.53	3.196	11.376	10.237	16.2	6.0	14.2	3.9	3.60	0.20	11.1	5.1	9.0
44	110.5	0.282	82.6	2.1	6.53	3.273	11.376	10.229	16.2	6.0	14.2	3.9	3.60	0.20	11.1	5.1	9.0
45	110.8	0.286	82.6	2.1	6.54	3.350	11.413	10.255	16.3	6.0	14.2	3.9	3.61	0.20	11.1	5.1	9.1
46	111.0	0.291	82.6	2.1	6.54	3.427	11.449	10.281	16.3	6.0	14.2	3.9	3.62	0.20	11.1	5.1	9.1
47	111.1	0.296	82.5	2.0	6.55	3.504	11.467	10.290	16.3	6.0	14.2	4.0	3.60	0.20	11.1	5.1	9.1
48	111.5	0.300	82.5	2.0	6.55	3.581	11.522	10.334	16.3	6.0	14.3	4.0	3.61	0.20	11.2	5.2	9.1
49	111.7	0.304	82.5	2.0	6.56	3.648	11.558	10.361	16.4	6.0	14.3	4.0	3.62	0.20	11.2	5.2	9.1
50	111.7	0.309	82.5	2.0	6.56	3.725	11.558	10.352	16.4	6.0	14.3	4.0	3.60	0.19	11.2	5.2	9.2
51	111.7	0.313	82.5	2.0	6.57	3.802	11.558	10.343	16.3	6.0	14.3	4.0	3.61	0.20	11.2	5.2	9.1
52	111.9	0.318	82.5	2.0	6.57	3.879	11.595	10.370	16.4	6.0	14.4	4.0	3.60	0.19	11.2	5.2	9.2
53	111.7	0.323	82.5	2.0	6.58	3.956	11.558	10.326	16.3	6.0	14.3	4.0	3.59	0.20	11.2	5.2	9.2
54	112.1	0.327	82.5	2.0	6.58	4.033	11.631	10.387	16.4	6.0	14.4	4.0	3.60	0.19	11.2	5.2	9.2
55	111.9	0.332	82.5	2.0	6.59	4.110	11.595	10.343	16.3	6.0	14.3	4.0	3.59	0.19	11.2	5.2	9.2
56	112.0	0.337	82.5	2.0	6.60	4.206	11.613	10.349	16.4	6.0	14.3	4.0	3.59	0.19	11.2	5.2	9.2
57	112.4	0.343	82.5	2.0	6.60	4.293	11.668	10.391	16.4	6.0	14.4	4.0	3.59	0.19	11.2	5.2	9.2
58	112.6	0.347	82.5	2.0	6.61	4.370	11.704	10.417	16.4	6.0	14.4	4.0	3.59	0.19	11.2	5.2	9.2
59	112.5	0.351	82.5	2.0	6.61	4.437	11.686	10.392	16.4	6.0	14.4	4.0	3.59	0.19	11.2	5.2	9.2

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	112.8	0.355	82.5	2.0	6.62	4.505	11.740	10.436	16.4	6.0	14.5	4.0	3.58	0.19	11.2	5.2	9.3
61	113.3	0.359	82.5	2.0	6.62	4.572	11.813	10.498	16.5	6.0	14.5	4.0	3.59	0.19	11.3	5.2	9.3
62	113.3	0.363	82.5	2.0	6.63	4.639	11.813	10.490	16.5	6.0	14.5	4.0	3.59	0.19	11.2	5.2	9.3
63	113.8	0.368	82.5	2.0	6.63	4.716	11.886	10.550	16.6	6.0	14.6	4.0	3.61	0.19	11.3	5.3	9.3
64	114.2	0.372	82.5	2.0	6.64	4.784	11.959	10.611	16.6	6.0	14.7	4.0	3.62	0.18	11.3	5.3	9.4
65	114.8	0.376	82.4	1.9	6.64	4.851	12.050	10.690	16.7	6.0	14.8	4.1	3.62	0.18	11.3	5.3	9.4
66	114.8	0.380	82.4	1.9	6.65	4.919	12.050	10.682	16.7	6.0	14.8	4.1	3.62	0.18	11.3	5.3	9.4
67	114.7	0.384	82.4	1.9	6.65	4.986	12.032	10.656	16.7	6.0	14.7	4.1	3.61	0.18	11.3	5.3	9.4
68	115.0	0.389	82.4	1.9	6.66	5.063	12.086	10.699	16.7	6.0	14.8	4.1	3.62	0.18	11.4	5.3	9.4
69	115.5	0.393	82.4	1.9	6.66	5.130	12.159	10.760	16.8	6.0	14.8	4.1	3.64	0.18	11.4	5.4	9.5
70	116.2	0.397	82.4	1.9	6.67	5.198	12.268	10.855	16.9	6.0	14.9	4.1	3.66	0.18	11.4	5.4	9.5
71	116.6	0.401	82.4	1.9	6.67	5.275	12.341	10.915	16.9	6.0	15.0	4.1	3.68	0.18	11.5	5.5	9.5
72	116.4	0.405	82.4	1.9	6.68	5.342	12.305	10.872	16.9	6.0	15.0	4.1	3.65	0.17	11.4	5.4	9.5
73	116.4	0.410	82.4	1.9	6.68	5.419	12.305	10.862	16.9	6.0	15.0	4.1	3.65	0.17	11.4	5.4	9.5
74	116.5	0.414	82.4	1.9	6.69	5.496	12.323	10.870	16.9	6.0	15.0	4.1	3.65	0.17	11.4	5.4	9.5
75	116.4	0.418	82.4	1.9	6.69	5.563	12.305	10.845	16.8	6.0	15.0	4.1	3.64	0.17	11.4	5.4	9.5
76	116.7	0.423	82.4	1.9	6.70	5.640	12.359	10.887	16.9	6.0	15.0	4.1	3.65	0.17	11.4	5.4	9.5
77	117.1	0.428	82.4	1.9	6.70	5.717	12.414	10.929	16.9	6.0	15.0	4.1	3.66	0.17	11.5	5.5	9.6
78	117.3	0.432	82.4	1.9	6.71	5.794	12.450	10.953	17.0	6.0	15.1	4.1	3.67	0.17	11.5	5.5	9.6
79	117.3	0.437	82.4	1.9	6.71	5.871	12.450	10.944	16.9	6.0	15.1	4.1	3.65	0.17	11.5	5.5	9.6
80	117.4	0.442	82.3	1.8	6.72	5.958	12.469	10.950	17.0	6.0	15.1	4.2	3.63	0.17	11.5	5.5	9.6
81	117.6	0.446	82.4	1.9	6.72	6.035	12.487	10.958	17.0	6.0	15.1	4.1	3.65	0.17	11.5	5.5	9.6
82	116.9	0.452	82.4	1.9	6.73	6.122	12.378	10.844	16.8	6.0	15.0	4.1	3.62	0.17	11.4	5.4	9.6
83	117.0	0.456	82.4	1.9	6.74	6.199	12.396	10.852	16.9	6.0	15.0	4.1	3.62	0.17	11.4	5.4	9.6
84	116.6	0.461	82.4	1.9	6.74	6.285	12.341	10.790	16.8	6.0	14.9	4.1	3.61	0.17	11.4	5.4	9.5
85	116.9	0.466	82.4	1.9	6.75	6.362	12.378	10.814	16.8	6.0	14.9	4.1	3.62	0.17	11.4	5.4	9.5
86	116.7	0.471	82.3	1.8	6.75	6.439	12.359	10.788	16.8	6.0	15.0	4.2	3.59	0.17	11.4	5.4	9.6
87	116.6	0.476	82.3	1.8	6.76	6.526	12.341	10.760	16.8	6.0	14.9	4.2	3.58	0.17	11.4	5.4	9.5
88	116.6	0.480	82.3	1.8	6.77	6.593	12.341	10.752	16.8	6.0	14.9	4.2	3.58	0.17	11.4	5.4	9.5
89	117.0	0.484	82.3	1.8	6.77	6.670	12.396	10.793	16.8	6.0	15.0	4.2	3.59	0.17	11.4	5.4	9.6
90	116.6	0.489	82.3	1.8	6.78	6.747	12.341	10.733	16.7	6.0	14.9	4.2	3.58	0.17	11.4	5.4	9.5
91	117.0	0.493	82.3	1.8	6.78	6.815	12.396	10.775	16.8	6.0	14.9	4.2	3.59	0.17	11.4	5.4	9.6
92	117.2	0.498	82.3	1.8	6.79	6.892	12.432	10.800	16.8	6.0	15.0	4.2	3.59	0.17	11.4	5.4	9.6
93	117.2	0.502	82.3	1.8	6.79	6.969	12.432	10.790	16.8	6.0	15.0	4.2	3.57	0.17	11.4	5.4	9.6
94	117.3	0.507	82.3	1.8	6.80	7.046	12.450	10.798	16.8	6.0	15.0	4.2	3.57	0.17	11.4	5.4	9.6
95	117.9	0.511	82.3	1.8	6.80	7.123	12.541	10.873	16.9	6.0	15.1	4.2	3.57	0.16	11.4	5.4	9.7
96	118.0	0.515	82.3	1.8	6.81	7.190	12.560	10.881	16.9	6.0	15.1	4.2	3.59	0.17	11.4	5.4	9.6
97	117.8	0.520	82.3	1.8	6.81	7.267	12.523	10.838	16.8	6.0	15.0	4.2	3.58	0.17	11.4	5.4	9.6
98	117.7	0.525	82.3	1.8	6.82	7.344	12.505	10.811	16.8	6.0	15.0	4.2	3.58	0.17	11.4	5.4	9.6
99	117.4	0.530	82.3	1.8	6.83	7.431	12.469	10.766	16.8	6.0	15.0	4.2	3.57	0.17	11.4	5.4	9.6
100	117.1	0.535	82.3	1.8	6.83	7.517	12.414	10.705	16.7	6.0	14.9	4.2	3.55	0.17	11.4	5.4	9.5

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	114.3	0.541	82.4	1.9	6.84	7.614	11.977	10.290	16.3	6.0	14.4	4.1	3.49	0.18	11.1	5.1	9.3
102	115.5	0.545	82.3	1.8	6.85	7.691	12.159	10.448	16.5	6.0	14.6	4.2	3.49	0.17	11.2	5.2	9.4
103	115.9	0.550	82.3	1.8	6.85	7.768	12.232	10.506	16.5	6.0	14.7	4.2	3.51	0.17	11.3	5.3	9.4
104	116.5	0.554	82.3	1.8	6.86	7.835	12.323	10.582	16.6	6.0	14.8	4.2	3.52	0.17	11.3	5.3	9.5
105	116.9	0.558	82.3	1.8	6.86	7.902	12.378	10.624	16.6	6.0	14.8	4.2	3.52	0.17	11.3	5.3	9.5
106	117.3	0.562	82.3	1.8	6.87	7.970	12.450	10.683	16.7	6.0	14.9	4.2	3.55	0.17	11.3	5.3	9.5
107	117.9	0.566	82.3	1.8	6.87	8.037	12.541	10.758	16.8	6.0	15.0	4.2	3.55	0.17	11.4	5.4	9.6
108	118.6	0.570	82.3	1.8	6.88	8.104	12.651	10.850	16.9	6.0	15.1	4.2	3.57	0.16	11.4	5.4	9.6
109	118.4	0.574	82.3	1.8	6.88	8.172	12.614	10.808	16.8	6.0	15.0	4.2	3.56	0.16	11.4	5.4	9.6
110	118.7	0.578	82.2	1.8	6.89	8.249	12.669	10.848	16.9	6.0	15.1	4.3	3.55	0.16	11.4	5.4	9.7
111	118.5	0.582	82.3	1.8	6.89	8.316	12.632	10.806	16.8	6.0	15.0	4.2	3.56	0.16	11.4	5.4	9.6
112	118.7	0.587	82.3	1.8	6.90	8.384	12.669	10.831	16.8	6.0	15.1	4.2	3.57	0.16	11.4	5.4	9.6
113	118.9	0.591	82.3	1.8	6.90	8.451	12.705	10.856	16.9	6.0	15.1	4.2	3.57	0.16	11.4	5.4	9.7
114	119.3	0.595	82.3	1.8	6.91	8.528	12.760	10.896	16.9	6.0	15.1	4.2	3.58	0.16	11.5	5.4	9.7
115	119.5	0.599	82.3	1.8	6.91	8.595	12.796	10.921	16.9	6.0	15.1	4.2	3.59	0.16	11.5	5.5	9.7
116	119.5	0.604	82.2	1.8	6.92	8.672	12.796	10.911	16.9	6.0	15.2	4.3	3.57	0.16	11.5	5.5	9.7
117	119.5	0.608	82.2	1.7	6.92	8.740	12.796	10.902	16.9	6.0	15.2	4.3	3.55	0.16	11.5	5.5	9.7
118	120.0	0.612	82.2	1.8	6.93	8.817	12.869	10.959	17.0	6.0	15.2	4.3	3.58	0.16	11.5	5.5	9.7
119	120.0	0.617	82.2	1.8	6.94	8.894	12.869	10.949	17.0	6.0	15.2	4.3	3.58	0.16	11.5	5.5	9.7
120	119.9	0.622	82.2	1.7	6.94	8.971	12.851	10.922	16.9	6.0	15.2	4.3	3.55	0.16	11.5	5.5	9.7
121	119.9	0.626	82.2	1.7	6.95	9.038	12.851	10.914	16.9	6.0	15.2	4.3	3.55	0.16	11.5	5.5	9.7
122	120.3	0.630	82.2	1.7	6.95	9.115	12.924	10.970	17.0	6.0	15.3	4.3	3.56	0.16	11.5	5.5	9.8
123	120.8	0.635	82.2	1.7	6.96	9.202	12.996	11.025	17.0	6.0	15.3	4.3	3.58	0.16	11.5	5.5	9.8
124	121.0	0.640	82.2	1.7	6.97	9.279	13.033	11.048	17.1	6.0	15.3	4.3	3.58	0.16	11.5	5.5	9.8
125	121.6	0.644	82.2	1.7	6.97	9.356	13.124	11.120	17.1	6.0	15.4	4.3	3.60	0.15	11.6	5.6	9.8
126	122.2	0.649	82.2	1.7	6.98	9.433	13.215	11.193	17.2	6.0	15.5	4.3	3.61	0.15	11.6	5.6	9.9
127	121.6	0.654	82.2	1.7	6.98	9.519	13.124	11.099	17.1	6.0	15.4	4.3	3.58	0.15	11.6	5.5	9.9
128	120.9	0.659	82.2	1.7	6.99	9.596	13.015	10.990	17.0	6.0	15.3	4.3	3.55	0.15	11.5	5.5	9.8
129	120.3	0.663	82.2	1.7	7.00	9.673	12.924	10.898	16.9	6.0	15.2	4.3	3.53	0.16	11.5	5.4	9.8
130	120.1	0.668	82.2	1.7	7.00	9.750	12.887	10.855	16.9	6.0	15.2	4.3	3.52	0.16	11.4	5.4	9.7
131	119.7	0.673	82.2	1.7	7.01	9.827	12.833	10.796	16.8	6.0	15.1	4.3	3.50	0.16	11.4	5.4	9.7
132	119.2	0.677	82.2	1.7	7.01	9.904	12.742	10.704	16.7	6.0	15.0	4.3	3.47	0.16	11.4	5.4	9.7
133	119.2	0.682	82.2	1.7	7.02	9.981	12.742	10.694	16.7	6.0	15.0	4.3	3.48	0.16	11.4	5.3	9.7
134	119.3	0.686	82.2	1.7	7.03	10.058	12.760	10.701	16.7	6.0	15.0	4.3	3.47	0.16	11.4	5.4	9.7
135	119.4	0.690	82.2	1.7	7.03	10.126	12.778	10.709	16.7	6.0	15.0	4.3	3.47	0.16	11.4	5.4	9.7
136	119.4	0.695	82.2	1.7	7.04	10.203	12.778	10.699	16.7	6.0	15.0	4.3	3.47	0.16	11.4	5.3	9.7
137	119.4	0.700	82.2	1.7	7.04	10.280	12.778	10.689	16.7	6.0	15.0	4.3	3.46	0.16	11.3	5.3	9.7
138	119.7	0.704	82.2	1.7	7.05	10.357	12.833	10.728	16.7	6.0	15.1	4.3	3.47	0.16	11.4	5.4	9.7
139	119.9	0.709	82.1	1.6	7.06	10.434	12.851	10.734	16.7	6.0	15.1	4.4	3.46	0.15	11.4	5.4	9.7
140	119.7	0.713	82.2	1.7	7.06	10.511	12.833	10.708	16.7	6.0	15.0	4.3	3.47	0.16	11.4	5.4	9.7
141	119.9	0.718	82.1	1.6	7.07	10.588	12.851	10.715	16.7	6.0	15.1	4.4	3.45	0.15	11.4	5.4	9.7

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	119.6	0.723	82.1	1.6	7.07	10.665	12.814	10.672	16.7	6.0	15.0	4.4	3.44	0.15	11.3	5.3	9.7
143	120.1	0.727	82.1	1.6	7.08	10.742	12.887	10.727	16.7	6.0	15.1	4.4	3.46	0.15	11.4	5.4	9.7
144	120.0	0.732	82.1	1.6	7.09	10.828	12.869	10.700	16.7	6.0	15.1	4.4	3.45	0.15	11.4	5.3	9.7
145	119.9	0.738	82.1	1.6	7.09	10.925	12.851	10.671	16.7	6.0	15.0	4.4	3.44	0.15	11.3	5.3	9.7
146	120.0	0.743	82.1	1.6	7.10	11.002	12.869	10.678	16.7	6.0	15.0	4.4	3.44	0.15	11.3	5.3	9.7
147	119.9	0.747	82.1	1.6	7.11	11.079	12.851	10.652	16.7	6.0	15.0	4.4	3.42	0.15	11.3	5.3	9.7
148	120.3	0.752	82.1	1.6	7.11	11.156	12.924	10.706	16.7	6.0	15.1	4.4	3.45	0.15	11.4	5.4	9.7
149	120.2	0.756	82.1	1.6	7.12	11.223	12.905	10.681	16.7	6.0	15.1	4.4	3.43	0.15	11.3	5.3	9.7
150	120.8	0.759	82.1	1.6	7.12	11.281	12.996	10.755	16.8	6.0	15.2	4.4	3.45	0.15	11.4	5.4	9.8
151	120.7	0.764	82.1	1.6	7.13	11.358	12.978	10.729	16.7	6.0	15.1	4.4	3.44	0.15	11.4	5.4	9.8
152	120.9	0.768	82.1	1.6	7.13	11.425	13.015	10.752	16.8	6.0	15.1	4.4	3.44	0.15	11.4	5.4	9.8
153	121.2	0.772	82.1	1.6	7.14	11.493	13.069	10.792	16.8	6.0	15.2	4.4	3.45	0.15	11.4	5.4	9.8
154	121.3	0.776	82.1	1.6	7.15	11.560	13.087	10.799	16.8	6.0	15.2	4.4	3.44	0.15	11.4	5.4	9.8
155	121.3	0.780	82.1	1.6	7.15	11.627	13.087	10.790	16.8	6.0	15.2	4.4	3.45	0.15	11.4	5.4	9.8
156	121.6	0.784	82.1	1.6	7.16	11.695	13.124	10.813	16.8	6.0	15.2	4.4	3.44	0.15	11.4	5.4	9.8
157	121.7	0.788	82.1	1.6	7.16	11.762	13.142	10.821	16.8	6.0	15.2	4.4	3.44	0.15	11.4	5.4	9.8
158	121.6	0.792	82.1	1.6	7.17	11.829	13.124	10.796	16.8	6.0	15.2	4.4	3.44	0.15	11.4	5.4	9.8
159	121.6	0.797	82.1	1.6	7.17	11.906	13.124	10.786	16.8	6.0	15.2	4.4	3.44	0.15	11.4	5.4	9.8
160	121.6	0.801	82.1	1.6	7.18	11.974	13.124	10.777	16.8	6.0	15.2	4.4	3.43	0.15	11.4	5.4	9.8
161	122.5	0.805	82.0	1.5	7.18	12.051	13.269	10.895	16.9	6.0	15.4	4.5	3.44	0.14	11.5	5.4	9.9
162	120.7	0.810	82.1	1.6	7.19	12.128	12.978	10.629	16.6	6.0	15.1	4.4	3.40	0.15	11.3	5.3	9.7
163	121.8	0.814	82.1	1.6	7.20	12.205	13.160	10.778	16.8	6.0	15.2	4.4	3.43	0.15	11.4	5.4	9.8
164	122.7	0.819	82.0	1.5	7.20	12.282	13.306	10.896	16.9	6.0	15.4	4.5	3.45	0.14	11.5	5.4	9.9
165	123.6	0.823	82.0	1.5	7.21	12.349	13.452	11.015	17.0	6.0	15.5	4.5	3.47	0.14	11.5	5.5	10.0
166	123.9	0.828	82.0	1.5	7.22	12.426	13.488	11.036	17.0	6.0	15.5	4.5	3.48	0.14	11.5	5.5	10.0
167	123.4	0.833	82.0	1.5	7.22	12.513	13.415	10.961	17.0	6.0	15.4	4.5	3.46	0.14	11.5	5.5	9.9
168	123.1	0.837	82.0	1.5	7.23	12.590	13.361	10.903	16.9	6.0	15.4	4.5	3.45	0.14	11.5	5.5	9.9
169	122.8	0.842	82.0	1.5	7.24	12.667	13.324	10.861	16.9	6.0	15.3	4.5	3.42	0.14	11.4	5.4	9.9
170	122.6	0.847	82.0	1.5	7.24	12.753	13.288	10.817	16.8	6.0	15.3	4.5	3.43	0.14	11.4	5.4	9.9
171	122.0	0.852	82.0	1.5	7.25	12.830	13.197	10.728	16.7	6.0	15.2	4.5	3.39	0.14	11.4	5.4	9.8
172	121.9	0.857	82.0	1.5	7.26	12.917	13.178	10.701	16.7	6.0	15.2	4.5	3.39	0.14	11.4	5.4	9.8
173	122.0	0.861	82.0	1.5	7.26	12.994	13.197	10.706	16.7	6.0	15.2	4.5	3.39	0.14	11.4	5.4	9.8
174	121.6	0.866	82.0	1.5	7.27	13.071	13.124	10.633	16.6	6.0	15.1	4.5	3.37	0.14	11.3	5.3	9.8
175	121.6	0.871	82.0	1.5	7.28	13.148	13.124	10.623	16.6	6.0	15.1	4.5	3.37	0.14	11.3	5.3	9.8
176	121.6	0.875	82.0	1.5	7.28	13.225	13.124	10.613	16.6	6.0	15.1	4.5	3.35	0.14	11.3	5.3	9.8
177	121.3	0.880	82.0	1.5	7.29	13.302	13.087	10.571	16.6	6.0	15.1	4.5	3.34	0.14	11.3	5.3	9.8
178	121.3	0.884	82.0	1.5	7.29	13.370	13.087	10.562	16.6	6.0	15.1	4.5	3.34	0.14	11.3	5.3	9.8
179	121.5	0.888	82.0	1.5	7.30	13.447	13.106	10.568	16.6	6.0	15.1	4.5	3.34	0.14	11.3	5.3	9.8
180	121.9	0.893	82.0	1.5	7.31	13.524	13.178	10.621	16.6	6.0	15.1	4.5	3.35	0.14	11.3	5.3	9.8
181	122.3	0.898	82.0	1.5	7.31	13.601	13.233	10.658	16.7	6.0	15.2	4.5	3.36	0.14	11.3	5.3	9.8
182	122.3	0.902	82.0	1.5	7.32	13.668	13.233	10.649	16.7	6.0	15.2	4.5	3.36	0.14	11.3	5.3	9.8

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	122.7	0.906	82.0	1.5	7.33	13.745	13.306	10.701	16.7	6.0	15.2	4.5	3.36	0.14	11.4	5.4	9.9
184	122.8	0.911	82.0	1.5	7.33	13.822	13.324	10.707	16.7	6.0	15.3	4.5	3.36	0.14	11.4	5.4	9.9
185	122.8	0.915	82.0	1.5	7.34	13.899	13.324	10.697	16.7	6.0	15.2	4.5	3.35	0.14	11.4	5.3	9.9
186	122.5	0.920	82.0	1.5	7.35	13.976	13.269	10.639	16.6	6.0	15.2	4.5	3.34	0.14	11.3	5.3	9.9
187	122.2	0.925	82.0	1.5	7.35	14.053	13.215	10.582	16.6	6.0	15.1	4.5	3.33	0.14	11.3	5.3	9.8
188	122.4	0.930	82.0	1.5	7.36	14.140	13.251	10.602	16.6	6.0	15.1	4.5	3.33	0.14	11.3	5.3	9.8
189	121.6	0.934	82.0	1.5	7.37	14.217	13.124	10.483	16.5	6.0	15.0	4.5	3.31	0.14	11.2	5.2	9.8
190	121.1	0.939	82.0	1.5	7.37	14.303	13.051	10.409	16.4	6.0	15.0	4.5	3.29	0.14	11.2	5.2	9.7
191	120.9	0.944	81.9	1.4	7.38	14.380	13.015	10.368	16.4	6.0	14.9	4.6	3.27	0.14	11.2	5.2	9.8
192	120.5	0.949	81.9	1.4	7.39	14.457	12.960	10.311	16.3	6.0	14.9	4.6	3.25	0.14	11.2	5.2	9.7
193	120.2	0.953	81.9	1.4	7.39	14.525	12.905	10.255	16.3	6.0	14.8	4.6	3.24	0.14	11.1	5.1	9.7
194	120.7	0.957	81.9	1.4	7.40	14.592	12.978	10.309	16.3	6.0	14.9	4.6	3.24	0.14	11.2	5.2	9.8
195	120.3	0.961	81.9	1.4	7.41	14.669	12.924	10.252	16.3	6.0	14.8	4.6	3.24	0.14	11.1	5.1	9.7
196	120.7	0.965	81.9	1.4	7.41	14.736	12.978	10.290	16.3	6.0	14.9	4.6	3.25	0.14	11.1	5.1	9.7
197	120.8	0.969	81.9	1.4	7.42	14.804	12.996	10.297	16.3	6.0	14.9	4.6	3.24	0.14	11.2	5.1	9.8
198	120.5	0.973	81.9	1.4	7.42	14.871	12.960	10.257	16.3	6.0	14.9	4.6	3.23	0.14	11.1	5.1	9.7
199	118.8	0.978	81.9	1.4	7.43	14.948	12.687	9.509	15.5	6.0	14.1	4.6	3.07	0.15	10.8	4.8	9.4
200	119.7	0.982	81.9	1.4	7.44	15.015	12.833	9.622	15.6	6.0	14.2	4.6	3.10	0.15	10.8	4.8	9.4
201	120.2	0.987	81.9	1.4	7.44	15.092	12.905	9.671	15.7	6.0	14.3	4.6	3.10	0.14	10.8	4.8	9.4
202	120.9	0.991	81.9	1.4	7.45	15.160	13.015	10.266	16.3	6.0	14.9	4.6	3.23	0.14	11.1	5.1	9.7
203	121.1	0.995	81.9	1.4	7.45	15.237	13.051	9.771	15.8	6.0	14.4	4.6	3.12	0.14	10.9	4.9	9.5
204	121.2	1.000	81.9	1.4	7.46	15.314	13.069	9.774	15.8	6.0	14.4	4.6	3.12	0.14	10.9	4.9	9.5
205	121.1	1.004	81.9	1.4	7.47	15.381	13.051	9.747	15.8	6.0	14.4	4.6	3.10	0.14	10.9	4.9	9.5
206	121.5	1.008	81.8	1.3	7.47	15.458	13.106	9.781	15.8	6.0	14.4	4.7	3.10	0.14	10.9	4.9	9.6
207	121.5	1.013	81.9	1.4	7.48	15.535	13.106	9.768	15.8	6.0	14.4	4.6	3.11	0.14	10.9	4.9	9.5
208	121.7	1.018	81.9	1.4	7.49	15.612	13.142	9.786	15.8	6.0	14.4	4.6	3.11	0.14	10.9	4.9	9.5
209	121.7	1.022	81.8	1.3	7.49	15.689	13.142	9.774	15.8	6.0	14.4	4.7	3.10	0.14	10.9	4.9	9.5
210	121.9	1.027	81.8	1.3	7.50	15.766	13.178	9.792	15.8	6.0	14.5	4.7	3.10	0.14	10.9	4.9	9.6
211	121.8	1.031	81.9	1.4	7.51	15.843	13.160	9.763	15.8	6.0	14.4	4.6	3.11	0.14	10.9	4.9	9.5
212	121.5	1.036	81.8	1.3	7.52	15.920	13.106	9.705	15.7	6.0	14.4	4.7	3.08	0.14	10.9	4.9	9.5
213	121.3	1.040	81.8	1.3	7.52	15.997	13.087	9.677	15.7	6.0	14.3	4.7	3.08	0.14	10.8	4.8	9.5
214	120.9	1.046	81.8	1.3	7.53	16.084	13.015	9.601	15.6	6.0	14.3	4.7	3.06	0.14	10.8	4.8	9.5
215	121.2	1.050	81.8	1.3	7.54	16.161	13.069	9.635	15.6	6.0	14.3	4.7	3.07	0.14	10.8	4.8	9.5
216	121.0	1.055	81.8	1.3	7.54	16.238	13.033	9.591	15.6	6.0	14.3	4.7	3.05	0.14	10.8	4.8	9.5
217	120.4	1.059	81.8	1.3	7.55	16.315	12.942	9.503	15.5	6.0	14.2	4.7	3.03	0.14	10.8	4.8	9.4
218	120.4	1.064	81.8	1.3	7.56	16.392	12.942	9.490	15.5	6.0	14.2	4.7	3.04	0.14	10.7	4.7	9.4
219	120.7	1.069	81.8	1.3	7.56	16.469	12.978	9.508	15.5	6.0	14.2	4.7	3.03	0.14	10.8	4.8	9.4
220	120.3	1.073	81.8	1.3	7.57	16.546	12.924	9.450	15.5	6.0	14.1	4.7	3.01	0.14	10.7	4.7	9.4
221	120.1	1.077	81.8	1.3	7.58	16.613	12.887	9.408	15.4	6.0	14.1	4.7	2.99	0.14	10.7	4.7	9.4
222	120.3	1.082	81.8	1.3	7.59	16.690	12.924	9.426	15.4	6.0	14.1	4.7	3.01	0.14	10.7	4.7	9.4
223	120.3	1.086	81.8	1.3	7.59	16.767	12.924	9.414	15.4	6.0	14.1	4.7	3.01	0.14	10.7	4.7	9.4

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	120.0	1.090	81.8	1.3	7.60	16.835	12.869	9.357	15.4	6.0	14.1	4.7	2.98	0.14	10.7	4.7	9.4
225	120.0	1.095	81.8	1.3	7.61	16.912	12.869	9.345	15.3	6.0	14.1	4.7	2.98	0.14	10.7	4.7	9.4
226	120.0	1.099	81.8	1.3	7.61	16.979	12.869	9.334	15.3	6.0	14.1	4.7	2.98	0.14	10.7	4.7	9.4
227	118.1	1.104	81.8	1.3	7.62	17.066	12.578	9.078	15.1	6.0	13.8	4.7	2.94	0.14	10.5	4.5	9.2
228	118.5	1.109	81.8	1.3	7.63	17.143	12.632	9.111	15.1	6.0	13.8	4.7	2.93	0.14	10.6	4.6	9.3
229	118.9	1.113	81.8	1.3	7.63	17.220	12.705	9.159	15.2	6.0	13.9	4.7	2.94	0.14	10.6	4.6	9.3
230	119.2	1.118	81.8	1.3	7.64	17.297	12.742	9.177	15.2	6.0	13.9	4.7	2.94	0.14	10.6	4.6	9.3
231	118.8	1.123	81.8	1.3	7.65	17.374	12.687	9.119	15.1	6.0	13.8	4.7	2.93	0.14	10.6	4.6	9.3
232	118.7	1.127	81.8	1.3	7.65	17.451	12.669	9.092	15.1	6.0	13.8	4.7	2.93	0.14	10.5	4.5	9.3
233	118.8	1.132	81.8	1.3	7.66	17.537	12.687	9.093	15.1	6.0	13.8	4.7	2.93	0.14	10.6	4.5	9.3
234	118.9	1.137	81.8	1.3	7.67	17.614	12.705	9.096	15.1	6.0	13.8	4.7	2.93	0.14	10.6	4.5	9.3
235	119.2	1.141	81.8	1.3	7.68	17.691	12.742	9.113	15.1	6.0	13.9	4.7	2.92	0.14	10.6	4.6	9.3
236	119.7	1.146	81.7	1.2	7.68	17.768	12.833	9.176	15.2	6.0	14.0	4.8	2.92	0.13	10.6	4.6	9.4
237	120.2	1.151	81.8	1.3	7.69	17.845	12.905	9.223	15.2	6.0	14.0	4.7	2.94	0.14	10.6	4.6	9.4
238	120.4	1.155	81.8	1.3	7.70	17.922	12.942	9.240	15.2	6.0	14.0	4.7	2.95	0.14	10.6	4.6	9.4
239	119.9	1.159	81.7	1.2	7.71	17.990	12.851	9.155	15.2	6.0	13.9	4.8	2.92	0.13	10.6	4.6	9.4
240	119.2	1.163	81.7	1.2	7.71	18.057	12.742	9.054	15.1	6.0	13.8	4.8	2.90	0.14	10.5	4.5	9.3
241	119.0	1.168	81.8	1.3	7.72	18.134	12.723	9.027	15.0	6.0	13.8	4.7	2.90	0.14	10.5	4.5	9.3
242	117.4	1.172	81.8	1.3	7.73	18.201	12.469	8.808	14.8	6.0	13.6	4.7	2.85	0.14	10.4	4.4	9.2
243	118.4	1.176	81.7	1.2	7.73	18.269	12.614	8.916	14.9	6.0	13.7	4.8	2.87	0.14	10.5	4.5	9.2
244	118.2	1.180	81.7	1.2	7.74	18.346	12.596	8.889	14.9	6.0	13.7	4.8	2.86	0.14	10.4	4.4	9.2
245	118.2	1.185	81.7	1.2	7.75	18.413	12.596	8.878	14.9	6.0	13.7	4.8	2.86	0.14	10.4	4.4	9.2
246	118.6	1.189	81.7	1.2	7.75	18.490	12.651	8.910	14.9	6.0	13.7	4.8	2.87	0.14	10.5	4.5	9.2
247	118.4	1.193	81.7	1.2	7.76	18.558	12.614	8.870	14.9	6.0	13.6	4.8	2.86	0.14	10.4	4.4	9.2
248	117.9	1.198	81.7	1.2	7.77	18.635	12.541	8.798	14.8	6.0	13.6	4.8	2.84	0.14	10.4	4.4	9.2
249	118.2	1.202	81.7	1.2	7.77	18.702	12.596	8.832	14.8	6.0	13.6	4.8	2.85	0.14	10.4	4.4	9.2
250	118.4	1.206	81.7	1.2	7.78	18.779	12.614	8.834	14.8	6.0	13.6	4.8	2.84	0.14	10.4	4.4	9.2
251	118.0	1.211	81.7	1.2	7.79	18.856	12.560	8.778	14.8	6.0	13.6	4.8	2.82	0.13	10.4	4.4	9.2
252	116.5	1.215	81.7	1.2	7.79	18.933	12.323	8.573	14.6	6.0	13.4	4.8	2.78	0.14	10.3	4.3	9.1
253	117.2	1.220	81.7	1.2	7.80	19.000	12.432	8.651	14.7	6.0	13.5	4.8	2.80	0.14	10.3	4.3	9.1
254	117.8	1.224	81.7	1.2	7.81	19.077	12.523	8.713	14.7	6.0	13.5	4.8	2.80	0.13	10.4	4.4	9.2
255	117.8	1.229	81.7	1.2	7.82	19.154	12.523	8.701	14.7	6.0	13.5	4.8	2.81	0.14	10.4	4.4	9.2
256	118.0	1.234	81.7	1.2	7.82	19.241	12.560	8.716	14.7	6.0	13.6	4.8	2.80	0.13	10.4	4.4	9.2
257	118.2	1.238	81.7	1.2	7.83	19.318	12.596	8.733	14.7	6.0	13.6	4.8	2.81	0.13	10.4	4.4	9.2
258	117.8	1.243	81.7	1.2	7.84	19.395	12.523	8.662	14.7	6.0	13.5	4.8	2.79	0.13	10.3	4.3	9.2
259	117.4	1.248	81.7	1.2	7.85	19.472	12.469	8.606	14.6	6.0	13.4	4.8	2.78	0.14	10.3	4.3	9.1
260	117.3	1.252	81.7	1.2	7.85	19.549	12.450	8.579	14.6	6.0	13.4	4.8	2.77	0.14	10.3	4.3	9.1
261	116.3	1.257	81.7	1.2	7.86	19.626	12.287	8.435	14.4	6.0	13.3	4.8	2.74	0.14	10.2	4.2	9.1
262	116.3	1.261	81.7	1.2	7.87	19.703	12.287	8.423	14.4	6.0	13.3	4.8	2.74	0.14	10.2	4.2	9.0
263	116.4	1.266	81.7	1.2	7.88	19.780	12.305	8.426	14.4	6.0	13.3	4.8	2.74	0.14	10.2	4.2	9.0
264	116.4	1.271	81.7	1.2	7.88	19.857	12.305	8.414	14.4	6.0	13.2	4.8	2.74	0.14	10.2	4.2	9.0

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
265	116.6	1.275	81.6	1.1	7.89	19.934	12.341	8.431	14.4	6.0	13.3	4.9	2.73	0.14	10.2	4.2	9.1
266	116.6	1.279	81.6	1.1	7.90	20.001	12.341	8.420	14.4	6.0	13.3	4.9	2.72	0.13	10.2	4.2	9.1

Specimen C Shear Data

CU Triaxial Test

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File Location
T-5668.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5668
Sample Location: Guilford County (Sta. 405 + 70)
Sample Description: Orange colored clay
Remarks: 28° shear plane. Vertical stripe of black and tannish colored spots insid the sample.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.694
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.852	2.830	
Height (in)	5.972	5.934	
Weight (grams)	908.00		1070.00
Moisture (%)	27.35		50.07
Dry Density (pcf)	71.21	72.77	
Saturation (%)	54.11	100.00	
Void Ratio	1.355	1.311	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 92.400
Effective Confining Stress (psi): 12.0
Corrected Peak Deviator Stress (psi): 15.529 at reading number: 77

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	31.4	0.093	80.4	0.0	6.29	0.000	0.000	0.000	12.0	12.0	12.0	12.0	1.00	0.00	12.0	0.0	12.0
1	54.9	0.096	81.1	0.7	6.29	0.048	3.739	3.719	15.7	12.0	15.0	11.3	1.33	0.19	13.8	1.9	13.1
2	70.6	0.101	82.0	1.6	6.30	0.135	6.232	6.171	18.2	12.0	16.6	10.4	1.59	0.25	15.1	3.1	13.5
3	80.2	0.106	82.7	2.3	6.30	0.212	7.771	7.673	19.7	12.0	17.3	9.7	1.79	0.30	15.8	3.8	13.5
4	61.7	0.111	82.4	2.0	6.31	0.298	4.820	4.690	16.7	12.0	14.7	10.0	1.47	0.42	14.3	2.3	12.4
5	82.7	0.115	83.2	2.8	6.31	0.375	8.156	7.980	20.0	12.0	17.2	9.2	1.87	0.35	16.0	4.0	13.2
6	91.7	0.120	83.7	3.3	6.32	0.452	9.586	9.367	21.4	12.0	18.1	8.7	2.08	0.35	16.7	4.7	13.4
7	98.1	0.125	84.2	3.8	6.32	0.539	10.612	10.346	22.3	12.0	18.5	8.2	2.26	0.37	17.2	5.2	13.4
8	103.2	0.130	84.6	4.1	6.33	0.616	11.419	11.109	23.1	12.0	18.9	7.8	2.42	0.37	17.5	5.6	13.4
9	107.7	0.134	84.9	4.5	6.33	0.693	12.133	11.780	23.8	12.0	19.3	7.5	2.57	0.38	17.9	5.9	13.4
10	111.7	0.139	85.2	4.7	6.34	0.779	12.775	12.372	24.4	12.0	19.6	7.2	2.71	0.38	18.2	6.2	13.4
11	114.9	0.144	85.4	5.0	6.34	0.856	13.288	12.842	24.8	12.0	19.8	7.0	2.84	0.39	18.4	6.4	13.4
12	118.1	0.149	85.6	5.2	6.35	0.943	13.783	13.287	25.3	12.0	20.0	6.8	2.97	0.39	18.6	6.6	13.4
13	120.3	0.154	85.8	5.4	6.36	1.020	14.131	13.591	25.6	12.0	20.2	6.6	3.06	0.40	18.8	6.8	13.4
14	123.5	0.158	86.0	5.6	6.36	1.097	14.644	14.057	26.0	12.0	20.5	6.4	3.19	0.39	19.0	7.0	13.5
15	125.9	0.163	86.1	5.7	6.37	1.174	15.029	14.397	26.4	12.0	20.7	6.3	3.30	0.40	19.2	7.2	13.5
16	127.2	0.167	86.2	5.8	6.37	1.251	15.231	14.554	26.5	12.0	20.7	6.2	3.35	0.40	19.3	7.3	13.5
17	128.7	0.172	86.3	5.9	6.38	1.337	15.469	14.743	26.7	12.0	20.8	6.1	3.43	0.40	19.4	7.4	13.4
18	129.8	0.177	86.4	6.0	6.38	1.414	15.653	14.881	26.9	12.0	20.8	6.0	3.50	0.41	19.4	7.4	13.4

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	130.9	0.182	86.5	6.1	6.39	1.491	15.818	15.002	27.0	12.0	20.9	5.9	3.54	0.40	19.5	7.5	13.4
20	132.2	0.186	86.6	6.2	6.39	1.568	16.037	15.176	27.2	12.0	21.0	5.8	3.60	0.41	19.6	7.6	13.4
21	133.5	0.191	86.7	6.2	6.40	1.655	16.239	15.327	27.3	12.0	21.1	5.7	3.67	0.41	19.6	7.7	13.4
22	134.3	0.196	86.7	6.3	6.40	1.732	16.367	15.411	27.4	12.0	21.1	5.7	3.70	0.41	19.7	7.7	13.4
23	134.7	0.200	86.7	6.3	6.41	1.809	16.422	15.422	27.4	12.0	21.1	5.7	3.72	0.41	19.7	7.7	13.4
24	134.5	0.205	86.7	6.3	6.41	1.886	16.404	15.362	27.3	12.0	21.0	5.7	3.71	0.41	19.7	7.7	13.3
25	134.7	0.210	86.9	6.4	6.42	1.963	16.422	15.337	27.3	12.0	20.9	5.5	3.76	0.42	19.7	7.7	13.2
26	134.8	0.214	86.9	6.4	6.42	2.040	16.441	15.328	27.3	12.0	20.9	5.5	3.76	0.42	19.6	7.7	13.2
27	134.8	0.219	86.9	6.5	6.43	2.117	16.441	15.315	27.3	12.0	20.8	5.5	3.78	0.42	19.6	7.7	13.2
28	135.1	0.224	86.9	6.5	6.43	2.203	16.496	15.355	27.3	12.0	20.8	5.5	3.81	0.42	19.7	7.7	13.1
29	135.4	0.228	86.9	6.5	6.44	2.280	16.532	15.378	27.4	12.0	20.8	5.5	3.81	0.42	19.7	7.7	13.2
30	135.6	0.233	87.0	6.6	6.44	2.357	16.569	15.401	27.4	12.0	20.8	5.4	3.84	0.43	19.7	7.7	13.1
31	135.9	0.238	87.0	6.6	6.45	2.434	16.624	15.442	27.4	12.0	20.9	5.4	3.85	0.42	19.7	7.7	13.1
32	135.9	0.242	87.0	6.6	6.45	2.511	16.624	15.429	27.4	12.0	20.8	5.4	3.86	0.43	19.7	7.7	13.1
33	135.6	0.247	87.0	6.6	6.46	2.588	16.569	15.363	27.3	12.0	20.7	5.4	3.85	0.43	19.7	7.7	13.1
34	135.7	0.252	87.1	6.6	6.46	2.675	16.587	15.366	27.4	12.0	20.7	5.3	3.87	0.43	19.7	7.7	13.0
35	135.6	0.256	87.1	6.6	6.47	2.752	16.569	15.336	27.3	12.0	20.7	5.3	3.87	0.43	19.7	7.7	13.0
36	135.7	0.261	87.1	6.7	6.47	2.829	16.587	15.341	27.3	12.0	20.6	5.3	3.89	0.44	19.7	7.7	13.0
37	135.6	0.265	87.1	6.7	6.48	2.906	16.569	15.310	27.3	12.0	20.6	5.3	3.89	0.44	19.6	7.7	13.0
38	135.9	0.271	87.1	6.7	6.48	2.992	16.624	15.349	27.3	12.0	20.7	5.3	3.89	0.44	19.7	7.7	13.0
39	135.8	0.275	87.1	6.7	6.49	3.069	16.606	15.319	27.3	12.0	20.6	5.3	3.89	0.44	19.6	7.7	13.0
40	136.2	0.280	87.1	6.7	6.49	3.146	16.661	15.359	27.3	12.0	20.6	5.3	3.92	0.44	19.7	7.7	12.9
41	136.2	0.284	87.1	6.7	6.50	3.223	16.661	15.346	27.3	12.0	20.6	5.3	3.91	0.44	19.7	7.7	12.9
42	135.9	0.289	87.1	6.7	6.51	3.310	16.624	15.296	27.3	12.0	20.6	5.3	3.90	0.44	19.6	7.6	12.9
43	135.9	0.294	87.1	6.7	6.51	3.387	16.624	15.284	27.3	12.0	20.5	5.3	3.90	0.44	19.6	7.6	12.9
44	136.0	0.299	87.2	6.8	6.52	3.464	16.642	15.288	27.3	12.0	20.5	5.2	3.93	0.44	19.6	7.6	12.9
45	135.8	0.303	87.2	6.8	6.52	3.541	16.606	15.240	27.2	12.0	20.5	5.2	3.92	0.44	19.6	7.6	12.8
46	136.2	0.308	87.1	6.7	6.53	3.627	16.661	15.279	27.3	12.0	20.5	5.3	3.90	0.44	19.6	7.6	12.9
47	136.2	0.313	87.2	6.8	6.53	3.704	16.661	15.266	27.3	12.0	20.5	5.2	3.92	0.44	19.6	7.6	12.9
48	136.6	0.317	87.2	6.8	6.54	3.781	16.734	15.324	27.3	12.0	20.5	5.2	3.93	0.44	19.6	7.7	12.9
49	137.0	0.322	87.2	6.8	6.54	3.858	16.789	15.364	27.3	12.0	20.6	5.2	3.94	0.44	19.7	7.7	12.9
50	136.6	0.327	87.2	6.8	6.55	3.935	16.734	15.298	27.3	12.0	20.5	5.2	3.93	0.44	19.6	7.6	12.9
51	136.4	0.332	87.2	6.8	6.55	4.022	16.697	15.248	27.2	12.0	20.5	5.2	3.92	0.44	19.6	7.6	12.9
52	136.5	0.336	87.2	6.8	6.56	4.089	16.716	15.255	27.2	12.0	20.5	5.2	3.92	0.44	19.6	7.6	12.9
53	136.4	0.341	87.2	6.8	6.56	4.176	16.697	15.223	27.2	12.0	20.4	5.2	3.91	0.44	19.6	7.6	12.8
54	136.5	0.345	87.1	6.7	6.57	4.253	16.716	15.227	27.2	12.0	20.5	5.3	3.89	0.44	19.6	7.6	12.9
55	136.9	0.350	87.2	6.8	6.58	4.330	16.771	15.267	27.3	12.0	20.5	5.2	3.92	0.44	19.6	7.6	12.9
56	136.9	0.355	87.2	6.8	6.58	4.407	16.771	15.254	27.2	12.0	20.5	5.2	3.92	0.44	19.6	7.6	12.9
57	137.3	0.359	87.2	6.8	6.59	4.484	16.844	15.311	27.3	12.0	20.5	5.2	3.93	0.44	19.6	7.7	12.9
58	136.9	0.364	87.2	6.8	6.59	4.561	16.771	15.228	27.2	12.0	20.5	5.2	3.91	0.44	19.6	7.6	12.8
59	137.0	0.368	87.2	6.8	6.60	4.638	16.789	15.233	27.2	12.0	20.5	5.2	3.91	0.44	19.6	7.6	12.8

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	136.7	0.373	87.2	6.8	6.60	4.715	16.752	15.185	27.2	12.0	20.4	5.2	3.91	0.45	19.6	7.6	12.8
61	137.1	0.377	87.2	6.8	6.61	4.792	16.807	15.225	27.2	12.0	20.5	5.2	3.91	0.44	19.6	7.6	12.8
62	137.1	0.382	87.2	6.8	6.61	4.869	16.807	15.212	27.2	12.0	20.4	5.2	3.91	0.44	19.6	7.6	12.8
63	137.1	0.387	87.2	6.8	6.62	4.955	16.807	15.197	27.2	12.0	20.4	5.2	3.91	0.44	19.6	7.6	12.8
64	137.0	0.392	87.2	6.8	6.62	5.032	16.789	15.167	27.2	12.0	20.4	5.2	3.90	0.45	19.6	7.6	12.8
65	137.3	0.396	87.2	6.8	6.63	5.109	16.844	15.206	27.2	12.0	20.4	5.2	3.91	0.44	19.6	7.6	12.8
66	137.4	0.401	87.2	6.8	6.63	5.186	16.862	15.210	27.2	12.0	20.4	5.2	3.91	0.44	19.6	7.6	12.8
67	137.4	0.405	87.2	6.8	6.64	5.263	16.862	15.197	27.2	12.0	20.4	5.2	3.91	0.44	19.6	7.6	12.8
68	137.7	0.410	87.1	6.7	6.65	5.340	16.899	15.219	27.2	12.0	20.5	5.3	3.89	0.44	19.6	7.6	12.9
69	138.9	0.415	87.1	6.7	6.65	5.427	17.101	15.395	27.4	12.0	20.7	5.3	3.92	0.44	19.7	7.7	13.0
70	139.2	0.420	87.1	6.7	6.66	5.504	17.137	15.417	27.4	12.0	20.7	5.3	3.93	0.44	19.7	7.7	13.0
71	139.2	0.424	87.1	6.7	6.66	5.581	17.137	15.403	27.4	12.0	20.7	5.3	3.92	0.44	19.7	7.7	13.0
72	139.3	0.429	87.1	6.7	6.67	5.658	17.155	15.408	27.4	12.0	20.7	5.3	3.93	0.44	19.7	7.7	13.0
73	139.5	0.433	87.1	6.7	6.67	5.735	17.192	15.429	27.4	12.0	20.7	5.3	3.93	0.44	19.7	7.7	13.0
74	139.7	0.438	87.1	6.7	6.68	5.821	17.229	15.448	27.4	12.0	20.7	5.3	3.93	0.43	19.7	7.7	13.0
75	140.2	0.443	87.1	6.7	6.68	5.898	17.302	15.504	27.5	12.0	20.8	5.3	3.94	0.43	19.7	7.8	13.0
76	140.3	0.448	87.1	6.7	6.69	5.975	17.320	15.508	27.5	12.0	20.8	5.3	3.92	0.43	19.7	7.8	13.1
77	140.5	0.452	87.1	6.7	6.70	6.052	17.357	15.529	27.5	12.0	20.8	5.3	3.95	0.43	19.7	7.8	13.0
78	140.4	0.457	87.1	6.7	6.70	6.129	17.339	15.499	27.5	12.0	20.8	5.3	3.94	0.43	19.7	7.7	13.0
79	140.1	0.462	87.1	6.7	6.71	6.216	17.284	15.432	27.4	12.0	20.7	5.3	3.91	0.43	19.7	7.7	13.0
80	140.2	0.466	87.1	6.7	6.71	6.293	17.302	15.436	27.4	12.0	20.7	5.3	3.91	0.43	19.7	7.7	13.0
81	140.0	0.471	87.1	6.7	6.72	6.370	17.265	15.388	27.4	12.0	20.7	5.3	3.90	0.43	19.7	7.7	13.0
82	139.7	0.476	87.1	6.7	6.72	6.447	17.229	15.341	27.3	12.0	20.6	5.3	3.89	0.44	19.7	7.7	13.0
83	139.6	0.480	87.1	6.7	6.73	6.524	17.210	15.310	27.3	12.0	20.6	5.3	3.89	0.44	19.6	7.7	13.0
84	139.9	0.485	87.1	6.7	6.73	6.601	17.247	15.331	27.3	12.0	20.6	5.3	3.89	0.44	19.6	7.7	13.0
85	139.7	0.489	87.1	6.7	6.74	6.678	17.229	15.301	27.3	12.0	20.6	5.3	3.88	0.44	19.6	7.7	13.0
86	139.9	0.494	87.1	6.7	6.75	6.755	17.247	15.305	27.3	12.0	20.6	5.3	3.88	0.44	19.6	7.7	13.0
87	139.9	0.499	87.1	6.6	6.75	6.841	17.247	15.290	27.3	12.0	20.6	5.3	3.86	0.43	19.6	7.6	13.0
88	139.9	0.504	87.1	6.6	6.76	6.918	17.247	15.277	27.3	12.0	20.6	5.3	3.86	0.43	19.6	7.6	13.0
89	139.9	0.508	87.1	6.6	6.76	6.995	17.247	15.263	27.2	12.0	20.6	5.3	3.85	0.43	19.6	7.6	13.0
90	139.7	0.513	87.1	6.6	6.77	7.072	17.229	15.233	27.2	12.0	20.6	5.3	3.85	0.44	19.6	7.6	13.0
91	139.9	0.517	87.0	6.6	6.77	7.149	17.247	15.237	27.2	12.0	20.6	5.4	3.83	0.43	19.6	7.6	13.0
92	140.0	0.522	87.1	6.6	6.78	7.226	17.265	15.240	27.2	12.0	20.6	5.3	3.85	0.44	19.6	7.6	13.0
93	140.2	0.526	87.1	6.6	6.79	7.303	17.302	15.261	27.2	12.0	20.6	5.3	3.85	0.43	19.6	7.6	13.0
94	140.0	0.531	87.0	6.6	6.79	7.380	17.265	15.214	27.2	12.0	20.6	5.4	3.82	0.43	19.6	7.6	13.0
95	139.7	0.536	87.0	6.6	6.80	7.457	17.229	15.167	27.2	12.0	20.6	5.4	3.82	0.43	19.6	7.6	13.0
96	139.7	0.540	87.0	6.6	6.80	7.534	17.229	15.153	27.1	12.0	20.5	5.4	3.81	0.44	19.6	7.6	13.0
97	139.7	0.545	87.0	6.6	6.81	7.611	17.229	15.140	27.1	12.0	20.5	5.4	3.81	0.44	19.6	7.6	13.0
98	139.6	0.550	87.0	6.6	6.81	7.698	17.210	15.108	27.1	12.0	20.5	5.4	3.80	0.44	19.5	7.6	12.9
99	139.5	0.554	87.0	6.6	6.82	7.775	17.192	15.078	27.1	12.0	20.5	5.4	3.80	0.44	19.5	7.5	12.9
100	139.5	0.559	87.0	6.6	6.83	7.852	17.192	15.065	27.0	12.0	20.5	5.4	3.80	0.44	19.5	7.5	12.9

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	139.5	0.564	87.0	6.6	6.83	7.929	17.192	15.052	27.0	12.0	20.5	5.4	3.77	0.44	19.5	7.5	13.0
102	139.5	0.568	87.0	6.6	6.84	8.005	17.192	15.038	27.0	12.0	20.4	5.4	3.79	0.44	19.5	7.5	12.9
103	139.5	0.573	87.0	6.6	6.84	8.082	17.192	15.025	27.0	12.0	20.5	5.4	3.77	0.44	19.5	7.5	12.9
104	139.5	0.577	87.0	6.6	6.85	8.159	17.192	15.012	27.0	12.0	20.4	5.4	3.77	0.44	19.5	7.5	12.9
105	139.5	0.582	87.0	6.6	6.86	8.236	17.192	14.999	27.0	12.0	20.4	5.4	3.76	0.44	19.5	7.5	12.9
106	139.6	0.586	86.9	6.5	6.86	8.313	17.210	15.002	27.0	12.0	20.5	5.5	3.74	0.43	19.5	7.5	13.0
107	139.7	0.591	87.0	6.6	6.87	8.400	17.229	15.004	27.0	12.0	20.4	5.4	3.76	0.44	19.5	7.5	12.9
108	139.5	0.596	87.0	6.6	6.87	8.477	17.192	14.957	26.9	12.0	20.4	5.4	3.76	0.44	19.5	7.5	12.9
109	139.5	0.601	87.0	6.6	6.88	8.554	17.192	14.944	26.9	12.0	20.4	5.4	3.75	0.44	19.5	7.5	12.9
110	139.7	0.605	87.0	6.6	6.88	8.631	17.229	14.964	26.9	12.0	20.4	5.4	3.76	0.44	19.5	7.5	12.9
111	139.6	0.610	87.0	6.6	6.89	8.708	17.210	14.934	26.9	12.0	20.4	5.4	3.75	0.44	19.5	7.5	12.9
112	139.9	0.615	86.9	6.5	6.90	8.794	17.247	14.953	26.9	12.0	20.4	5.5	3.73	0.44	19.5	7.5	12.9
113	139.7	0.619	86.9	6.5	6.90	8.871	17.229	14.923	26.9	12.0	20.4	5.5	3.71	0.43	19.4	7.5	13.0
114	139.6	0.624	86.9	6.5	6.91	8.948	17.210	14.893	26.9	12.0	20.4	5.5	3.72	0.44	19.4	7.4	12.9
115	139.6	0.629	86.9	6.5	6.91	9.025	17.210	14.880	26.9	12.0	20.3	5.5	3.72	0.44	19.4	7.4	12.9
116	139.7	0.633	86.9	6.5	6.92	9.102	17.229	14.883	26.9	12.0	20.4	5.5	3.72	0.44	19.4	7.4	12.9
117	140.1	0.638	86.9	6.5	6.93	9.179	17.284	14.920	26.9	12.0	20.4	5.5	3.73	0.44	19.4	7.5	12.9
118	140.3	0.642	86.9	6.5	6.93	9.256	17.320	14.940	26.9	12.0	20.4	5.5	3.73	0.44	19.5	7.5	12.9
119	140.3	0.647	86.9	6.5	6.94	9.333	17.320	14.927	26.9	12.0	20.4	5.5	3.73	0.44	19.4	7.5	12.9
120	140.3	0.652	86.9	6.5	6.94	9.420	17.320	14.912	26.9	12.0	20.4	5.5	3.71	0.43	19.4	7.5	13.0
121	140.3	0.657	86.9	6.5	6.95	9.497	17.320	14.898	26.9	12.0	20.4	5.5	3.71	0.43	19.4	7.4	13.0
122	141.0	0.661	86.9	6.5	6.96	9.574	17.430	14.984	27.0	12.0	20.5	5.5	3.72	0.43	19.5	7.5	13.0
123	141.5	0.666	86.9	6.5	6.96	9.651	17.504	15.037	27.0	12.0	20.5	5.5	3.73	0.43	19.5	7.5	13.0
124	141.8	0.670	86.9	6.5	6.97	9.728	17.559	15.073	27.1	12.0	20.6	5.5	3.74	0.43	19.5	7.5	13.0
125	141.8	0.675	86.9	6.5	6.97	9.805	17.559	15.060	27.0	12.0	20.6	5.5	3.73	0.43	19.5	7.5	13.0
126	141.6	0.679	86.9	6.5	6.98	9.882	17.522	15.013	27.0	12.0	20.5	5.5	3.73	0.43	19.5	7.5	13.0
127	141.7	0.684	86.9	6.5	6.99	9.959	17.540	15.016	27.0	12.0	20.5	5.5	3.73	0.43	19.5	7.5	13.0
128	142.4	0.689	86.9	6.4	6.99	10.036	17.650	15.102	27.1	12.0	20.6	5.5	3.72	0.43	19.5	7.6	13.1
129	142.6	0.693	86.9	6.5	7.00	10.113	17.687	15.121	27.1	12.0	20.6	5.5	3.75	0.43	19.5	7.6	13.1
130	143.0	0.698	86.9	6.5	7.00	10.190	17.742	15.157	27.1	12.0	20.7	5.5	3.75	0.43	19.6	7.6	13.1
131	142.8	0.702	86.9	6.5	7.01	10.267	17.724	15.127	27.1	12.0	20.6	5.5	3.75	0.43	19.5	7.6	13.1
132	142.8	0.707	86.9	6.5	7.02	10.344	17.724	15.113	27.1	12.0	20.6	5.5	3.74	0.43	19.5	7.6	13.1
133	142.8	0.711	86.9	6.5	7.02	10.421	17.724	15.099	27.1	12.0	20.6	5.5	3.74	0.43	19.5	7.5	13.1
134	142.5	0.717	86.9	6.5	7.03	10.507	17.669	15.035	27.0	12.0	20.5	5.5	3.73	0.43	19.5	7.5	13.0
135	142.2	0.721	86.9	6.4	7.03	10.584	17.614	14.972	27.0	12.0	20.5	5.5	3.70	0.43	19.5	7.5	13.0
136	141.8	0.726	86.9	6.4	7.04	10.661	17.559	14.909	26.9	12.0	20.5	5.5	3.69	0.43	19.4	7.5	13.0
137	141.2	0.730	86.9	6.4	7.05	10.738	17.467	14.814	26.8	12.0	20.4	5.5	3.67	0.43	19.4	7.4	13.0
138	141.0	0.735	86.9	6.4	7.05	10.825	17.430	14.766	26.8	12.0	20.3	5.5	3.66	0.44	19.4	7.4	12.9
139	140.9	0.740	86.9	6.4	7.06	10.902	17.412	14.737	26.7	12.0	20.3	5.5	3.66	0.44	19.4	7.4	12.9
140	141.0	0.745	86.9	6.4	7.07	10.979	17.430	14.739	26.7	12.0	20.3	5.5	3.66	0.44	19.4	7.4	12.9
141	141.1	0.749	86.9	6.4	7.07	11.056	17.449	14.742	26.7	12.0	20.3	5.5	3.66	0.44	19.4	7.4	12.9

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	141.0	0.754	86.9	6.4	7.08	11.142	17.430	14.711	26.7	12.0	20.3	5.5	3.65	0.44	19.3	7.4	12.9
143	141.0	0.759	86.8	6.4	7.09	11.219	17.430	14.697	26.7	12.0	20.3	5.6	3.63	0.44	19.3	7.3	12.9
144	141.1	0.763	86.9	6.4	7.09	11.296	17.449	14.700	26.7	12.0	20.2	5.5	3.65	0.44	19.3	7.4	12.9
145	140.8	0.768	86.9	6.4	7.10	11.373	17.394	14.638	26.6	12.0	20.2	5.5	3.64	0.44	19.3	7.3	12.9
146	140.5	0.772	86.9	6.4	7.10	11.450	17.357	14.592	26.6	12.0	20.1	5.5	3.63	0.44	19.3	7.3	12.8
147	140.8	0.777	86.9	6.4	7.11	11.527	17.394	14.611	26.6	12.0	20.2	5.5	3.63	0.44	19.3	7.3	12.9
148	140.9	0.782	86.9	6.4	7.12	11.604	17.412	14.614	26.6	12.0	20.2	5.5	3.63	0.44	19.3	7.3	12.9
149	140.9	0.786	86.9	6.4	7.12	11.681	17.412	14.601	26.6	12.0	20.1	5.5	3.63	0.44	19.3	7.3	12.8
150	140.7	0.791	86.8	6.4	7.13	11.758	17.375	14.555	26.5	12.0	20.1	5.6	3.60	0.44	19.3	7.3	12.9
151	140.5	0.795	86.9	6.4	7.13	11.835	17.357	14.526	26.5	12.0	20.1	5.5	3.62	0.44	19.2	7.3	12.8
152	141.2	0.800	86.9	6.4	7.14	11.912	17.467	14.609	26.6	12.0	20.2	5.5	3.63	0.44	19.3	7.3	12.9
153	140.9	0.805	86.8	6.4	7.15	11.999	17.412	14.546	26.5	12.0	20.1	5.6	3.60	0.44	19.3	7.3	12.9
154	140.9	0.809	86.9	6.4	7.15	12.066	17.412	14.534	26.5	12.0	20.1	5.5	3.62	0.44	19.3	7.3	12.8
155	140.8	0.814	86.9	6.4	7.16	12.143	17.394	14.504	26.5	12.0	20.1	5.5	3.61	0.44	19.2	7.3	12.8
156	140.4	0.818	86.9	6.4	7.17	12.220	17.339	14.443	26.4	12.0	20.0	5.5	3.60	0.45	19.2	7.2	12.8
157	140.3	0.823	86.8	6.4	7.17	12.297	17.320	14.413	26.4	12.0	20.0	5.6	3.58	0.44	19.2	7.2	12.8
158	140.1	0.827	86.8	6.4	7.18	12.374	17.284	14.368	26.4	12.0	20.0	5.6	3.57	0.45	19.2	7.2	12.8
159	140.0	0.832	86.8	6.4	7.18	12.451	17.265	14.338	26.3	12.0	19.9	5.6	3.57	0.45	19.2	7.2	12.8
160	140.1	0.836	86.8	6.4	7.19	12.528	17.284	14.341	26.3	12.0	19.9	5.6	3.57	0.45	19.2	7.2	12.8
161	140.0	0.841	86.8	6.4	7.20	12.605	17.265	14.312	26.3	12.0	19.9	5.6	3.56	0.45	19.1	7.2	12.7
162	140.0	0.846	86.8	6.4	7.20	12.682	17.265	14.299	26.3	12.0	19.9	5.6	3.56	0.45	19.1	7.1	12.7
163	139.7	0.850	86.8	6.4	7.21	12.759	17.229	14.253	26.2	12.0	19.8	5.6	3.55	0.45	19.1	7.1	12.7
164	139.6	0.855	86.8	6.4	7.22	12.836	17.210	14.224	26.2	12.0	19.8	5.6	3.55	0.45	19.1	7.1	12.7
165	139.5	0.859	86.8	6.4	7.22	12.913	17.192	14.195	26.2	12.0	19.8	5.6	3.54	0.45	19.1	7.1	12.7
166	139.4	0.864	86.8	6.4	7.23	12.999	17.174	14.164	26.1	12.0	19.8	5.6	3.53	0.45	19.1	7.1	12.7
167	139.6	0.869	86.8	6.4	7.24	13.076	17.210	14.183	26.2	12.0	19.8	5.6	3.54	0.45	19.1	7.1	12.7
168	139.3	0.874	86.8	6.4	7.24	13.153	17.155	14.122	26.1	12.0	19.7	5.6	3.53	0.45	19.0	7.1	12.6
169	139.3	0.879	86.8	6.4	7.25	13.240	17.155	14.107	26.1	12.0	19.7	5.6	3.52	0.45	19.0	7.1	12.6
170	139.3	0.883	86.8	6.4	7.26	13.317	17.155	14.094	26.1	12.0	19.7	5.6	3.52	0.45	19.0	7.0	12.6
171	139.4	0.888	86.8	6.4	7.26	13.394	17.174	14.096	26.1	12.0	19.7	5.6	3.52	0.45	19.0	7.0	12.6
172	139.6	0.893	86.8	6.4	7.27	13.480	17.210	14.113	26.1	12.0	19.7	5.6	3.53	0.45	19.0	7.1	12.6
173	139.7	0.898	86.8	6.4	7.28	13.557	17.229	14.116	26.1	12.0	19.7	5.6	3.53	0.45	19.0	7.1	12.6
174	140.2	0.902	86.8	6.4	7.28	13.634	17.302	14.166	26.2	12.0	19.8	5.6	3.53	0.45	19.1	7.1	12.7
175	140.1	0.907	86.8	6.4	7.29	13.711	17.284	14.137	26.1	12.0	19.7	5.6	3.53	0.45	19.1	7.1	12.7
176	140.4	0.911	86.8	6.4	7.30	13.788	17.339	14.171	26.2	12.0	19.8	5.6	3.54	0.45	19.1	7.1	12.7
177	140.9	0.916	86.8	6.4	7.30	13.875	17.412	14.219	26.2	12.0	19.8	5.6	3.54	0.45	19.1	7.1	12.7
178	140.2	0.921	86.8	6.4	7.31	13.952	17.302	14.111	26.1	12.0	19.7	5.6	3.53	0.45	19.0	7.1	12.6
179	139.6	0.925	86.8	6.4	7.32	14.029	17.210	14.019	26.0	12.0	19.6	5.6	3.51	0.46	19.0	7.0	12.6
180	139.2	0.930	86.8	6.4	7.32	14.106	17.137	13.942	25.9	12.0	19.6	5.6	3.48	0.46	19.0	7.0	12.6
181	139.2	0.935	86.8	6.4	7.33	14.183	17.137	13.929	25.9	12.0	19.5	5.6	3.49	0.46	18.9	7.0	12.6
182	139.6	0.939	86.8	6.4	7.34	14.260	17.210	13.979	26.0	12.0	19.6	5.6	3.50	0.46	19.0	7.0	12.6

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	140.3	0.944	86.8	6.4	7.34	14.337	17.320	14.060	26.0	12.0	19.6	5.6	3.52	0.45	19.0	7.0	12.6
184	140.9	0.948	86.8	6.4	7.35	14.414	17.412	14.125	26.1	12.0	19.7	5.6	3.53	0.45	19.0	7.1	12.7
185	141.1	0.953	86.8	6.4	7.36	14.491	17.449	14.143	26.1	12.0	19.7	5.6	3.53	0.45	19.1	7.1	12.7
186	141.0	0.957	86.8	6.4	7.36	14.568	17.430	14.114	26.1	12.0	19.7	5.6	3.53	0.45	19.0	7.1	12.6
187	140.7	0.962	86.8	6.4	7.37	14.645	17.375	14.053	26.0	12.0	19.6	5.6	3.51	0.46	19.0	7.0	12.6
188	140.0	0.967	86.8	6.4	7.38	14.722	17.265	13.946	25.9	12.0	19.6	5.6	3.48	0.46	19.0	7.0	12.6
189	140.0	0.971	86.8	6.4	7.38	14.799	17.265	13.933	25.9	12.0	19.5	5.6	3.49	0.46	19.0	7.0	12.6
190	139.9	0.976	86.8	6.4	7.39	14.876	17.247	13.904	25.9	12.0	19.5	5.6	3.49	0.46	18.9	7.0	12.5
191	139.7	0.980	86.8	6.4	7.40	14.953	17.229	13.875	25.9	12.0	19.5	5.6	3.48	0.46	18.9	6.9	12.5
192	139.5	0.985	86.8	6.4	7.40	15.030	17.192	13.831	25.8	12.0	19.4	5.6	3.48	0.46	18.9	6.9	12.5
193	140.0	0.990	86.8	6.4	7.41	15.116	17.265	13.878	25.9	12.0	19.5	5.6	3.48	0.46	18.9	6.9	12.5
194	139.9	0.995	86.8	6.4	7.42	15.193	17.247	13.849	25.8	12.0	19.4	5.6	3.48	0.46	18.9	6.9	12.5
195	139.6	0.999	86.8	6.4	7.42	15.270	17.210	13.805	25.8	12.0	19.4	5.6	3.45	0.46	18.9	6.9	12.5
196	139.7	1.004	86.8	6.4	7.43	15.347	17.229	13.807	25.8	12.0	19.4	5.6	3.47	0.46	18.9	6.9	12.5
197	139.6	1.008	86.8	6.4	7.44	15.424	17.210	13.779	25.8	12.0	19.4	5.6	3.47	0.46	18.9	6.9	12.5
198	139.6	1.013	86.8	6.4	7.45	15.511	17.210	13.764	25.7	12.0	19.4	5.6	3.45	0.46	18.9	6.9	12.5
199	139.7	1.018	86.8	6.4	7.45	15.588	17.229	13.766	25.8	12.0	19.4	5.6	3.46	0.46	18.9	6.9	12.5
200	139.3	1.023	86.8	6.4	7.46	15.665	17.155	13.691	25.7	12.0	19.3	5.6	3.45	0.47	18.8	6.8	12.4
201	139.0	1.027	86.8	6.4	7.47	15.742	17.119	13.647	25.6	12.0	19.2	5.6	3.44	0.47	18.8	6.8	12.4
202	139.0	1.032	86.8	6.4	7.47	15.828	17.119	13.632	25.6	12.0	19.3	5.6	3.42	0.47	18.8	6.8	12.4
203	138.7	1.037	86.8	6.4	7.48	15.905	17.064	13.572	25.6	12.0	19.2	5.6	3.41	0.47	18.8	6.8	12.4
204	138.6	1.041	86.8	6.4	7.49	15.982	17.046	13.544	25.5	12.0	19.1	5.6	3.42	0.47	18.8	6.8	12.4
205	138.2	1.046	86.8	6.4	7.49	16.059	16.991	13.485	25.5	12.0	19.1	5.6	3.40	0.47	18.7	6.7	12.4
206	138.1	1.051	86.8	6.4	7.50	16.136	16.972	13.456	25.4	12.0	19.1	5.6	3.39	0.47	18.7	6.7	12.4
207	138.0	1.055	86.8	6.4	7.51	16.213	16.954	13.428	25.4	12.0	19.1	5.6	3.39	0.47	18.7	6.7	12.3
208	138.0	1.060	86.8	6.4	7.51	16.290	16.954	13.415	25.4	12.0	19.0	5.6	3.38	0.47	18.7	6.7	12.3
209	138.2	1.064	86.8	6.4	7.52	16.367	16.991	13.432	25.4	12.0	19.1	5.6	3.39	0.47	18.7	6.7	12.3
210	138.4	1.069	86.8	6.4	7.53	16.444	17.009	13.435	25.4	12.0	19.1	5.6	3.39	0.47	18.7	6.7	12.3
211	137.8	1.073	86.8	6.4	7.54	16.521	16.917	13.345	25.3	12.0	18.9	5.6	3.39	0.48	18.7	6.7	12.3
212	138.4	1.078	86.8	6.4	7.54	16.598	17.009	13.408	25.4	12.0	19.0	5.6	3.38	0.47	18.7	6.7	12.3
213	138.2	1.083	86.8	6.4	7.55	16.675	16.991	13.380	25.4	12.0	19.0	5.6	3.38	0.48	18.7	6.7	12.3
214	138.1	1.087	86.8	6.4	7.56	16.752	16.972	13.352	25.3	12.0	19.0	5.6	3.37	0.48	18.7	6.7	12.3
215	138.0	1.092	86.8	6.4	7.56	16.829	16.954	13.323	25.3	12.0	18.9	5.6	3.38	0.48	18.6	6.7	12.2
216	137.7	1.096	86.8	6.4	7.57	16.906	16.899	13.265	25.2	12.0	18.9	5.6	3.37	0.48	18.6	6.6	12.2
217	137.8	1.100	86.8	6.4	7.58	16.973	16.917	13.268	25.3	12.0	18.9	5.6	3.36	0.48	18.6	6.6	12.3
218	137.9	1.105	86.8	6.4	7.58	17.060	16.936	13.269	25.3	12.0	18.9	5.6	3.36	0.48	18.6	6.6	12.3
219	137.7	1.110	86.8	6.4	7.59	17.137	16.899	13.226	25.2	12.0	18.8	5.6	3.37	0.48	18.6	6.6	12.2
220	137.7	1.114	86.8	6.4	7.60	17.214	16.899	13.213	25.2	12.0	18.8	5.6	3.35	0.48	18.6	6.6	12.2
221	137.7	1.119	86.8	6.4	7.61	17.291	16.899	13.200	25.2	12.0	18.8	5.6	3.35	0.48	18.6	6.6	12.2
222	137.5	1.124	86.8	6.4	7.61	17.368	16.881	13.171	25.2	12.0	18.8	5.6	3.34	0.48	18.6	6.6	12.2
223	137.3	1.128	86.8	6.4	7.62	17.445	16.844	13.128	25.1	12.0	18.7	5.6	3.35	0.49	18.5	6.6	12.2

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	137.0	1.133	86.8	6.4	7.63	17.522	16.789	13.070	25.1	12.0	18.7	5.6	3.34	0.49	18.5	6.5	12.1
225	137.0	1.137	86.8	6.4	7.63	17.599	16.789	13.057	25.0	12.0	18.7	5.6	3.32	0.49	18.5	6.5	12.2
226	136.7	1.142	86.8	6.4	7.64	17.676	16.752	13.014	25.0	12.0	18.6	5.6	3.33	0.49	18.5	6.5	12.1
227	136.5	1.147	86.8	6.4	7.65	17.762	16.716	12.969	25.0	12.0	18.6	5.6	3.32	0.49	18.5	6.5	12.1
228	136.5	1.152	86.8	6.4	7.66	17.839	16.716	12.956	24.9	12.0	18.6	5.6	3.30	0.49	18.5	6.5	12.1
229	136.6	1.156	86.8	6.4	7.66	17.916	16.734	12.958	24.9	12.0	18.5	5.6	3.32	0.49	18.5	6.5	12.1
230	137.1	1.161	86.8	6.4	7.67	17.993	16.807	13.006	25.0	12.0	18.6	5.6	3.33	0.49	18.5	6.5	12.1
231	137.7	1.166	86.8	6.4	7.68	18.080	16.899	13.066	25.1	12.0	18.7	5.6	3.34	0.49	18.5	6.5	12.1
232	137.8	1.170	86.8	6.4	7.69	18.157	16.917	13.068	25.1	12.0	18.7	5.6	3.32	0.49	18.5	6.5	12.2
233	137.5	1.175	86.8	6.4	7.69	18.234	16.881	13.025	25.0	12.0	18.6	5.6	3.33	0.49	18.5	6.5	12.1
234	137.3	1.180	86.8	6.4	7.70	18.311	16.844	12.982	25.0	12.0	18.6	5.6	3.32	0.49	18.5	6.5	12.1
235	137.4	1.184	86.8	6.4	7.71	18.388	16.862	12.984	25.0	12.0	18.6	5.6	3.31	0.49	18.5	6.5	12.1
236	137.7	1.189	86.8	6.4	7.72	18.474	16.899	13.000	25.0	12.0	18.6	5.6	3.33	0.49	18.5	6.5	12.1
237	138.4	1.194	86.8	6.4	7.72	18.551	17.009	13.076	25.1	12.0	18.7	5.6	3.34	0.49	18.5	6.5	12.1
238	138.6	1.198	86.8	6.4	7.73	18.628	17.046	13.093	25.1	12.0	18.7	5.6	3.34	0.49	18.5	6.5	12.1
239	138.9	1.203	86.8	6.4	7.74	18.705	17.101	13.124	25.1	12.0	18.8	5.6	3.33	0.48	18.5	6.6	12.2
240	138.7	1.208	86.8	6.4	7.75	18.782	17.064	13.082	25.1	12.0	18.7	5.6	3.32	0.49	18.5	6.5	12.2
241	138.6	1.212	86.8	6.4	7.75	18.859	17.046	13.054	25.0	12.0	18.6	5.6	3.34	0.49	18.5	6.5	12.1
242	137.9	1.217	86.8	6.4	7.76	18.936	16.936	12.951	24.9	12.0	18.6	5.6	3.30	0.49	18.5	6.5	12.1
243	137.2	1.221	86.8	6.4	7.77	19.013	16.826	12.204	24.2	12.0	17.8	5.6	3.17	0.52	18.1	6.1	11.7
244	136.6	1.226	86.8	6.4	7.77	19.090	16.734	12.114	24.1	12.0	17.7	5.6	3.17	0.53	18.0	6.1	11.6
245	136.6	1.230	86.8	6.4	7.78	19.167	16.734	12.099	24.1	12.0	17.7	5.6	3.17	0.53	18.0	6.0	11.6
246	136.5	1.235	86.8	6.4	7.79	19.244	16.716	12.069	24.1	12.0	17.7	5.6	3.16	0.53	18.0	6.0	11.6
247	136.7	1.240	86.8	6.4	7.80	19.321	16.752	12.083	24.1	12.0	17.7	5.6	3.15	0.53	18.0	6.0	11.7
248	136.7	1.244	86.8	6.4	7.80	19.398	16.752	12.067	24.1	12.0	17.7	5.6	3.16	0.53	18.0	6.0	11.6
249	136.9	1.249	86.8	6.4	7.81	19.475	16.771	12.067	24.1	12.0	17.7	5.6	3.14	0.53	18.0	6.0	11.7
250	137.3	1.253	86.8	6.4	7.82	19.552	16.844	12.110	24.1	12.0	17.7	5.6	3.15	0.52	18.0	6.1	11.7
251	137.2	1.258	86.8	6.4	7.83	19.629	16.826	12.080	24.1	12.0	17.7	5.6	3.15	0.53	18.0	6.0	11.7
252	137.3	1.262	86.8	6.4	7.83	19.706	16.844	12.079	24.1	12.0	17.7	5.6	3.15	0.53	18.0	6.0	11.7
253	137.3	1.267	86.8	6.4	7.84	19.783	16.844	12.063	24.0	12.0	17.7	5.6	3.16	0.53	18.0	6.0	11.6
254	137.1	1.271	86.8	6.4	7.85	19.860	16.807	12.018	24.0	12.0	17.6	5.6	3.14	0.53	18.0	6.0	11.6
255	137.1	1.276	86.8	6.4	7.86	19.937	16.807	12.003	24.0	12.0	17.6	5.6	3.13	0.53	18.0	6.0	11.6
256	136.9	1.281	86.8	6.4	7.86	20.014	16.771	11.958	23.9	12.0	17.6	5.6	3.12	0.53	18.0	6.0	11.6

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. U-2412B

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project 39406.1.1 **County** GUILFORD **Owner**

Date: Sampled 3/22/13 **Received** 4/25/13 **Reported** 4/29/13

Sampled from **By** NEIL ROBERSON

Submitted by TED HOWARD 1995 **Standard Specifications**

785117 TO 785119
5/20/13

TEST RESULTS

Proj. Sample No.		ST-2#1	ST-2#2	ST-2#3			
Lab. Sample No.		785117	785118	785119			
Retained #4 Sieve	%	-	-	-			
Passing #10 Sieve	%	100	100	100			
Passing #40 Sieve	%	99	98	98			
Passing #200 Sieve	%	91	85	85			

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	2.0	4.4	4.4			
Fine Sand Ret - #270	%	11.9	17.3	16.3			
Silt 0.05 - 0.005 mm	%	56.0	64.2	59.2			
Clay < 0.005 mm	%	30.2	14.1	20.1			
T-#		T-5670	T-5670	T-5670			
Specific Gravity		2.787	2.738	2.729			

L. L.		62	66	68			
P. I.		22	17	19			
AASHTO Classification		A-7-5(26)	A-7-5(21)	A-7-5(23)			
Station		405+70	405+70	405+70			
Offset		3' RT	3' RT	3' RT			
Alignment		L	L	L			
Location							
Depth (Ft)		25.00	25.00	25.00			
	to	27.00	27.00	27.00			
Final Moisture	%	54.67	60.39	56.56			

cc: NEIL ROBERSON
GREG BODENHEIMER

Soils Engineer

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	57.09	49.26	**Plastic Limits:**	0	
Dry Density (pcf):	62.06	76.08	**Plasticity Index (%):**	0	
Saturation (%):	89.19	108.30			
Void Ratio:	1.7432	1.2381	**Specific Gravity:**	2.734	Measured

Soil Description: Orange tan colored soft clay.

Project Number: 39406.1.1 **Depth:** 25.0 - 27.0 ft

Sample Number: ST-2 **Boring Number:**

Project: U-2412B

Client: T-5670

Location: Guilford County (Sta. 405+70)

Remarks:
Solid Height 0.36553 inches Est.
Blows/Ft= NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	57.09	49.26	**Plastic Limits:**	0	
Dry Density (pcf):	62.06	76.08	**Plasticity Index (%):**	0	
Saturation (%):	89.19	108.30			
Void Ratio:	1.7432	1.2381	**Specific Gravity:**	2.734	Measured

Soil Description: Orange tan colored soft clay.

Project Number: 39406.1.1 **Depth:** 25.0 - 27.0 ft **Remarks:**

Sample Number: ST-2 **Boring Number:** Solid Height 0.36553 inches Est. Blows/Ft= NA

Project: U-2412B

Client: T-5670

Location: Guilford County (Sta. 405+70)

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	57.09	49.26	**Plastic Limits:**	0	
Dry Density (pcf):	62.06	76.08	**Plasticity Index (%):**	0	
Saturation (%):	89.19	108.30			
Void Ratio:	1.7432	1.2381	**Specific Gravity:**	2.734	Measured

Soil Description: Orange tan colored soft clay.

Project Number: 39406.1.1 **Depth:** 25.0 - 27.0 ft **Remarks:**

Sample Number: ST-2 **Boring Number:** Solid Height 0.36553 inches Est. Blows/Ft= NA

Project: U-2412B

Client: T-5670

Location: Guilford County (Sta. 405+70)

Consolidation Test Results
Summary

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County (Sta. 405+70)
Job Number: T-5670

Sample Number: ST-2 **Soil Description:**
Boring Number: Orange tan colored soft clay.
Depth: 25.0 - 27.0 ft **Remarks:** **Test Number:**
Sample Type: Undisturbed Solid Height 0.36553 inches Est. Blows/Ft= NA **Test Date:**

Index	Load Sequence (tsf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	1.0025	0.6371	0.00	1.7432	0.000		0.000	
1	0.031	0.0008	1.0017	0.6363	0.08	1.7410	6.003		129.341	
2	0.063	0.0014	1.0011	0.6357	0.14	1.7394	0.114		6802.661	
3	0.125	0.0034	0.9991	0.6337	0.34	1.7339	1.563		494.183	
4	0.250	0.0073	0.9952	0.6298	0.73	1.7233	7.300		104.985	
5	0.500	0.0141	0.9884	0.6230	1.41	1.7047	0.309		2448.824	
6	1.000	0.0251	0.9774	0.6120	2.50	1.6746	0.250		2956.879	
7	2.000	0.0388	0.9637	0.5983	3.87	1.6371	0.191		3754.660	
8	4.000	0.0714	0.9311	0.5657	7.12	1.5479	0.295		2276.362	
9	2.000	0.0668	0.9357	0.5703	6.66	1.5604	0.000		0.000	
10	1.000	0.0607	0.9418	0.5764	6.05	1.5771	0.000		0.000	
11	0.500	0.0532	0.9493	0.5839	5.31	1.5977	0.000		0.000	
12	1.000	0.0554	0.9471	0.5817	5.53	1.5916	0.000		0.000	
13	2.000	0.0597	0.9428	0.5774	5.96	1.5799	0.000		0.000	
14	4.000	0.0731	0.9294	0.5640	7.29	1.5432	0.000		0.000	
15	8.000	0.1627	0.8398	0.4744	16.23	1.2980	0.236		2312.430	
16	16.000	0.2645	0.7380	0.3726	26.38	1.0195	0.490		860.093	
17	4.000	0.2516	0.7509	0.3855	25.10	1.0548	0.000		0.000	
18	0.016	0.1846	0.8179	0.4525	18.41	1.2381	0.000		0.000	

Tested By: **Checked By:**

Consolidation Test
Consolidation Specimen Information

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County (Sta. 405+70)
Job Number: T-5670 **Test Date:**

Sample Number: ST-2 **Soil Description:**
Boring Number: Orange tan colored soft clay.
Depth: 25.0 - 27.0 ft **Remarks:**
Sample Type: Undisturbed Solid Height 0.36553 inches Est. Blows/Ft= NA

Test Number:
Liquid Limit: 0.0000 **Initial Void Ratio:** 1.7432 **Initial Height (in):** 1.0025
Plastic Limit: 0.0000 **Plasticity Index (%):** 0.0000 **Initial Diameter (in):** 2.4998
Specific Gravity: 2.7340 Measured **Weight of Ring (g):** 107.3200

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	125.92	119.65
Dry Soil + Container (g)	80.16	80.16
Weight of Container (g)	0.00	0.00
Moisture Content (%)	57.09	49.26
Void Ratio	1.7432	1.2381
Saturation (%)	89.19	108.30
Dry Density (pcf)	62.06	76.08

Tested By: **Checked By:**

ncdot

Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date

Tested By:

Effective Stress at Maximum Deviator Stress Criterion

Deviator Stress Vs. Axial Strain

Initial	Specimen A	B	C	D
Water Content (%)	47.9	55.7	54.4	
Dry Density (pcf)	69.7	66.0	66.8	
Saturation (%)	89.23	95.96	95.71	
Void Ratio	1.490	1.583	1.543	
Diameter (in)	2.830	2.854	2.864	
Height (in)	5.677	5.991	6.074	
Specific Gravity	2.79	2.74	2.73	
Liquid Limit	0	0	0	
Plastic Limit	0	0	0	
After Consolidation	**A**	**B**	**C**	**D**
B-Value	0.00	0.00	0.00	
Water Content (%)	48.3	58.4	59.9	
Dry Density (pcf)	70.37	68.48	71.32	
Saturation (%)	100.00	100.00	100.00	
Void Ratio	1.472	1.496	1.389	
Effective Stress (psi)	6.0	12.0	24.0	
Back Press. (psi)	70.7	70.4	71.0	
Rate of Strain	0.009	0.009	0.009	

Maximium Deviator Stress Criterion	
C (psi)	0.0
C' (psi)	0.0
Ø (deg)	0.0
Ø' (deg)	0.0

After Shear	A	B	C	D
σ'1 at Failure (psi)	8.95	29.82	38.69	
σ'3 at Failure (psi)	3.19	7.84	16.58	

Project:	U-2412B
Location:	Guilford County (Sta. 405 + 70)
Project Number:	39406.1.1
Boring Number:	
Sample Number:	ST-2
Depth:	25.0 - 27.0 ft
Sample Type:	Undisturbed
Description:	
Test Type	Consolidated Undrained
Remarks	

Failure Photographs

ncdot

Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date:

Tested By:

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)

Change in Pore Pressure vs. Axial Strain

Deviator Stress vs. Axial Strain

Principal Stress Ratio vs. Axial Strain

Change in Pore Pressure vs. Axial Strain
Change in Pore Pressure (psi)
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
0.000
5.000
10.000
15.000
20.000
25.000
Axial Strain (%)
Specimen A
Specimen B
Specimen C
Specimen D

Mohr Stress Circles at Maximum Deviator Stress Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at Maximum Principal Stress Ratio Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at 15% Axial Strain Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)
Q (psi)
P' (psi)
0.0
10.0
20.0
30.0
Specimen A
Specimen B
Specimen C
Specimen D
Tangent Line

Stress Paths (Total)
(C' = 0.0 Ø' = 0.0)
Q (psi)
P (psi)
0.0
10.0
20.0
30.0
40.0

Specimen A Shear Data

CU Triaxial Test

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File Location
T-5670.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5670
Sample Location: Guilford County (Sta. 405 + 70)
Sample Description: Orange-tan colored clay
Remarks: 25° shear plane with slicken side

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.7869999
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.830	2.831	
Height (in)	5.677	5.617	
Weight (grams)	966.00		1010.00
Moisture (%)	47.93		54.67
Dry Density (pcf)	69.68	70.37	
Saturation (%)	89.23	100.00	
Void Ratio	1.490	1.472	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 76.700
Effective Confining Stress (psi): 6.0
Corrected Peak Deviator Stress (psi): 5.755 at reading number: 106

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	29.9	0.126	70.7	0.0	6.29	0.000	0.000	0.000	6.0	6.0	6.0	6.0	1.00	0.00	6.0	0.0	6.0
1	38.5	0.130	71.2	0.6	6.30	0.065	1.369	1.343	7.4	6.0	6.8	5.5	1.24	0.42	6.7	0.7	6.2
2	42.7	0.134	71.5	0.9	6.30	0.139	2.035	1.978	8.0	6.0	7.2	5.2	1.38	0.43	7.0	1.0	6.2
3	45.1	0.138	71.7	1.1	6.31	0.213	2.405	2.317	8.4	6.0	7.3	5.0	1.46	0.46	7.2	1.2	6.1
4	46.6	0.143	71.9	1.2	6.31	0.286	2.645	2.526	8.6	6.0	7.3	4.8	1.53	0.49	7.3	1.3	6.1
5	47.7	0.147	72.0	1.4	6.32	0.360	2.830	2.680	8.7	6.0	7.3	4.7	1.57	0.52	7.4	1.3	6.0
6	48.5	0.150	72.1	1.5	6.32	0.417	2.960	2.785	8.8	6.0	7.4	4.6	1.61	0.53	7.4	1.4	6.0
7	49.5	0.154	72.2	1.6	6.32	0.491	3.108	2.902	8.9	6.0	7.4	4.5	1.65	0.55	7.5	1.5	5.9
8	50.5	0.158	72.3	1.7	6.33	0.557	3.274	3.040	9.1	6.0	7.4	4.4	1.70	0.55	7.6	1.5	5.9
9	51.9	0.162	72.4	1.8	6.33	0.630	3.496	3.229	9.3	6.0	7.5	4.3	1.75	0.55	7.7	1.6	5.9
10	52.0	0.166	72.5	1.9	6.34	0.704	3.515	3.216	9.3	6.0	7.4	4.2	1.77	0.58	7.7	1.6	5.8
11	53.2	0.170	72.6	1.9	6.34	0.778	3.700	3.369	9.4	6.0	7.5	4.1	1.82	0.58	7.7	1.7	5.8
12	53.9	0.174	72.7	2.0	6.35	0.851	3.811	3.447	9.5	6.0	7.5	4.0	1.86	0.59	7.8	1.7	5.7
13	54.4	0.178	72.7	2.1	6.35	0.925	3.885	3.489	9.5	6.0	7.5	4.0	1.87	0.59	7.8	1.7	5.7
14	53.9	0.183	72.8	2.1	6.36	1.007	3.811	3.381	9.4	6.0	7.3	3.9	1.87	0.64	7.7	1.7	5.6
15	56.3	0.187	72.9	2.2	6.36	1.080	4.199	3.734	9.8	6.0	7.6	3.8	1.97	0.59	7.9	1.9	5.7
16	55.9	0.191	72.9	2.3	6.37	1.154	4.125	3.629	9.7	6.0	7.4	3.8	1.96	0.62	7.9	1.8	5.6
17	54.9	0.196	72.9	2.3	6.37	1.236	3.977	3.448	9.5	6.0	7.2	3.8	1.92	0.67	7.8	1.7	5.5
18	57.2	0.200	73.0	2.4	6.38	1.310	4.329	3.763	9.8	6.0	7.5	3.7	2.02	0.63	7.9	1.9	5.6

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	57.4	0.205	73.0	2.4	6.38	1.391	4.366	3.764	9.8	6.0	7.4	3.7	2.03	0.63	7.9	1.9	5.5
20	58.4	0.208	73.1	2.4	6.39	1.457	4.532	3.900	9.9	6.0	7.5	3.6	2.07	0.62	8.0	1.9	5.6
21	58.6	0.213	73.1	2.5	6.39	1.539	4.551	3.883	9.9	6.0	7.5	3.6	2.09	0.64	8.0	1.9	5.5
22	58.8	0.217	73.2	2.5	6.40	1.621	4.588	3.883	9.9	6.0	7.4	3.5	2.10	0.64	8.0	1.9	5.5
23	59.7	0.222	73.2	2.5	6.40	1.702	4.736	3.993	10.0	6.0	7.5	3.5	2.14	0.63	8.0	2.0	5.5
24	59.6	0.227	73.2	2.6	6.41	1.784	4.717	3.940	10.0	6.0	7.4	3.5	2.13	0.65	8.0	2.0	5.5
25	60.5	0.231	73.2	2.6	6.41	1.866	4.865	4.049	10.1	6.0	7.5	3.5	2.17	0.64	8.1	2.0	5.5
26	61.2	0.236	73.2	2.6	6.42	1.956	4.976	4.119	10.2	6.0	7.6	3.5	2.19	0.63	8.1	2.1	5.5
27	60.9	0.241	73.3	2.6	6.42	2.038	4.921	4.043	10.1	6.0	7.5	3.4	2.18	0.65	8.1	2.0	5.5
28	60.8	0.246	73.3	2.6	6.43	2.120	4.902	4.021	10.1	6.0	7.4	3.4	2.18	0.66	8.1	2.0	5.4
29	61.7	0.250	73.3	2.6	6.43	2.202	5.050	4.162	10.2	6.0	7.6	3.4	2.22	0.64	8.1	2.1	5.5
30	61.4	0.254	73.3	2.7	6.44	2.275	4.995	4.104	10.2	6.0	7.5	3.4	2.22	0.65	8.1	2.1	5.4
31	61.5	0.259	73.4	2.7	6.45	2.357	5.013	4.118	10.2	6.0	7.5	3.3	2.23	0.66	8.1	2.1	5.4
32	62.3	0.263	73.4	2.7	6.45	2.439	5.143	4.240	10.3	6.0	7.6	3.3	2.27	0.64	8.2	2.1	5.5
33	63.0	0.268	73.4	2.7	6.46	2.513	5.253	4.344	10.4	6.0	7.7	3.3	2.31	0.63	8.2	2.2	5.5
34	63.0	0.272	73.4	2.7	6.46	2.595	5.253	4.340	10.4	6.0	7.7	3.3	2.31	0.63	8.2	2.2	5.5
35	63.2	0.276	73.4	2.7	6.47	2.668	5.290	4.372	10.4	6.0	7.7	3.3	2.32	0.63	8.2	2.2	5.5
36	63.6	0.281	73.4	2.7	6.47	2.750	5.346	4.422	10.5	6.0	7.7	3.3	2.34	0.62	8.3	2.2	5.5
37	64.3	0.286	73.4	2.8	6.48	2.832	5.457	4.525	10.6	6.0	7.8	3.3	2.38	0.61	8.3	2.3	5.5
38	63.9	0.290	73.4	2.8	6.48	2.914	5.401	4.467	10.5	6.0	7.7	3.3	2.36	0.62	8.3	2.2	5.5
39	63.8	0.295	73.4	2.8	6.49	2.996	5.383	4.445	10.5	6.0	7.7	3.3	2.35	0.62	8.3	2.2	5.5
40	64.6	0.299	73.4	2.8	6.49	3.078	5.512	4.566	10.6	6.0	7.8	3.3	2.40	0.61	8.3	2.3	5.5
41	64.7	0.304	73.4	2.8	6.50	3.159	5.531	4.579	10.6	6.0	7.8	3.3	2.41	0.61	8.3	2.3	5.5
42	64.8	0.308	73.4	2.8	6.50	3.233	5.549	4.593	10.6	6.0	7.8	3.3	2.41	0.61	8.3	2.3	5.5
43	65.1	0.313	73.4	2.8	6.51	3.315	5.586	4.624	10.7	6.0	7.9	3.3	2.42	0.60	8.4	2.3	5.6
44	65.2	0.317	73.4	2.8	6.51	3.397	5.605	4.637	10.7	6.0	7.9	3.3	2.43	0.60	8.4	2.3	5.6
45	66.2	0.322	73.5	2.8	6.52	3.479	5.771	4.793	10.8	6.0	8.0	3.2	2.49	0.59	8.4	2.4	5.6
46	65.9	0.326	73.5	2.8	6.53	3.552	5.716	4.736	10.8	6.0	8.0	3.2	2.47	0.60	8.4	2.4	5.6
47	65.8	0.331	73.5	2.8	6.53	3.634	5.697	4.713	10.8	6.0	7.9	3.2	2.46	0.60	8.4	2.4	5.6
48	66.9	0.335	73.5	2.9	6.54	3.708	5.882	4.887	10.9	6.0	8.1	3.2	2.53	0.58	8.5	2.4	5.6
49	66.7	0.339	73.5	2.9	6.54	3.781	5.845	4.847	10.9	6.0	8.0	3.2	2.52	0.59	8.5	2.4	5.6
50	66.7	0.343	73.5	2.9	6.55	3.863	5.845	4.842	10.9	6.0	8.0	3.2	2.52	0.59	8.5	2.4	5.6
51	66.8	0.348	73.5	2.9	6.55	3.945	5.864	4.855	10.9	6.0	8.0	3.2	2.52	0.59	8.5	2.4	5.6
52	66.9	0.352	73.5	2.9	6.56	4.019	5.882	4.869	10.9	6.0	8.0	3.2	2.54	0.59	8.5	2.4	5.6
53	65.4	0.357	73.5	2.9	6.56	4.101	5.642	4.633	10.7	6.0	7.8	3.2	2.45	0.62	8.4	2.3	5.5
54	66.5	0.361	73.5	2.9	6.57	4.174	5.808	4.789	10.8	6.0	8.0	3.2	2.51	0.60	8.4	2.4	5.6
55	66.7	0.365	73.5	2.9	6.57	4.248	5.845	4.820	10.9	6.0	8.0	3.2	2.52	0.60	8.5	2.4	5.6
56	66.7	0.370	73.5	2.9	6.58	4.330	5.845	4.815	10.9	6.0	8.0	3.2	2.52	0.60	8.5	2.4	5.6
57	67.2	0.374	73.5	2.9	6.58	4.403	5.919	4.882	10.9	6.0	8.0	3.2	2.54	0.59	8.5	2.4	5.6
58	66.6	0.378	73.5	2.9	6.59	4.477	5.827	4.789	10.8	6.0	8.0	3.2	2.51	0.60	8.4	2.4	5.6
59	67.6	0.382	73.5	2.9	6.59	4.551	5.993	4.943	11.0	6.0	8.1	3.2	2.56	0.58	8.5	2.5	5.6

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	67.4	0.386	73.6	2.9	6.60	4.624	5.956	4.904	11.0	6.0	8.0	3.1	2.56	0.59	8.5	2.5	5.6
61	67.4	0.391	73.6	2.9	6.60	4.706	5.956	4.899	10.9	6.0	8.0	3.1	2.56	0.59	8.5	2.4	5.6
62	68.2	0.395	73.6	2.9	6.61	4.780	6.086	5.018	11.1	6.0	8.2	3.1	2.60	0.58	8.6	2.5	5.6
63	67.8	0.400	73.6	2.9	6.61	4.862	6.012	4.942	11.0	6.0	8.1	3.1	2.58	0.59	8.5	2.5	5.6
64	67.8	0.404	73.6	2.9	6.62	4.935	6.012	4.938	11.0	6.0	8.1	3.1	2.58	0.59	8.5	2.5	5.6
65	68.1	0.408	73.6	2.9	6.63	5.017	6.067	4.986	11.0	6.0	8.1	3.1	2.59	0.58	8.5	2.5	5.6
66	67.9	0.413	73.6	2.9	6.63	5.099	6.030	4.946	11.0	6.0	8.1	3.1	2.58	0.59	8.5	2.5	5.6
67	68.6	0.417	73.6	2.9	6.64	5.181	6.141	5.046	11.1	6.0	8.2	3.1	2.61	0.58	8.6	2.5	5.7
68	68.9	0.422	73.6	2.9	6.64	5.263	6.197	5.094	11.1	6.0	8.2	3.1	2.62	0.57	8.6	2.5	5.7
69	67.8	0.427	73.6	2.9	6.65	5.345	6.012	4.913	11.0	6.0	8.0	3.1	2.57	0.59	8.5	2.5	5.6
70	69.7	0.431	73.6	2.9	6.65	5.418	6.326	5.206	11.3	6.0	8.3	3.1	2.66	0.56	8.7	2.6	5.7
71	69.2	0.436	73.6	2.9	6.66	5.508	6.234	5.113	11.2	6.0	8.2	3.1	2.63	0.57	8.6	2.6	5.7
72	69.8	0.440	73.6	2.9	6.67	5.590	6.345	5.213	11.3	6.0	8.3	3.1	2.66	0.56	8.7	2.6	5.7
73	69.3	0.445	73.5	2.9	6.67	5.664	6.252	5.121	11.2	6.0	8.3	3.2	2.62	0.56	8.6	2.6	5.7
74	68.6	0.449	73.5	2.9	6.68	5.746	6.141	5.011	11.1	6.0	8.2	3.2	2.58	0.58	8.6	2.5	5.7
75	69.7	0.454	73.6	2.9	6.68	5.828	6.326	5.181	11.2	6.0	8.3	3.1	2.65	0.56	8.6	2.6	5.7
76	69.3	0.458	73.6	2.9	6.69	5.909	6.252	5.106	11.2	6.0	8.2	3.1	2.63	0.57	8.6	2.6	5.7
77	69.6	0.463	73.6	2.9	6.69	5.983	6.308	5.153	11.2	6.0	8.3	3.1	2.64	0.57	8.6	2.6	5.7
78	69.7	0.467	73.6	2.9	6.70	6.065	6.326	5.166	11.2	6.0	8.3	3.1	2.65	0.56	8.6	2.6	5.7
79	70.0	0.472	73.6	2.9	6.71	6.147	6.363	5.195	11.2	6.0	8.3	3.1	2.66	0.56	8.6	2.6	5.7
80	70.5	0.476	73.5	2.9	6.71	6.221	6.456	5.277	11.3	6.0	8.4	3.2	2.67	0.55	8.7	2.6	5.8
81	71.0	0.480	73.6	2.9	6.72	6.302	6.530	5.341	11.4	6.0	8.5	3.1	2.70	0.55	8.7	2.7	5.8
82	71.1	0.485	73.6	2.9	6.72	6.384	6.548	5.353	11.4	6.0	8.5	3.1	2.71	0.54	8.7	2.7	5.8
83	70.7	0.490	73.6	2.9	6.73	6.466	6.474	5.279	11.3	6.0	8.4	3.1	2.68	0.55	8.7	2.6	5.8
84	70.5	0.494	73.6	2.9	6.73	6.548	6.456	5.256	11.3	6.0	8.4	3.1	2.68	0.55	8.7	2.6	5.8
85	70.9	0.499	73.6	2.9	6.74	6.630	6.511	5.302	11.4	6.0	8.4	3.1	2.69	0.55	8.7	2.7	5.8
86	71.8	0.503	73.6	2.9	6.75	6.712	6.659	5.435	11.5	6.0	8.6	3.1	2.73	0.54	8.8	2.7	5.9
87	71.1	0.508	73.5	2.9	6.75	6.793	6.548	5.326	11.4	6.0	8.5	3.2	2.68	0.54	8.7	2.7	5.8
88	71.6	0.512	73.5	2.9	6.76	6.867	6.622	5.390	11.4	6.0	8.6	3.2	2.70	0.53	8.7	2.7	5.9
89	71.7	0.517	73.5	2.9	6.76	6.949	6.641	5.402	11.4	6.0	8.6	3.2	2.71	0.53	8.7	2.7	5.9
90	72.2	0.521	73.5	2.9	6.77	7.031	6.715	5.466	11.5	6.0	8.6	3.2	2.73	0.53	8.8	2.7	5.9
91	71.6	0.526	73.5	2.9	6.78	7.113	6.622	5.374	11.4	6.0	8.5	3.2	2.70	0.54	8.7	2.7	5.9
92	71.8	0.531	73.5	2.9	6.78	7.195	6.659	5.403	11.5	6.0	8.6	3.2	2.71	0.53	8.7	2.7	5.9
93	72.1	0.535	73.5	2.9	6.79	7.276	6.696	5.432	11.5	6.0	8.6	3.2	2.72	0.53	8.8	2.7	5.9
94	72.2	0.539	73.5	2.9	6.79	7.350	6.715	5.444	11.5	6.0	8.6	3.2	2.72	0.53	8.8	2.7	5.9
95	72.2	0.544	73.5	2.9	6.80	7.432	6.715	5.439	11.5	6.0	8.6	3.2	2.70	0.52	8.8	2.7	5.9
96	72.8	0.548	73.5	2.9	6.80	7.506	6.807	5.519	11.6	6.0	8.7	3.2	2.74	0.52	8.8	2.8	5.9
97	73.0	0.553	73.5	2.9	6.81	7.587	6.844	5.548	11.6	6.0	8.7	3.2	2.75	0.52	8.8	2.8	5.9
98	72.8	0.557	73.5	2.9	6.82	7.661	6.807	5.509	11.6	6.0	8.7	3.2	2.74	0.52	8.8	2.8	5.9
99	72.8	0.561	73.5	2.9	6.82	7.735	6.807	5.504	11.6	6.0	8.7	3.2	2.74	0.52	8.8	2.8	5.9
100	73.5	0.566	73.5	2.9	6.83	7.817	6.918	5.600	11.6	6.0	8.8	3.2	2.75	0.51	8.8	2.8	6.0

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	73.9	0.570	73.5	2.9	6.83	7.890	6.992	5.663	11.7	6.0	8.9	3.2	2.77	0.50	8.9	2.8	6.0
102	74.0	0.574	73.5	2.9	6.84	7.972	7.011	5.675	11.7	6.0	8.9	3.2	2.78	0.50	8.9	2.8	6.0
103	73.9	0.578	73.5	2.9	6.84	8.046	6.992	5.653	11.7	6.0	8.8	3.2	2.77	0.50	8.9	2.8	6.0
104	73.7	0.583	73.5	2.9	6.85	8.119	6.955	5.613	11.7	6.0	8.8	3.2	2.76	0.51	8.9	2.8	6.0
105	74.2	0.587	73.5	2.9	6.86	8.201	7.029	5.676	11.7	6.0	8.9	3.2	2.78	0.50	8.9	2.8	6.0
106	74.7	0.591	73.5	2.9	6.86	8.275	7.122	5.755	11.8	6.0	8.9	3.2	2.80	0.50	8.9	2.9	6.1
107	74.2	0.596	73.5	2.9	6.87	8.357	7.029	5.381	11.4	6.0	8.6	3.2	2.69	0.53	8.7	2.7	5.9
108	71.0	0.600	73.4	2.7	6.87	8.439	6.530	4.915	11.0	6.0	8.3	3.3	2.47	0.55	8.5	2.5	5.8
109	74.0	0.605	73.5	2.8	6.88	8.512	7.011	5.348	11.4	6.0	8.6	3.2	2.66	0.53	8.7	2.7	5.9
110	73.6	0.609	73.5	2.8	6.88	8.594	6.937	5.272	11.3	6.0	8.5	3.2	2.64	0.54	8.7	2.6	5.9
111	74.0	0.613	73.5	2.8	6.89	8.668	7.011	5.332	11.4	6.0	8.6	3.2	2.65	0.53	8.7	2.7	5.9
112	74.0	0.618	73.5	2.8	6.90	8.750	7.011	5.323	11.4	6.0	8.5	3.2	2.65	0.53	8.7	2.7	5.9
113	74.3	0.623	73.5	2.8	6.90	8.832	7.048	5.349	11.4	6.0	8.6	3.2	2.66	0.53	8.7	2.7	5.9
114	74.7	0.627	73.5	2.8	6.91	8.913	7.122	5.408	11.5	6.0	8.6	3.2	2.68	0.52	8.8	2.7	5.9
115	75.1	0.631	73.5	2.8	6.91	8.987	7.177	5.450	11.5	6.0	8.7	3.2	2.69	0.52	8.8	2.7	5.9
116	75.1	0.636	73.4	2.8	6.92	9.069	7.177	5.442	11.5	6.0	8.7	3.3	2.67	0.51	8.8	2.7	6.0
117	75.0	0.640	73.4	2.8	6.93	9.151	7.159	5.416	11.5	6.0	8.7	3.3	2.67	0.52	8.8	2.7	6.0
118	75.4	0.645	73.4	2.8	6.93	9.233	7.233	5.475	11.5	6.0	8.7	3.3	2.68	0.51	8.8	2.7	6.0
119	76.4	0.649	73.4	2.8	6.94	9.306	7.381	5.601	11.6	6.0	8.9	3.3	2.72	0.50	8.8	2.8	6.1
120	75.8	0.654	73.4	2.8	6.95	9.388	7.288	5.508	11.6	6.0	8.8	3.3	2.69	0.51	8.8	2.8	6.0
121	75.0	0.658	73.4	2.8	6.95	9.470	7.159	5.383	11.4	6.0	8.6	3.3	2.66	0.52	8.7	2.7	5.9
122	75.3	0.663	73.4	2.8	6.96	9.552	7.214	5.424	11.5	6.0	8.7	3.3	2.67	0.52	8.8	2.7	6.0
123	75.1	0.668	73.4	2.8	6.96	9.634	7.177	5.382	11.4	6.0	8.6	3.3	2.65	0.52	8.7	2.7	5.9
124	75.3	0.672	73.4	2.8	6.97	9.707	7.214	5.408	11.5	6.0	8.7	3.3	2.65	0.51	8.8	2.7	6.0
125	75.0	0.676	73.4	2.8	6.98	9.789	7.159	5.349	11.4	6.0	8.6	3.3	2.63	0.52	8.7	2.7	6.0
126	76.7	0.681	73.4	2.8	6.98	9.871	7.436	5.590	11.6	6.0	8.9	3.3	2.70	0.49	8.8	2.8	6.1
127	76.0	0.686	73.4	2.8	6.99	9.953	7.325	5.481	11.5	6.0	8.8	3.3	2.67	0.50	8.8	2.7	6.0
128	76.3	0.690	73.4	2.8	6.99	10.026	7.362	5.507	11.6	6.0	8.8	3.3	2.68	0.50	8.8	2.8	6.0
129	76.4	0.694	73.4	2.8	7.00	10.108	7.381	5.515	11.6	6.0	8.8	3.3	2.68	0.50	8.8	2.8	6.0
130	76.6	0.699	73.4	2.8	7.01	10.190	7.418	5.539	11.6	6.0	8.8	3.3	2.69	0.50	8.8	2.8	6.1
131	76.4	0.703	73.4	2.7	7.01	10.272	7.381	5.497	11.5	6.0	8.8	3.3	2.66	0.50	8.8	2.7	6.1
132	76.7	0.708	73.4	2.7	7.02	10.346	7.436	5.539	11.6	6.0	8.8	3.3	2.67	0.49	8.8	2.8	6.1
133	76.5	0.712	73.4	2.7	7.03	10.428	7.399	5.497	11.5	6.0	8.8	3.3	2.66	0.50	8.8	2.7	6.1
134	77.1	0.717	73.4	2.7	7.03	10.509	7.492	5.571	11.6	6.0	8.9	3.3	2.68	0.49	8.8	2.8	6.1
135	76.1	0.721	73.4	2.7	7.04	10.583	7.344	5.430	11.5	6.0	8.7	3.3	2.64	0.50	8.8	2.7	6.0
136	76.7	0.726	73.4	2.7	7.04	10.665	7.436	5.504	11.6	6.0	8.8	3.3	2.66	0.50	8.8	2.8	6.1
137	75.8	0.730	73.4	2.7	7.05	10.747	7.288	5.363	11.4	6.0	8.7	3.3	2.62	0.51	8.7	2.7	6.0
138	77.3	0.734	73.4	2.7	7.06	10.820	7.529	5.570	11.6	6.0	8.9	3.3	2.68	0.49	8.8	2.8	6.1
139	77.2	0.739	73.4	2.7	7.06	10.902	7.510	5.545	11.6	6.0	8.9	3.3	2.66	0.49	8.8	2.8	6.1
140	76.8	0.743	73.4	2.7	7.07	10.976	7.455	5.487	11.5	6.0	8.8	3.3	2.66	0.50	8.8	2.7	6.1
141	77.2	0.747	73.4	2.7	7.08	11.050	7.510	5.528	11.6	6.0	8.9	3.3	2.65	0.49	8.8	2.8	6.1

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	77.2	0.752	73.4	2.7	7.08	11.131	7.510	5.520	11.6	6.0	8.9	3.3	2.65	0.49	8.8	2.8	6.1
143	77.8	0.756	73.4	2.7	7.09	11.205	7.603	5.594	11.6	6.0	8.9	3.3	2.67	0.48	8.8	2.8	6.1
144	76.9	0.760	73.4	2.7	7.09	11.279	7.473	5.471	11.5	6.0	8.8	3.3	2.64	0.49	8.8	2.7	6.1
145	77.2	0.765	73.4	2.7	7.10	11.361	7.510	5.495	11.5	6.0	8.8	3.3	2.64	0.49	8.8	2.7	6.1
146	77.6	0.769	73.3	2.7	7.11	11.434	7.584	5.552	11.6	6.0	8.9	3.4	2.65	0.48	8.8	2.8	6.1
147	77.2	0.773	73.4	2.7	7.11	11.508	7.510	5.479	11.5	6.0	8.8	3.3	2.64	0.49	8.8	2.7	6.1
148	77.6	0.777	73.4	2.7	7.12	11.590	7.584	5.535	11.6	6.0	8.9	3.3	2.66	0.49	8.8	2.8	6.1
149	77.5	0.782	73.4	2.7	7.12	11.663	7.566	5.511	11.6	6.0	8.9	3.3	2.65	0.49	8.8	2.8	6.1
150	78.0	0.786	73.4	2.7	7.13	11.745	7.640	5.567	11.6	6.0	8.9	3.3	2.67	0.49	8.8	2.8	6.1
151	78.0	0.791	73.4	2.7	7.14	11.827	7.640	5.558	11.6	6.0	8.9	3.3	2.66	0.49	8.8	2.8	6.1
152	76.8	0.795	73.4	2.7	7.14	11.901	7.455	5.387	11.4	6.0	8.7	3.3	2.61	0.50	8.7	2.7	6.0
153	78.1	0.799	73.3	2.7	7.15	11.975	7.658	5.558	11.6	6.0	8.9	3.4	2.65	0.48	8.8	2.8	6.1
154	77.4	0.804	73.4	2.7	7.16	12.056	7.547	5.451	11.5	6.0	8.8	3.3	2.63	0.50	8.8	2.7	6.1
155	77.4	0.808	73.3	2.7	7.16	12.138	7.547	5.442	11.5	6.0	8.8	3.4	2.61	0.49	8.8	2.7	6.1
156	77.5	0.812	73.3	2.7	7.17	12.212	7.566	5.451	11.5	6.0	8.8	3.4	2.62	0.49	8.8	2.7	6.1
157	77.9	0.817	73.4	2.7	7.18	12.294	7.621	5.490	11.5	6.0	8.8	3.3	2.64	0.49	8.8	2.7	6.1
158	78.6	0.822	73.3	2.7	7.18	12.376	7.732	5.578	11.6	6.0	8.9	3.4	2.66	0.48	8.8	2.8	6.2
159	77.6	0.826	73.3	2.7	7.19	12.457	7.584	5.440	11.5	6.0	8.8	3.4	2.61	0.49	8.8	2.7	6.1
160	78.3	0.831	73.3	2.7	7.20	12.539	7.695	5.528	11.6	6.0	8.9	3.4	2.64	0.48	8.8	2.8	6.1
161	78.1	0.835	73.3	2.7	7.20	12.621	7.658	5.486	11.5	6.0	8.9	3.4	2.63	0.49	8.8	2.7	6.1
162	78.0	0.840	73.3	2.7	7.21	12.703	7.640	5.461	11.5	6.0	8.8	3.4	2.62	0.49	8.8	2.7	6.1
163	78.1	0.844	73.3	2.7	7.22	12.777	7.658	5.469	11.5	6.0	8.8	3.4	2.62	0.49	8.8	2.7	6.1
164	77.6	0.849	73.3	2.7	7.22	12.858	7.584	5.396	11.4	6.0	8.8	3.4	2.60	0.50	8.7	2.7	6.1
165	77.3	0.853	73.3	2.7	7.23	12.940	7.529	5.338	11.4	6.0	8.7	3.4	2.58	0.50	8.7	2.7	6.0
166	77.8	0.858	73.3	2.7	7.24	13.022	7.603	5.394	11.4	6.0	8.8	3.4	2.60	0.50	8.7	2.7	6.1
167	77.5	0.863	73.3	2.7	7.24	13.104	7.566	5.353	11.4	6.0	8.7	3.4	2.59	0.50	8.7	2.7	6.0
168	78.0	0.867	73.3	2.7	7.25	13.178	7.640	5.409	11.5	6.0	8.8	3.4	2.61	0.50	8.8	2.7	6.1
169	77.5	0.871	73.3	2.7	7.26	13.260	7.566	5.336	11.4	6.0	8.7	3.4	2.58	0.50	8.7	2.7	6.0
170	78.1	0.876	73.3	2.7	7.26	13.341	7.658	5.407	11.5	6.0	8.8	3.4	2.60	0.50	8.8	2.7	6.1
171	77.8	0.880	73.3	2.7	7.27	13.415	7.603	5.351	11.4	6.0	8.7	3.4	2.59	0.50	8.7	2.7	6.0
172	78.0	0.885	73.3	2.7	7.28	13.497	7.640	5.374	11.4	6.0	8.7	3.4	2.59	0.50	8.7	2.7	6.1
173	78.0	0.889	73.3	2.7	7.28	13.579	7.640	5.365	11.4	6.0	8.7	3.4	2.59	0.50	8.7	2.7	6.1
174	78.0	0.894	73.3	2.6	7.29	13.661	7.640	5.356	11.4	6.0	8.8	3.4	2.58	0.49	8.7	2.7	6.1
175	78.1	0.898	73.3	2.7	7.30	13.742	7.658	5.363	11.4	6.0	8.7	3.4	2.59	0.50	8.7	2.7	6.1
176	78.3	0.903	73.3	2.6	7.30	13.824	7.695	5.385	11.4	6.0	8.8	3.4	2.58	0.49	8.7	2.7	6.1
177	78.5	0.908	73.3	2.6	7.31	13.906	7.714	5.392	11.4	6.0	8.8	3.4	2.59	0.49	8.7	2.7	6.1
178	78.7	0.912	73.3	2.7	7.32	13.988	7.751	5.415	11.5	6.0	8.8	3.4	2.61	0.49	8.8	2.7	6.1
179	77.8	0.916	73.3	2.6	7.32	14.062	7.603	5.280	11.3	6.0	8.7	3.4	2.55	0.50	8.7	2.6	6.0
180	77.9	0.921	73.3	2.7	7.33	14.143	7.621	5.286	11.3	6.0	8.7	3.4	2.57	0.51	8.7	2.6	6.0
181	77.4	0.926	73.3	2.6	7.34	14.225	7.547	5.214	11.3	6.0	8.6	3.4	2.53	0.51	8.7	2.6	6.0
182	77.9	0.930	73.3	2.6	7.34	14.299	7.621	5.269	11.3	6.0	8.7	3.4	2.55	0.50	8.7	2.6	6.0

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	78.3	0.934	73.3	2.6	7.35	14.381	7.695	5.324	11.4	6.0	8.7	3.4	2.57	0.50	8.7	2.7	6.1
184	77.5	0.939	73.3	2.6	7.36	14.463	7.566	5.204	11.3	6.0	8.6	3.4	2.53	0.51	8.6	2.6	6.0
185	77.5	0.943	73.3	2.6	7.36	14.536	7.566	5.196	11.2	6.0	8.6	3.4	2.53	0.51	8.6	2.6	6.0
186	77.4	0.947	73.3	2.6	7.37	14.610	7.547	5.172	11.2	6.0	8.6	3.4	2.52	0.51	8.6	2.6	6.0
187	77.3	0.952	73.3	2.6	7.38	14.692	7.529	5.147	11.2	6.0	8.5	3.4	2.51	0.51	8.6	2.6	6.0
188	77.5	0.956	73.3	2.6	7.38	14.766	7.566	5.171	11.2	6.0	8.6	3.4	2.52	0.51	8.6	2.6	6.0
189	77.1	0.960	73.3	2.6	7.39	14.839	7.492	5.100	11.1	6.0	8.5	3.4	2.50	0.52	8.6	2.5	5.9
190	76.6	0.964	73.3	2.6	7.40	14.913	7.418	5.029	11.1	6.0	8.4	3.4	2.48	0.53	8.6	2.5	5.9
191	77.3	0.969	73.3	2.6	7.40	14.995	7.529	5.114	11.2	6.0	8.5	3.4	2.50	0.52	8.6	2.6	6.0
192	77.4	0.973	73.3	2.6	7.41	15.068	7.547	5.122	11.2	6.0	8.5	3.4	2.51	0.52	8.6	2.6	6.0
193	76.7	0.977	73.3	2.6	7.42	15.142	7.436	5.020	11.1	6.0	8.4	3.4	2.48	0.53	8.6	2.5	5.9
194	77.5	0.981	73.3	2.6	7.42	15.216	7.566	5.121	11.2	6.0	8.5	3.4	2.51	0.52	8.6	2.6	6.0
195	76.7	0.986	73.3	2.6	7.43	15.298	7.436	5.003	11.1	6.0	8.4	3.4	2.47	0.53	8.5	2.5	5.9
196	76.5	0.990	73.3	2.6	7.44	15.371	7.399	4.963	11.0	6.0	8.4	3.4	2.45	0.53	8.5	2.5	5.9
197	76.9	0.994	73.3	2.6	7.44	15.453	7.473	5.017	11.1	6.0	8.4	3.4	2.48	0.53	8.6	2.5	5.9
198	76.5	0.999	73.3	2.6	7.45	15.527	7.399	4.947	11.0	6.0	8.3	3.4	2.46	0.54	8.5	2.5	5.9
199	76.5	1.003	73.3	2.6	7.46	15.609	7.399	4.938	11.0	6.0	8.3	3.4	2.45	0.54	8.5	2.5	5.9
200	76.6	1.008	73.3	2.6	7.46	15.690	7.418	4.945	11.0	6.0	8.3	3.4	2.45	0.54	8.5	2.5	5.9
201	76.3	1.012	73.3	2.6	7.47	15.772	7.362	4.889	10.9	6.0	8.3	3.4	2.44	0.54	8.5	2.4	5.8
202	75.2	1.017	73.3	2.6	7.48	15.854	7.196	4.740	10.8	6.0	8.1	3.4	2.39	0.56	8.4	2.4	5.8
203	75.9	1.022	73.3	2.6	7.49	15.936	7.307	4.825	10.9	6.0	8.2	3.4	2.42	0.55	8.5	2.4	5.8
204	76.4	1.026	73.3	2.6	7.49	16.018	7.381	4.878	10.9	6.0	8.3	3.4	2.44	0.54	8.5	2.4	5.8
205	76.3	1.031	73.3	2.6	7.50	16.100	7.362	4.854	10.9	6.0	8.3	3.4	2.43	0.55	8.5	2.4	5.8
206	76.4	1.035	73.3	2.6	7.51	16.182	7.381	4.860	10.9	6.0	8.3	3.4	2.43	0.54	8.5	2.4	5.8
207	75.6	1.040	73.3	2.6	7.52	16.263	7.251	4.743	10.8	6.0	8.1	3.4	2.40	0.56	8.4	2.4	5.8
208	75.6	1.045	73.3	2.6	7.52	16.345	7.251	4.735	10.8	6.0	8.1	3.4	2.39	0.56	8.4	2.4	5.8
209	75.1	1.049	73.3	2.6	7.53	16.419	7.177	4.665	10.7	6.0	8.1	3.4	2.37	0.57	8.4	2.3	5.7
210	75.0	1.053	73.3	2.6	7.54	16.501	7.159	4.641	10.7	6.0	8.1	3.4	2.35	0.56	8.4	2.3	5.7
211	75.2	1.058	73.3	2.6	7.54	16.583	7.196	4.663	10.7	6.0	8.1	3.4	2.36	0.56	8.4	2.3	5.8
212	75.3	1.062	73.3	2.6	7.55	16.656	7.214	4.671	10.7	6.0	8.1	3.4	2.36	0.56	8.4	2.3	5.8
213	75.8	1.067	73.3	2.6	7.56	16.738	7.288	4.724	10.8	6.0	8.2	3.4	2.38	0.55	8.4	2.4	5.8
214	75.8	1.071	73.3	2.6	7.57	16.812	7.288	4.716	10.8	6.0	8.1	3.4	2.38	0.56	8.4	2.4	5.8
215	75.2	1.075	73.3	2.6	7.57	16.894	7.196	4.630	10.7	6.0	8.1	3.4	2.35	0.57	8.4	2.3	5.7
216	75.3	1.080	73.3	2.6	7.58	16.975	7.214	4.637	10.7	6.0	8.1	3.4	2.35	0.56	8.4	2.3	5.7
217	75.2	1.085	73.3	2.6	7.59	17.057	7.196	4.613	10.7	6.0	8.0	3.4	2.35	0.57	8.4	2.3	5.7
218	75.4	1.089	73.3	2.6	7.59	17.131	7.233	4.636	10.7	6.0	8.1	3.4	2.35	0.56	8.4	2.3	5.7
219	76.0	1.093	73.3	2.6	7.60	17.213	7.325	4.703	10.8	6.0	8.1	3.4	2.37	0.56	8.4	2.4	5.8
220	75.3	1.098	73.3	2.6	7.61	17.295	7.214	4.603	10.7	6.0	8.0	3.4	2.34	0.57	8.3	2.3	5.7
221	75.3	1.103	73.3	2.6	7.62	17.377	7.214	4.594	10.6	6.0	8.0	3.4	2.34	0.57	8.3	2.3	5.7
222	74.5	1.107	73.3	2.6	7.62	17.450	7.085	4.480	10.5	6.0	7.9	3.4	2.31	0.58	8.3	2.2	5.7
223	74.3	1.111	73.3	2.6	7.63	17.532	7.048	4.440	10.5	6.0	7.9	3.4	2.30	0.59	8.3	2.2	5.6

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	74.4	1.116	73.2	2.6	7.64	17.614	7.066	4.447	10.5	6.0	7.9	3.5	2.29	0.58	8.3	2.2	5.7
225	74.9	1.120	73.3	2.6	7.65	17.696	7.140	4.499	10.5	6.0	7.9	3.4	2.31	0.58	8.3	2.2	5.7
226	75.1	1.125	73.3	2.6	7.65	17.769	7.177	4.522	10.6	6.0	8.0	3.4	2.32	0.58	8.3	2.3	5.7
227	75.2	1.129	73.3	2.6	7.66	17.851	7.196	4.529	10.6	6.0	8.0	3.4	2.32	0.58	8.3	2.3	5.7
228	74.7	1.134	73.3	2.6	7.67	17.933	7.122	4.459	10.5	6.0	7.9	3.4	2.30	0.59	8.3	2.2	5.7
229	74.5	1.138	73.3	2.6	7.68	18.007	7.085	4.421	10.5	6.0	7.8	3.4	2.29	0.59	8.3	2.2	5.6
230	74.3	1.142	73.3	2.6	7.68	18.080	7.048	4.383	10.4	6.0	7.8	3.4	2.28	0.60	8.2	2.2	5.6
231	74.3	1.147	73.2	2.6	7.69	18.162	7.048	4.375	10.4	6.0	7.8	3.5	2.26	0.59	8.2	2.2	5.6
232	74.3	1.151	73.2	2.6	7.70	18.236	7.048	4.367	10.4	6.0	7.8	3.5	2.26	0.59	8.2	2.2	5.6
233	73.1	1.155	73.2	2.6	7.70	18.318	6.863	4.207	10.3	6.0	7.7	3.5	2.22	0.62	8.2	2.1	5.6
234	74.2	1.160	73.3	2.6	7.71	18.391	7.029	4.336	10.4	6.0	7.8	3.4	2.26	0.60	8.2	2.2	5.6
235	73.5	1.164	73.3	2.6	7.72	18.465	6.918	4.237	10.3	6.0	7.7	3.4	2.24	0.62	8.2	2.1	5.5
236	73.9	1.168	73.3	2.6	7.73	18.547	6.992	4.289	10.3	6.0	7.7	3.4	2.25	0.61	8.2	2.1	5.6
237	72.9	1.172	73.2	2.6	7.73	18.621	6.826	4.146	10.2	6.0	7.6	3.5	2.19	0.62	8.1	2.1	5.6
238	73.0	1.177	73.2	2.6	7.74	18.694	6.844	4.154	10.2	6.0	7.6	3.5	2.20	0.62	8.1	2.1	5.5
239	73.7	1.181	73.2	2.6	7.75	18.768	6.955	4.236	10.3	6.0	7.7	3.5	2.22	0.61	8.2	2.1	5.6
240	74.2	1.185	73.2	2.6	7.76	18.850	7.029	4.288	10.3	6.0	7.7	3.5	2.24	0.60	8.2	2.1	5.6
241	73.8	1.189	73.2	2.6	7.76	18.923	6.974	4.235	10.3	6.0	7.7	3.5	2.22	0.61	8.2	2.1	5.6
242	73.6	1.194	73.2	2.6	7.77	18.997	6.937	4.198	10.2	6.0	7.7	3.5	2.21	0.62	8.1	2.1	5.6
243	73.7	1.198	73.2	2.6	7.78	19.079	6.955	4.204	10.3	6.0	7.7	3.5	2.22	0.62	8.1	2.1	5.6
244	73.5	1.203	73.2	2.6	7.78	19.161	6.918	4.166	10.2	6.0	7.6	3.5	2.20	0.62	8.1	2.1	5.5
245	73.3	1.207	73.2	2.6	7.79	19.235	6.900	4.143	10.2	6.0	7.6	3.5	2.20	0.63	8.1	2.1	5.5
246	73.3	1.211	73.2	2.6	7.80	19.316	6.900	4.135	10.2	6.0	7.6	3.5	2.19	0.62	8.1	2.1	5.6
247	72.8	1.216	73.2	2.6	7.81	19.398	6.807	4.052	10.1	6.0	7.5	3.5	2.17	0.64	8.1	2.0	5.5
248	72.5	1.221	73.2	2.6	7.82	19.480	6.770	4.014	10.1	6.0	7.5	3.5	2.15	0.64	8.1	2.0	5.5
249	73.0	1.225	73.2	2.6	7.82	19.562	6.844	4.065	10.1	6.0	7.6	3.5	2.17	0.63	8.1	2.0	5.5
250	72.4	1.230	73.2	2.6	7.83	19.644	6.752	3.982	10.0	6.0	7.5	3.5	2.14	0.64	8.0	2.0	5.5
251	72.5	1.234	73.2	2.6	7.84	19.726	6.770	3.989	10.0	6.0	7.5	3.5	2.14	0.64	8.0	2.0	5.5
252	71.7	1.239	73.2	2.6	7.85	19.799	6.641	3.877	9.9	6.0	7.4	3.5	2.11	0.66	8.0	1.9	5.4
253	72.2	1.243	73.2	2.6	7.85	19.881	6.715	3.928	10.0	6.0	7.4	3.5	2.13	0.65	8.0	2.0	5.5
254	71.6	1.248	73.2	2.6	7.86	19.963	6.622	3.846	9.9	6.0	7.3	3.5	2.10	0.67	8.0	1.9	5.4
255	71.8	1.250	73.2	2.6	7.87	19.996	6.659	3.872	9.9	6.0	7.4	3.5	2.11	0.66	8.0	1.9	5.4

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)

Specimen B Shear Data

CU Triaxial Test

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File Location
T-5670.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5670
Sample Location: Guilford County (Sta. 405 + 70)
Sample Description: Orange-tan colored clay
Remarks: 25° shear plane with slicken side. Carbon colored spots at shear plane.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.7379999
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.854	2.812	
Height (in)	5.990	5.948	
Weight (grams)	1034.00		1065.00
Moisture (%)	55.72		60.39
Dry Density (pcf)	66.00	68.48	
Saturation (%)	95.96	100.00	
Void Ratio	1.583	1.496	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 82.400
Effective Confining Stress (psi): 12.0
Corrected Peak Deviator Stress (psi): 21.989 at reading number: 26

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	25.4	0.108	70.4	0.0	6.21	0.000	0.000	0.000	12.0	12.0	12.0	12.0	1.00	0.00	12.0	0.0	12.0
1	50.8	0.112	71.4	0.9	6.22	0.068	4.093	4.063	16.0	12.0	15.1	11.0	1.37	0.23	14.0	2.0	13.1
2	60.8	0.116	72.0	1.5	6.22	0.145	5.704	5.639	17.6	12.0	16.1	10.4	1.54	0.27	14.8	2.8	13.3
3	68.7	0.121	72.4	2.0	6.22	0.212	6.963	6.865	18.8	12.0	16.9	10.0	1.69	0.29	15.4	3.4	13.4
4	76.0	0.125	72.8	2.3	6.23	0.289	8.148	8.011	20.0	12.0	17.7	9.6	1.83	0.29	16.0	4.0	13.6
5	82.7	0.129	73.0	2.6	6.23	0.357	9.222	9.050	21.0	12.0	18.4	9.4	1.97	0.29	16.5	4.5	13.9
6	89.1	0.133	73.3	2.8	6.24	0.425	10.259	10.050	22.0	12.0	19.2	9.1	2.10	0.28	17.0	5.0	14.1
7	94.9	0.138	73.6	3.1	6.24	0.502	11.185	10.933	22.9	12.0	19.8	8.8	2.24	0.29	17.4	5.5	14.3
8	100.8	0.142	73.7	3.3	6.25	0.569	12.130	11.838	23.8	12.0	20.5	8.7	2.36	0.28	17.9	5.9	14.6
9	104.9	0.145	73.8	3.4	6.25	0.618	12.796	12.476	24.4	12.0	21.0	8.6	2.46	0.27	18.2	6.2	14.8
10	110.8	0.149	74.0	3.6	6.25	0.685	13.741	13.379	25.3	12.0	21.8	8.4	2.59	0.27	18.7	6.7	15.1
11	116.1	0.153	74.1	3.7	6.26	0.753	14.593	14.189	26.2	12.0	22.5	8.3	2.71	0.26	19.1	7.1	15.4
12	120.5	0.156	74.2	3.8	6.26	0.811	15.315	14.874	26.8	12.0	23.0	8.2	2.82	0.26	19.4	7.4	15.6
13	124.7	0.160	74.2	3.8	6.27	0.868	15.982	15.503	27.5	12.0	23.7	8.2	2.90	0.25	19.7	7.8	15.9
14	129.6	0.163	74.4	4.0	6.27	0.926	16.778	16.260	28.2	12.0	24.3	8.0	3.03	0.24	20.1	8.1	16.1
15	134.8	0.168	74.5	4.0	6.27	1.004	17.611	17.042	29.0	12.0	25.0	7.9	3.15	0.24	20.5	8.5	16.4
16	139.5	0.172	74.5	4.1	6.28	1.071	18.371	17.755	29.7	12.0	25.6	7.9	3.25	0.23	20.8	8.9	16.8
17	144.1	0.176	74.6	4.2	6.28	1.148	19.111	18.443	30.4	12.0	26.2	7.8	3.37	0.23	21.2	9.2	17.0
18	148.3	0.180	74.6	4.2	6.29	1.216	19.778	19.062	31.0	12.0	26.8	7.8	3.46	0.22	21.5	9.5	17.3

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	152.3	0.185	74.7	4.2	6.29	1.293	20.426	19.656	31.6	12.0	27.4	7.7	3.55	0.22	21.8	9.8	17.5
20	155.9	0.189	74.7	4.2	6.30	1.370	21.000	20.177	32.1	12.0	27.9	7.7	3.62	0.21	22.1	10.1	17.8
21	159.0	0.194	74.7	4.2	6.30	1.447	21.500	20.623	32.6	12.0	28.3	7.7	3.67	0.21	22.3	10.3	18.0
22	161.6	0.199	74.6	4.2	6.31	1.525	21.926	20.996	33.0	12.0	28.8	7.8	3.71	0.20	22.5	10.5	18.3
23	164.6	0.203	74.7	4.2	6.31	1.602	22.408	21.422	33.4	12.0	29.1	7.7	3.78	0.20	22.7	10.7	18.4
24	166.8	0.207	74.6	4.2	6.32	1.669	22.760	21.727	33.7	12.0	29.5	7.8	3.80	0.19	22.8	10.9	18.6
25	168.2	0.212	74.6	4.2	6.32	1.756	22.982	21.891	33.9	12.0	29.7	7.8	3.81	0.19	22.9	10.9	18.7
26	169.1	0.217	74.6	4.1	6.33	1.833	23.130	21.989	34.0	12.0	29.8	7.8	3.81	0.19	23.0	11.0	18.8
27	169.3	0.222	74.5	4.1	6.33	1.920	23.167	21.971	33.9	12.0	29.8	7.9	3.79	0.19	22.9	11.0	18.9
28	168.6	0.227	74.4	4.0	6.34	1.997	23.056	21.814	33.8	12.0	29.8	8.0	3.74	0.18	22.9	10.9	18.9
29	167.0	0.232	74.3	3.9	6.34	2.084	22.797	21.539	33.5	12.0	29.6	8.1	3.67	0.18	22.7	10.8	18.8
30	165.3	0.236	74.3	3.9	6.35	2.161	22.519	21.250	33.2	12.0	29.3	8.1	3.63	0.18	22.6	10.6	18.7
31	164.4	0.241	74.3	3.8	6.35	2.239	22.371	21.088	33.1	12.0	29.2	8.1	3.60	0.18	22.5	10.5	18.7
32	162.8	0.246	74.2	3.8	6.36	2.316	22.111	20.817	32.8	12.0	29.0	8.2	3.54	0.18	22.4	10.4	18.6
33	161.0	0.250	74.2	3.7	6.36	2.393	21.834	20.529	32.5	12.0	28.8	8.2	3.49	0.18	22.2	10.3	18.5
34	159.4	0.255	74.1	3.7	6.37	2.470	21.574	20.259	32.2	12.0	28.5	8.3	3.45	0.18	22.1	10.1	18.4
35	157.6	0.259	74.0	3.6	6.37	2.547	21.278	19.954	31.9	12.0	28.3	8.4	3.39	0.18	21.9	10.0	18.3
36	156.4	0.264	74.0	3.5	6.38	2.625	21.093	19.757	31.7	12.0	28.2	8.4	3.34	0.18	21.8	9.9	18.3
37	155.4	0.268	74.0	3.5	6.38	2.692	20.926	19.581	31.5	12.0	28.0	8.4	3.32	0.18	21.8	9.8	18.2
38	154.1	0.273	73.9	3.5	6.39	2.769	20.723	19.366	31.3	12.0	27.8	8.5	3.28	0.18	21.6	9.7	18.2
39	152.9	0.277	73.9	3.4	6.39	2.847	20.519	19.152	31.1	12.0	27.7	8.5	3.25	0.18	21.5	9.6	18.1
40	151.5	0.282	73.8	3.4	6.40	2.924	20.297	18.921	30.9	12.0	27.5	8.6	3.21	0.18	21.4	9.5	18.0
41	149.9	0.286	73.8	3.4	6.40	3.001	20.037	18.654	30.6	12.0	27.3	8.6	3.17	0.18	21.3	9.3	17.9
42	148.6	0.291	73.8	3.3	6.41	3.078	19.834	18.441	30.4	12.0	27.1	8.6	3.14	0.18	21.2	9.2	17.9
43	146.8	0.296	73.7	3.3	6.41	3.165	19.537	18.137	30.1	12.0	26.8	8.7	3.09	0.18	21.0	9.1	17.7
44	144.9	0.301	73.6	3.2	6.42	3.252	19.241	17.833	29.8	12.0	26.6	8.8	3.04	0.18	20.9	8.9	17.7
45	143.2	0.306	73.7	3.2	6.43	3.339	18.963	17.548	29.5	12.0	26.3	8.7	3.01	0.18	20.7	8.8	17.5
46	141.9	0.311	73.6	3.2	6.43	3.416	18.760	17.336	29.3	12.0	26.1	8.8	2.98	0.18	20.6	8.7	17.4
47	140.9	0.316	73.6	3.2	6.44	3.493	18.593	17.161	29.1	12.0	25.9	8.8	2.96	0.19	20.5	8.6	17.3
48	139.9	0.320	73.6	3.2	6.44	3.561	18.426	16.988	29.0	12.0	25.8	8.8	2.93	0.19	20.5	8.5	17.3
49	138.9	0.324	73.6	3.2	6.44	3.628	18.278	16.833	28.8	12.0	25.6	8.8	2.91	0.19	20.4	8.4	17.2
50	138.1	0.328	73.6	3.1	6.45	3.705	18.148	16.694	28.7	12.0	25.5	8.8	2.89	0.19	20.3	8.3	17.2
51	137.8	0.332	73.5	3.1	6.45	3.773	18.093	16.628	28.6	12.0	25.5	8.9	2.87	0.19	20.3	8.3	17.2
52	137.0	0.336	73.5	3.1	6.46	3.840	17.963	16.491	28.5	12.0	25.4	8.9	2.86	0.19	20.2	8.2	17.1
53	136.1	0.340	73.5	3.1	6.46	3.908	17.815	16.337	28.3	12.0	25.2	8.9	2.84	0.19	20.1	8.2	17.0
54	135.2	0.345	73.5	3.0	6.47	3.985	17.667	16.181	28.1	12.0	25.1	8.9	2.81	0.19	20.1	8.1	17.0
55	134.2	0.349	73.5	3.0	6.47	4.053	17.519	16.026	28.0	12.0	24.9	8.9	2.80	0.19	20.0	8.0	16.9
56	133.1	0.353	73.5	3.0	6.48	4.120	17.334	15.837	27.8	12.0	24.8	8.9	2.78	0.19	19.9	7.9	16.8
57	132.3	0.357	73.4	3.0	6.48	4.188	17.204	15.701	27.7	12.0	24.7	9.0	2.75	0.19	19.8	7.9	16.8
58	131.6	0.361	73.4	2.9	6.49	4.255	17.093	15.583	27.5	12.0	24.6	9.0	2.72	0.19	19.8	7.8	16.8
59	130.7	0.366	73.4	3.0	6.49	4.333	16.945	15.428	27.4	12.0	24.4	9.0	2.72	0.19	19.7	7.7	16.7

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	129.3	0.370	73.4	3.0	6.50	4.400	16.722	15.204	27.2	12.0	24.2	9.0	2.69	0.20	19.6	7.6	16.6
61	128.6	0.374	73.4	2.9	6.50	4.477	16.611	15.085	27.0	12.0	24.1	9.0	2.67	0.19	19.5	7.5	16.6
62	127.8	0.379	73.4	2.9	6.51	4.554	16.482	14.949	26.9	12.0	24.0	9.0	2.65	0.20	19.4	7.5	16.5
63	126.5	0.383	73.3	2.9	6.51	4.632	16.278	14.742	26.7	12.0	23.8	9.1	2.62	0.20	19.3	7.4	16.4
64	125.6	0.388	73.3	2.9	6.52	4.709	16.130	14.588	26.6	12.0	23.7	9.1	2.61	0.20	19.3	7.3	16.4
65	124.7	0.393	73.2	2.8	6.52	4.786	15.982	14.435	26.4	12.0	23.6	9.2	2.58	0.19	19.2	7.2	16.4
66	124.1	0.397	73.3	2.8	6.53	4.854	15.889	14.336	26.3	12.0	23.5	9.1	2.57	0.20	19.1	7.2	16.3
67	123.3	0.402	73.3	2.8	6.53	4.940	15.760	14.199	26.2	12.0	23.3	9.1	2.56	0.20	19.1	7.1	16.2
68	122.5	0.406	73.2	2.8	6.54	5.018	15.630	14.063	26.0	12.0	23.2	9.2	2.54	0.20	19.0	7.0	16.2
69	121.6	0.411	73.2	2.8	6.55	5.104	15.482	13.909	25.9	12.0	23.1	9.2	2.52	0.20	18.9	7.0	16.1
70	120.7	0.416	73.2	2.8	6.55	5.182	15.334	13.757	25.7	12.0	23.0	9.2	2.50	0.20	18.8	6.9	16.1
71	119.6	0.421	73.2	2.8	6.56	5.268	15.167	13.586	25.5	12.0	22.8	9.2	2.48	0.20	18.8	6.8	16.0
72	118.7	0.426	73.2	2.7	6.56	5.346	15.019	13.434	25.4	12.0	22.7	9.2	2.45	0.20	18.7	6.7	16.0
73	117.8	0.431	73.2	2.7	6.57	5.433	14.871	13.280	25.2	12.0	22.5	9.2	2.44	0.21	18.6	6.6	15.9
74	117.3	0.436	73.2	2.7	6.57	5.510	14.797	13.199	25.2	12.0	22.4	9.2	2.43	0.21	18.6	6.6	15.8
75	116.5	0.440	73.1	2.7	6.58	5.587	14.667	13.065	25.0	12.0	22.3	9.3	2.41	0.21	18.5	6.5	15.8
76	115.7	0.445	73.1	2.7	6.58	5.664	14.537	12.932	24.9	12.0	22.2	9.3	2.39	0.21	18.4	6.5	15.7
77	115.5	0.449	73.1	2.7	6.59	5.741	14.500	12.885	24.8	12.0	22.2	9.3	2.39	0.21	18.4	6.4	15.7
78	115.4	0.454	73.1	2.6	6.59	5.818	14.482	12.857	24.8	12.0	22.2	9.3	2.38	0.21	18.4	6.4	15.7
79	114.8	0.459	73.1	2.6	6.60	5.896	14.389	12.758	24.7	12.0	22.1	9.3	2.37	0.21	18.3	6.4	15.7
80	113.9	0.463	73.0	2.6	6.60	5.963	14.241	12.609	24.6	12.0	22.0	9.4	2.34	0.20	18.3	6.3	15.7
81	113.6	0.467	73.1	2.6	6.61	6.040	14.204	12.564	24.5	12.0	21.9	9.3	2.35	0.21	18.2	6.3	15.6
82	113.4	0.472	73.0	2.6	6.62	6.118	14.167	12.518	24.5	12.0	21.9	9.4	2.34	0.21	18.2	6.3	15.6
83	113.3	0.476	73.0	2.6	6.62	6.195	14.148	12.490	24.5	12.0	21.8	9.4	2.33	0.21	18.2	6.2	15.6
84	113.3	0.481	73.0	2.6	6.63	6.272	14.148	12.479	24.4	12.0	21.9	9.4	2.33	0.21	18.2	6.2	15.6
85	113.0	0.486	73.0	2.6	6.63	6.349	14.093	12.416	24.4	12.0	21.8	9.4	2.32	0.21	18.2	6.2	15.6
86	112.4	0.490	73.0	2.6	6.64	6.426	14.000	12.318	24.3	12.0	21.7	9.4	2.31	0.21	18.1	6.2	15.6
87	111.5	0.495	72.9	2.5	6.64	6.513	13.852	12.168	24.1	12.0	21.6	9.5	2.28	0.20	18.0	6.1	15.6
88	110.9	0.501	73.0	2.5	6.65	6.610	13.759	12.068	24.0	12.0	21.5	9.4	2.28	0.21	18.0	6.0	15.5
89	110.3	0.506	73.0	2.5	6.66	6.697	13.667	11.969	23.9	12.0	21.4	9.4	2.27	0.21	17.9	6.0	15.4
90	109.8	0.510	72.9	2.5	6.66	6.764	13.593	11.891	23.9	12.0	21.4	9.5	2.25	0.21	17.9	5.9	15.4
91	109.8	0.515	72.9	2.5	6.67	6.841	13.593	11.881	23.8	12.0	21.4	9.5	2.25	0.21	17.9	5.9	15.4
92	109.7	0.519	72.9	2.5	6.67	6.909	13.574	11.854	23.8	12.0	21.3	9.5	2.25	0.21	17.9	5.9	15.4
93	109.7	0.523	72.9	2.5	6.68	6.976	13.574	11.845	23.8	12.0	21.3	9.5	2.25	0.21	17.9	5.9	15.4
94	109.2	0.527	72.9	2.4	6.68	7.044	13.482	11.750	23.7	12.0	21.3	9.5	2.23	0.21	17.8	5.9	15.4
95	109.0	0.531	72.9	2.4	6.69	7.121	13.463	11.722	23.7	12.0	21.2	9.5	2.23	0.21	17.8	5.9	15.4
96	108.9	0.535	72.9	2.4	6.69	7.189	13.445	11.696	23.7	12.0	21.2	9.5	2.23	0.21	17.8	5.8	15.4
97	108.8	0.540	72.8	2.4	6.70	7.266	13.426	11.668	23.6	12.0	21.2	9.6	2.22	0.21	17.8	5.8	15.4
98	108.7	0.544	72.8	2.4	6.70	7.333	13.408	11.642	23.6	12.0	21.2	9.6	2.22	0.21	17.8	5.8	15.4
99	108.6	0.548	72.8	2.4	6.71	7.401	13.389	11.616	23.6	12.0	21.2	9.6	2.22	0.21	17.8	5.8	15.4
100	108.7	0.553	72.8	2.4	6.71	7.478	13.408	11.623	23.6	12.0	21.2	9.6	2.21	0.20	17.8	5.8	15.4

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	108.9	0.557	72.8	2.4	6.72	7.555	13.445	11.647	23.6	12.0	21.2	9.6	2.21	0.20	17.8	5.8	15.4
102	108.4	0.562	72.7	2.3	6.72	7.633	13.352	11.551	23.5	12.0	21.2	9.7	2.19	0.20	17.7	5.8	15.5
103	108.4	0.566	72.8	2.3	6.73	7.710	13.352	11.540	23.5	12.0	21.2	9.6	2.20	0.20	17.7	5.8	15.4
104	108.4	0.571	72.8	2.3	6.74	7.787	13.352	11.530	23.5	12.0	21.2	9.6	2.20	0.20	17.7	5.8	15.4
105	108.5	0.576	72.8	2.3	6.74	7.864	13.371	11.537	23.5	12.0	21.2	9.6	2.20	0.20	17.7	5.8	15.4
106	108.6	0.580	72.8	2.3	6.75	7.941	13.389	11.544	23.5	12.0	21.2	9.6	2.20	0.20	17.7	5.8	15.4
107	108.7	0.584	72.8	2.3	6.75	8.009	13.408	11.552	23.5	12.0	21.2	9.6	2.20	0.20	17.7	5.8	15.4
108	108.7	0.589	72.7	2.3	6.76	8.086	13.408	11.541	23.5	12.0	21.2	9.7	2.19	0.20	17.7	5.8	15.4
109	109.2	0.593	72.7	2.3	6.76	8.163	13.482	11.599	23.6	12.0	21.3	9.7	2.20	0.20	17.8	5.8	15.5
110	109.0	0.598	72.7	2.3	6.77	8.240	13.463	11.571	23.5	12.0	21.3	9.7	2.20	0.20	17.7	5.8	15.5
111	109.2	0.603	72.7	2.3	6.78	8.327	13.482	11.577	23.5	12.0	21.3	9.7	2.20	0.20	17.8	5.8	15.5
112	108.9	0.608	72.7	2.3	6.78	8.404	13.445	11.532	23.5	12.0	21.2	9.7	2.19	0.20	17.7	5.8	15.4
113	108.9	0.612	72.7	2.2	6.79	8.482	13.445	11.522	23.5	12.0	21.2	9.7	2.19	0.19	17.7	5.8	15.5
114	108.6	0.618	72.7	2.2	6.79	8.569	13.389	11.460	23.4	12.0	21.2	9.7	2.18	0.20	17.7	5.7	15.4
115	108.4	0.623	72.7	2.2	6.80	8.655	13.352	11.414	23.4	12.0	21.1	9.7	2.17	0.20	17.7	5.7	15.4
116	108.2	0.627	72.7	2.2	6.81	8.733	13.334	11.387	23.3	12.0	21.1	9.7	2.17	0.20	17.7	5.7	15.4
117	108.0	0.632	72.6	2.2	6.81	8.810	13.297	11.343	23.3	12.0	21.1	9.8	2.16	0.19	17.6	5.7	15.4
118	107.4	0.636	72.7	2.2	6.82	8.887	13.204	11.248	23.2	12.0	21.0	9.7	2.16	0.20	17.6	5.6	15.3
119	107.4	0.641	72.6	2.2	6.82	8.964	13.204	11.238	23.2	12.0	21.0	9.8	2.15	0.20	17.6	5.6	15.4
120	107.3	0.646	72.6	2.2	6.83	9.041	13.185	11.211	23.2	12.0	21.0	9.8	2.15	0.20	17.6	5.6	15.4
121	107.3	0.650	72.6	2.2	6.83	9.119	13.185	11.201	23.2	12.0	21.0	9.8	2.15	0.20	17.6	5.6	15.4
122	107.0	0.655	72.6	2.2	6.84	9.196	13.130	11.140	23.1	12.0	20.9	9.8	2.14	0.19	17.5	5.6	15.4
123	107.1	0.659	72.6	2.2	6.85	9.263	13.148	11.148	23.1	12.0	20.9	9.8	2.14	0.19	17.5	5.6	15.4
124	107.3	0.663	72.6	2.1	6.85	9.340	13.185	11.171	23.1	12.0	21.0	9.8	2.14	0.19	17.5	5.6	15.4
125	106.9	0.668	72.6	2.2	6.86	9.418	13.111	11.094	23.1	12.0	20.9	9.8	2.13	0.20	17.5	5.5	15.3
126	106.7	0.673	72.6	2.2	6.86	9.495	13.093	11.067	23.0	12.0	20.9	9.8	2.13	0.20	17.5	5.5	15.3
127	107.1	0.677	72.6	2.1	6.87	9.572	13.148	11.107	23.1	12.0	20.9	9.8	2.13	0.19	17.5	5.6	15.4
128	107.0	0.682	72.6	2.1	6.87	9.649	13.130	11.081	23.0	12.0	20.9	9.8	2.13	0.19	17.5	5.5	15.4
129	107.1	0.686	72.6	2.1	6.88	9.726	13.148	11.087	23.0	12.0	20.9	9.8	2.13	0.19	17.5	5.5	15.4
130	106.5	0.691	72.6	2.1	6.89	9.804	13.056	10.994	23.0	12.0	20.8	9.8	2.12	0.19	17.5	5.5	15.3
131	106.9	0.696	72.5	2.0	6.89	9.881	13.111	11.033	23.0	12.0	21.0	9.9	2.11	0.19	17.5	5.5	15.4
132	106.9	0.700	72.5	2.1	6.90	9.958	13.111	11.023	23.0	12.0	20.9	9.9	2.12	0.19	17.5	5.5	15.4
133	107.0	0.705	72.5	2.1	6.90	10.035	13.130	11.030	23.0	12.0	20.9	9.9	2.12	0.19	17.5	5.5	15.4
134	107.1	0.710	72.5	2.1	6.91	10.122	13.148	11.035	23.0	12.0	20.9	9.9	2.12	0.19	17.5	5.5	15.4
135	106.9	0.714	72.5	2.1	6.92	10.190	13.111	10.993	23.0	12.0	20.9	9.9	2.11	0.19	17.5	5.5	15.4
136	106.5	0.719	72.5	2.1	6.92	10.267	13.056	10.933	22.9	12.0	20.8	9.9	2.11	0.19	17.4	5.5	15.3
137	106.9	0.723	72.5	2.0	6.93	10.334	13.111	10.974	22.9	12.0	20.9	9.9	2.11	0.19	17.4	5.5	15.4
138	107.4	0.727	72.4	2.0	6.93	10.412	13.204	11.047	23.0	12.0	21.0	10.0	2.11	0.18	17.5	5.5	15.5
139	107.5	0.731	72.5	2.0	6.94	10.479	13.222	11.055	23.0	12.0	21.0	9.9	2.11	0.18	17.5	5.5	15.4
140	107.8	0.735	72.5	2.0	6.94	10.547	13.259	11.079	23.0	12.0	21.0	9.9	2.12	0.18	17.5	5.5	15.5
141	107.8	0.740	72.4	2.0	6.95	10.624	13.259	11.068	23.0	12.0	21.0	10.0	2.11	0.18	17.5	5.5	15.5

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	108.1	0.744	72.4	2.0	6.95	10.691	13.315	11.109	23.1	12.0	21.1	10.0	2.12	0.18	17.5	5.6	15.5
143	108.1	0.748	72.4	2.0	6.96	10.759	13.315	11.100	23.1	12.0	21.1	10.0	2.11	0.18	17.5	5.6	15.5
144	108.0	0.752	72.4	2.0	6.97	10.836	13.297	11.073	23.0	12.0	21.0	10.0	2.11	0.18	17.5	5.5	15.5
145	108.5	0.756	72.4	2.0	6.97	10.904	13.371	11.130	23.1	12.0	21.1	10.0	2.11	0.18	17.5	5.6	15.6
146	108.7	0.761	72.4	2.0	6.98	10.981	13.408	11.153	23.1	12.0	21.2	10.0	2.12	0.18	17.5	5.6	15.6
147	108.9	0.765	72.4	2.0	6.98	11.048	13.445	11.177	23.1	12.0	21.2	10.0	2.12	0.18	17.6	5.6	15.6
148	108.7	0.770	72.4	2.0	6.99	11.126	13.408	11.134	23.1	12.0	21.1	10.0	2.11	0.18	17.5	5.6	15.6
149	108.7	0.774	72.4	2.0	6.99	11.203	13.408	11.123	23.1	12.0	21.1	10.0	2.11	0.18	17.5	5.6	15.6
150	108.6	0.779	72.4	2.0	7.00	11.280	13.389	11.096	23.1	12.0	21.1	10.0	2.11	0.18	17.5	5.5	15.5
151	108.7	0.783	72.4	2.0	7.01	11.357	13.408	11.103	23.1	12.0	21.1	10.0	2.11	0.18	17.5	5.6	15.6
152	109.0	0.788	72.4	1.9	7.01	11.434	13.463	11.141	23.1	12.0	21.2	10.0	2.11	0.17	17.5	5.6	15.6
153	109.7	0.793	72.4	1.9	7.02	11.512	13.574	11.229	23.2	12.0	21.3	10.0	2.12	0.17	17.6	5.6	15.7
154	109.8	0.797	72.4	1.9	7.03	11.589	13.593	11.235	23.2	12.0	21.3	10.0	2.12	0.17	17.6	5.6	15.7
155	109.8	0.802	72.4	1.9	7.03	11.666	13.593	11.225	23.2	12.0	21.3	10.0	2.12	0.17	17.6	5.6	15.7
156	109.2	0.806	72.4	1.9	7.04	11.743	13.482	11.116	23.1	12.0	21.2	10.0	2.11	0.17	17.5	5.6	15.6
157	108.9	0.811	72.4	1.9	7.04	11.820	13.445	11.073	23.0	12.0	21.1	10.0	2.10	0.17	17.5	5.5	15.6
158	108.8	0.815	72.4	1.9	7.05	11.898	13.426	11.046	23.0	12.0	21.1	10.0	2.10	0.17	17.5	5.5	15.6
159	108.8	0.821	72.3	1.9	7.06	11.984	13.426	11.035	23.0	12.0	21.1	10.1	2.09	0.17	17.5	5.5	15.6
160	108.5	0.825	72.3	1.8	7.06	12.062	13.371	10.976	22.9	12.0	21.1	10.1	2.08	0.17	17.5	5.5	15.6
161	108.5	0.830	72.3	1.9	7.07	12.139	13.371	10.965	22.9	12.0	21.0	10.1	2.09	0.17	17.4	5.5	15.6
162	108.7	0.834	72.3	1.9	7.08	12.216	13.408	10.987	23.0	12.0	21.1	10.1	2.09	0.17	17.5	5.5	15.6
163	108.6	0.839	72.3	1.9	7.08	12.293	13.389	10.961	22.9	12.0	21.0	10.1	2.09	0.17	17.4	5.5	15.6
164	108.2	0.844	72.3	1.9	7.09	12.370	13.334	10.902	22.9	12.0	21.0	10.1	2.08	0.17	17.4	5.5	15.5
165	108.2	0.848	72.3	1.9	7.09	12.438	13.334	10.893	22.9	12.0	21.0	10.1	2.08	0.17	17.4	5.4	15.5
166	108.2	0.852	72.3	1.8	7.10	12.515	13.334	10.883	22.8	12.0	21.0	10.1	2.08	0.17	17.4	5.4	15.6
167	108.5	0.857	72.2	1.8	7.11	12.592	13.371	10.905	22.9	12.0	21.1	10.2	2.07	0.17	17.4	5.5	15.6
168	108.7	0.861	72.3	1.8	7.11	12.660	13.408	10.928	22.9	12.0	21.0	10.1	2.08	0.17	17.4	5.5	15.6
169	108.6	0.865	72.3	1.8	7.12	12.737	13.389	10.901	22.9	12.0	21.0	10.1	2.08	0.17	17.4	5.5	15.6
170	109.2	0.870	72.3	1.8	7.12	12.814	13.482	10.972	22.9	12.0	21.1	10.1	2.08	0.17	17.4	5.5	15.6
171	109.2	0.875	72.3	1.8	7.13	12.891	13.482	10.961	22.9	12.0	21.1	10.1	2.08	0.17	17.4	5.5	15.6
172	109.0	0.879	72.3	1.8	7.14	12.969	13.463	10.935	22.9	12.0	21.1	10.1	2.08	0.17	17.4	5.5	15.6
173	108.8	0.884	72.2	1.8	7.14	13.046	13.426	10.892	22.9	12.0	21.1	10.2	2.07	0.17	17.4	5.4	15.6
174	108.8	0.888	72.2	1.8	7.15	13.123	13.426	10.882	22.8	12.0	21.1	10.2	2.07	0.16	17.4	5.4	15.6
175	108.6	0.893	72.3	1.8	7.16	13.200	13.389	10.839	22.8	12.0	21.0	10.1	2.07	0.17	17.4	5.4	15.5
176	108.4	0.898	72.2	1.8	7.16	13.277	13.352	10.797	22.8	12.0	21.0	10.2	2.06	0.17	17.4	5.4	15.6
177	108.7	0.902	72.2	1.8	7.17	13.355	13.408	10.835	22.8	12.0	21.0	10.2	2.07	0.17	17.4	5.4	15.6
178	108.5	0.907	72.2	1.8	7.18	13.441	13.371	10.791	22.8	12.0	21.0	10.2	2.06	0.17	17.4	5.4	15.6
179	108.4	0.911	72.2	1.8	7.18	13.509	13.352	10.766	22.7	12.0	20.9	10.2	2.06	0.17	17.3	5.4	15.5
180	108.5	0.916	72.2	1.8	7.19	13.596	13.371	10.770	22.7	12.0	20.9	10.2	2.06	0.17	17.3	5.4	15.5
181	108.8	0.921	72.2	1.8	7.19	13.663	13.426	10.809	22.8	12.0	21.0	10.2	2.06	0.16	17.4	5.4	15.6
182	109.0	0.925	72.2	1.8	7.20	13.731	13.463	10.832	22.8	12.0	21.0	10.2	2.07	0.17	17.4	5.4	15.6

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	109.3	0.929	72.2	1.8	7.21	13.798	13.500	10.855	22.8	12.0	21.1	10.2	2.06	0.16	17.4	5.4	15.6
184	109.2	0.933	72.2	1.8	7.21	13.876	13.482	10.829	22.8	12.0	21.0	10.2	2.06	0.16	17.4	5.4	15.6
185	109.4	0.937	72.2	1.8	7.22	13.943	13.519	10.851	22.8	12.0	21.1	10.2	2.06	0.16	17.4	5.4	15.6
186	109.3	0.942	72.2	1.8	7.22	14.020	13.500	10.825	22.8	12.0	21.0	10.2	2.06	0.16	17.4	5.4	15.6
187	109.4	0.946	72.2	1.8	7.23	14.088	13.519	10.832	22.8	12.0	21.0	10.2	2.06	0.16	17.4	5.4	15.6
188	110.0	0.950	72.2	1.7	7.24	14.155	13.611	10.902	22.9	12.0	21.1	10.2	2.06	0.16	17.4	5.5	15.7
189	110.3	0.954	72.2	1.7	7.24	14.233	13.667	10.939	22.9	12.0	21.2	10.2	2.07	0.16	17.4	5.5	15.7
190	110.2	0.958	72.2	1.8	7.25	14.300	13.648	10.914	22.9	12.0	21.1	10.2	2.07	0.16	17.4	5.5	15.7
191	110.4	0.962	72.2	1.7	7.25	14.368	13.685	10.937	22.9	12.0	21.2	10.2	2.07	0.16	17.4	5.5	15.7
192	110.7	0.968	72.2	1.7	7.26	14.455	13.722	10.957	22.9	12.0	21.2	10.2	2.07	0.16	17.4	5.5	15.7
193	111.6	0.972	72.2	1.7	7.27	14.522	13.871	11.074	23.0	12.0	21.3	10.2	2.08	0.16	17.5	5.5	15.8
194	111.5	0.976	72.2	1.7	7.27	14.599	13.852	11.047	23.0	12.0	21.3	10.2	2.08	0.16	17.5	5.5	15.8
195	111.3	0.981	72.1	1.6	7.28	14.676	13.834	11.021	23.0	12.0	21.3	10.3	2.07	0.15	17.5	5.5	15.8
196	111.3	0.985	72.2	1.7	7.29	14.754	13.834	11.010	23.0	12.0	21.3	10.2	2.08	0.16	17.5	5.5	15.7
197	111.2	0.989	72.2	1.7	7.29	14.821	13.815	10.985	22.9	12.0	21.2	10.2	2.07	0.16	17.5	5.5	15.7
198	111.1	0.995	72.1	1.7	7.30	14.908	13.797	10.957	22.9	12.0	21.2	10.3	2.07	0.15	17.4	5.5	15.8
199	110.8	0.999	72.2	1.7	7.31	14.985	13.741	10.900	22.9	12.0	21.1	10.2	2.06	0.16	17.4	5.4	15.7
200	110.9	1.004	72.1	1.7	7.31	15.062	13.759	10.905	22.9	12.0	21.2	10.3	2.06	0.15	17.4	5.5	15.7
201	111.0	1.008	72.1	1.7	7.32	15.140	13.778	10.910	22.9	12.0	21.2	10.3	2.06	0.15	17.4	5.5	15.7
202	111.3	1.013	72.1	1.6	7.33	15.226	13.834	10.945	22.9	12.0	21.3	10.3	2.06	0.15	17.4	5.5	15.8
203	110.9	1.018	72.1	1.7	7.33	15.304	13.759	10.871	22.8	12.0	21.2	10.3	2.06	0.15	17.4	5.4	15.7
204	110.8	1.023	72.1	1.7	7.34	15.381	13.741	10.845	22.8	12.0	21.1	10.3	2.05	0.16	17.4	5.4	15.7
205	110.7	1.028	72.1	1.7	7.35	15.468	13.722	10.818	22.8	12.0	21.1	10.3	2.05	0.16	17.4	5.4	15.7
206	110.3	1.032	72.1	1.7	7.35	15.545	13.667	10.760	22.7	12.0	21.0	10.3	2.05	0.16	17.3	5.4	15.7
207	110.7	1.036	72.1	1.7	7.36	15.612	13.722	10.798	22.8	12.0	21.1	10.3	2.05	0.16	17.4	5.4	15.7
208	110.9	1.041	72.1	1.7	7.37	15.690	13.759	10.818	22.8	12.0	21.1	10.3	2.05	0.16	17.4	5.4	15.7
209	111.1	1.046	72.1	1.6	7.37	15.767	13.797	10.839	22.8	12.0	21.2	10.3	2.05	0.15	17.4	5.4	15.7
210	111.1	1.050	72.1	1.6	7.38	15.844	13.797	10.828	22.8	12.0	21.1	10.3	2.05	0.15	17.4	5.4	15.7
211	111.2	1.055	72.1	1.7	7.39	15.921	13.815	10.290	22.3	12.0	20.6	10.3	2.00	0.16	17.1	5.1	15.4
212	111.3	1.059	72.1	1.6	7.39	15.998	13.834	10.292	22.3	12.0	20.6	10.3	2.00	0.16	17.1	5.1	15.5
213	111.5	1.064	72.1	1.6	7.40	16.076	13.852	10.294	22.3	12.0	20.6	10.3	2.00	0.16	17.1	5.1	15.5
214	111.6	1.069	72.1	1.6	7.41	16.153	13.871	10.296	22.3	12.0	20.6	10.3	2.00	0.16	17.1	5.1	15.5
215	111.9	1.073	72.1	1.6	7.41	16.230	13.926	10.330	22.3	12.0	20.6	10.3	2.00	0.16	17.1	5.2	15.5
216	112.1	1.078	72.1	1.6	7.42	16.307	13.963	10.347	22.3	12.0	20.7	10.3	2.00	0.16	17.1	5.2	15.5
217	112.3	1.082	72.1	1.6	7.43	16.375	13.982	10.351	22.3	12.0	20.7	10.3	2.00	0.16	17.1	5.2	15.5
218	112.5	1.087	72.1	1.6	7.44	16.462	14.019	10.367	22.3	12.0	20.7	10.3	2.00	0.16	17.1	5.2	15.5
219	112.6	1.091	72.1	1.6	7.44	16.529	14.037	10.370	22.3	12.0	20.7	10.3	2.00	0.16	17.1	5.2	15.5
220	112.5	1.096	72.1	1.6	7.45	16.616	14.019	10.340	22.3	12.0	20.7	10.3	2.00	0.16	17.1	5.2	15.5
221	112.3	1.100	72.1	1.6	7.45	16.684	13.982	10.297	22.3	12.0	20.6	10.3	2.00	0.16	17.1	5.1	15.5
222	111.9	1.105	72.1	1.6	7.46	16.761	13.926	10.238	22.2	12.0	20.6	10.3	1.99	0.16	17.1	5.1	15.4
223	112.3	1.109	72.1	1.6	7.47	16.838	13.982	10.270	22.2	12.0	20.6	10.3	2.00	0.16	17.1	5.1	15.5

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	112.7	1.114	72.0	1.6	7.48	16.915	14.056	10.318	22.3	12.0	20.7	10.4	1.99	0.15	17.1	5.2	15.6
225	112.4	1.118	72.1	1.6	7.48	16.983	14.000	10.261	22.2	12.0	20.6	10.3	1.99	0.16	17.1	5.1	15.5
226	112.5	1.122	72.1	1.6	7.49	17.050	14.019	10.264	22.2	12.0	20.6	10.3	1.99	0.16	17.1	5.1	15.5
227	113.0	1.127	72.0	1.6	7.49	17.127	14.093	10.312	22.3	12.0	20.7	10.4	2.00	0.16	17.1	5.2	15.5
228	113.3	1.131	72.0	1.6	7.50	17.205	14.148	10.345	22.3	12.0	20.7	10.4	2.00	0.15	17.1	5.2	15.5
229	113.4	1.135	72.1	1.6	7.51	17.272	14.167	10.348	22.3	12.0	20.7	10.3	2.00	0.16	17.1	5.2	15.5
230	113.3	1.139	72.0	1.6	7.51	17.340	14.148	10.321	22.3	12.0	20.7	10.4	2.00	0.16	17.1	5.2	15.5
231	113.8	1.143	72.0	1.6	7.52	17.407	14.222	10.370	22.3	12.0	20.8	10.4	2.00	0.15	17.1	5.2	15.6
232	114.1	1.148	72.0	1.6	7.53	17.484	14.278	10.402	22.4	12.0	20.8	10.4	2.00	0.15	17.2	5.2	15.6
233	114.1	1.152	72.0	1.6	7.53	17.552	14.278	10.390	22.4	12.0	20.8	10.4	2.00	0.15	17.2	5.2	15.6
234	114.2	1.156	72.0	1.6	7.54	17.619	14.297	10.394	22.4	12.0	20.8	10.4	2.00	0.15	17.2	5.2	15.6
235	114.3	1.160	72.0	1.6	7.55	17.697	14.315	10.395	22.4	12.0	20.8	10.4	2.00	0.15	17.2	5.2	15.6
236	114.2	1.165	72.0	1.6	7.55	17.774	14.297	10.366	22.3	12.0	20.7	10.4	2.00	0.15	17.1	5.2	15.5
237	114.1	1.170	72.0	1.6	7.56	17.851	14.278	10.338	22.3	12.0	20.7	10.4	2.00	0.16	17.1	5.2	15.5
238	114.1	1.174	72.0	1.6	7.57	17.919	14.278	10.326	22.3	12.0	20.7	10.4	1.99	0.15	17.1	5.2	15.6
239	114.4	1.178	72.0	1.5	7.57	17.996	14.334	10.357	22.3	12.0	20.8	10.4	1.99	0.15	17.1	5.2	15.6
240	114.6	1.183	72.0	1.6	7.58	18.073	14.352	10.359	22.3	12.0	20.7	10.4	2.00	0.15	17.1	5.2	15.5
241	114.8	1.187	72.0	1.6	7.59	18.150	14.389	10.376	22.3	12.0	20.7	10.4	2.00	0.15	17.2	5.2	15.5
242	114.8	1.192	72.0	1.6	7.60	18.227	14.389	10.362	22.3	12.0	20.8	10.4	2.00	0.15	17.1	5.2	15.6
243	115.0	1.197	72.0	1.6	7.60	18.305	14.426	10.378	22.3	12.0	20.8	10.4	2.00	0.15	17.2	5.2	15.6
244	115.6	1.202	72.0	1.6	7.61	18.391	14.519	10.438	22.4	12.0	20.8	10.4	2.00	0.15	17.2	5.2	15.6
245	115.6	1.206	72.0	1.6	7.62	18.469	14.519	10.425	22.4	12.0	20.8	10.4	2.00	0.15	17.2	5.2	15.6
246	115.4	1.211	72.0	1.5	7.63	18.555	14.482	10.379	22.3	12.0	20.8	10.4	1.99	0.15	17.2	5.2	15.6
247	115.1	1.216	72.0	1.6	7.63	18.633	14.445	10.335	22.3	12.0	20.7	10.4	1.99	0.15	17.1	5.2	15.6
248	115.6	1.221	72.0	1.6	7.64	18.710	14.519	10.381	22.3	12.0	20.8	10.4	2.00	0.15	17.2	5.2	15.6
249	115.7	1.225	72.0	1.6	7.65	18.787	14.537	10.382	22.3	12.0	20.8	10.4	2.00	0.15	17.2	5.2	15.6
250	115.6	1.230	72.0	1.6	7.66	18.864	14.519	10.354	22.3	12.0	20.8	10.4	2.00	0.15	17.1	5.2	15.6
251	115.1	1.234	72.0	1.6	7.66	18.941	14.445	10.280	22.2	12.0	20.7	10.4	1.99	0.15	17.1	5.1	15.5
252	114.6	1.239	72.0	1.6	7.67	19.019	14.352	10.191	22.2	12.0	20.6	10.4	1.98	0.15	17.1	5.1	15.5
253	114.7	1.243	72.0	1.5	7.68	19.086	14.371	10.194	22.2	12.0	20.6	10.4	1.98	0.15	17.1	5.1	15.5
254	114.4	1.248	72.0	1.5	7.68	19.163	14.334	10.150	22.1	12.0	20.6	10.4	1.97	0.15	17.0	5.1	15.5
255	114.3	1.252	72.0	1.6	7.69	19.231	14.315	10.123	22.1	12.0	20.5	10.4	1.97	0.15	17.0	5.1	15.5
256	114.3	1.256	72.0	1.5	7.70	19.308	14.315	10.110	22.1	12.0	20.5	10.4	1.97	0.15	17.0	5.1	15.5
257	114.7	1.261	72.0	1.5	7.70	19.385	14.371	10.141	22.1	12.0	20.6	10.4	1.97	0.15	17.0	5.1	15.5
258	114.9	1.265	71.9	1.5	7.71	19.462	14.408	10.157	22.1	12.0	20.6	10.5	1.97	0.15	17.0	5.1	15.6
259	115.1	1.270	72.0	1.5	7.72	19.540	14.445	10.173	22.1	12.0	20.6	10.4	1.97	0.15	17.0	5.1	15.5
260	115.0	1.275	72.0	1.5	7.73	19.617	14.426	10.144	22.1	12.0	20.6	10.4	1.97	0.15	17.0	5.1	15.5
261	115.0	1.279	71.9	1.5	7.73	19.694	14.426	10.130	22.1	12.0	20.6	10.5	1.97	0.15	17.0	5.1	15.5
262	115.0	1.284	72.0	1.5	7.74	19.771	14.426	10.117	22.1	12.0	20.6	10.4	1.97	0.15	17.0	5.1	15.5
263	115.0	1.288	72.0	1.5	7.75	19.839	14.426	10.105	22.1	12.0	20.5	10.4	1.97	0.15	17.0	5.1	15.5
264	115.0	1.292	72.0	1.5	7.76	19.916	14.426	10.091	22.1	12.0	20.5	10.4	1.97	0.15	17.0	5.0	15.5

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
265	115.3	1.297	72.0	1.5	7.76	19.993	14.463	10.107	22.1	12.0	20.5	10.4	1.97	0.15	17.0	5.1	15.5

Specimen C Shear Data

CU Triaxial Test

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File Location
T-5670.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5670
Sample Location: Guilford County (Sta. 405 + 70)
Sample Description: Orange-tan colored clay
Remarks: 45° shear plane with slicken side

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.7290001
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.864	2.785	
Height (in)	6.074	6.014	
Weight (grams)	1059.00		1074.00
Moisture (%)	54.37		56.56
Dry Density (pcf)	66.80	71.32	
Saturation (%)	95.71	100.00	
Void Ratio	1.543	1.389	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 95.000
Effective Confining Stress (psi): 24.0
Corrected Peak Deviator Stress (psi): 22.106 at reading number: 120

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	31.4	0.126	71.0	0.0	6.09	0.000	0.000	0.000	24.0	24.0	24.0	24.0	1.00	0.00	24.0	0.0	24.0
1	25.8	0.126	70.9	-0.1	6.09	0.009	-0.908	0.912	24.9	24.0	25.0	24.1	1.04	-0.06	24.5	0.5	24.5
2	26.2	0.126	71.0	0.0	6.09	0.009	-0.852	0.856	24.9	24.0	24.8	24.0	1.04	0.03	24.4	0.4	24.4
3	26.3	0.126	71.0	0.1	6.09	0.009	-0.833	0.837	24.8	24.0	24.8	24.0	1.03	0.07	24.4	0.4	24.4
4	26.5	0.126	71.1	0.1	6.09	0.009	-0.795	0.799	24.8	24.0	24.7	23.9	1.03	0.15	24.4	0.4	24.3
5	55.5	0.128	71.9	0.9	6.10	0.047	3.955	3.934	27.9	24.0	27.1	23.1	1.17	0.22	26.0	2.0	25.1
6	76.2	0.134	73.0	2.1	6.10	0.133	7.361	7.299	31.3	24.0	29.3	22.0	1.33	0.28	27.7	3.6	25.6
7	90.0	0.138	74.0	3.0	6.11	0.209	9.632	9.530	33.5	24.0	30.5	21.0	1.45	0.32	28.8	4.8	25.8
8	101.3	0.143	74.8	3.8	6.11	0.285	11.487	11.342	35.4	24.0	31.6	20.2	1.56	0.33	29.7	5.7	25.9
9	110.3	0.148	75.5	4.5	6.12	0.370	12.963	12.769	36.8	24.0	32.3	19.5	1.65	0.35	30.4	6.4	25.9
10	67.7	0.152	74.4	3.4	6.12	0.446	5.961	5.758	29.8	24.0	26.3	20.6	1.28	0.60	26.9	2.9	23.5
11	75.1	0.158	74.7	3.7	6.13	0.532	7.172	6.924	30.9	24.0	27.2	20.3	1.34	0.53	27.5	3.5	23.8
13	118.3	0.167	76.2	5.3	6.13	0.684	14.269	13.901	37.9	24.0	32.7	18.8	1.74	0.38	31.0	7.0	25.7
14	126.7	0.171	76.7	5.7	6.14	0.759	15.650	15.231	39.2	24.0	33.5	18.3	1.83	0.37	31.6	7.6	25.9
15	133.6	0.176	77.1	6.1	6.14	0.835	16.785	16.315	40.3	24.0	34.2	17.9	1.91	0.37	32.2	8.2	26.1
16	139.3	0.180	77.4	6.4	6.15	0.911	17.713	17.191	41.2	24.0	34.8	17.6	1.98	0.37	32.6	8.6	26.2
17	144.0	0.185	77.7	6.7	6.15	0.987	18.489	17.916	41.9	24.0	35.2	17.3	2.04	0.38	33.0	9.0	26.2
18	147.5	0.190	78.0	7.0	6.16	1.073	19.056	18.428	42.4	24.0	35.5	17.0	2.08	0.38	33.2	9.2	26.2
19	150.8	0.195	78.2	7.2	6.16	1.149	19.605	18.926	42.9	24.0	35.8	16.8	2.12	0.38	33.5	9.5	26.3

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
20	153.3	0.199	78.3	7.3	6.17	1.225	20.021	19.293	43.3	24.0	36.0	16.7	2.16	0.38	33.7	9.6	26.3
21	155.8	0.204	78.4	7.4	6.17	1.301	20.419	19.640	43.6	24.0	36.2	16.6	2.18	0.38	33.8	9.8	26.4
22	157.8	0.208	78.5	7.5	6.18	1.377	20.759	19.930	43.9	24.0	36.4	16.5	2.21	0.38	34.0	10.0	26.4
23	159.7	0.213	78.6	7.6	6.18	1.453	21.062	20.183	44.2	24.0	36.6	16.4	2.23	0.38	34.1	10.1	26.5
24	160.8	0.218	78.6	7.6	6.19	1.528	21.251	20.323	44.3	24.0	36.7	16.4	2.24	0.38	34.2	10.2	26.5
25	161.4	0.223	78.7	7.7	6.19	1.614	21.346	20.364	44.4	24.0	36.7	16.3	2.25	0.38	34.2	10.2	26.5
26	161.2	0.227	78.7	7.7	6.20	1.680	21.308	20.286	44.3	24.0	36.6	16.3	2.25	0.38	34.2	10.1	26.4
27	159.7	0.232	78.7	7.7	6.20	1.766	21.062	19.993	44.0	24.0	36.3	16.3	2.22	0.38	34.0	10.0	26.3
28	158.0	0.236	78.6	7.6	6.21	1.842	20.778	19.668	43.7	24.0	36.1	16.4	2.20	0.38	33.8	9.8	26.3
29	156.7	0.241	78.5	7.5	6.21	1.918	20.570	19.418	43.4	24.0	35.9	16.5	2.18	0.39	33.7	9.7	26.2
30	156.0	0.246	78.5	7.5	6.22	1.994	20.457	19.261	43.3	24.0	35.8	16.5	2.17	0.39	33.6	9.6	26.2
31	156.1	0.250	78.4	7.4	6.22	2.070	20.476	19.262	43.3	24.0	35.8	16.6	2.16	0.39	33.6	9.6	26.2
32	155.5	0.255	78.4	7.4	6.23	2.146	20.381	19.154	43.2	24.0	35.8	16.6	2.15	0.38	33.6	9.6	26.2
33	156.1	0.260	78.4	7.4	6.23	2.231	20.476	19.229	43.2	24.0	35.8	16.6	2.16	0.38	33.6	9.6	26.2
34	156.7	0.264	78.4	7.4	6.24	2.307	20.570	19.306	43.3	24.0	35.9	16.6	2.16	0.38	33.7	9.7	26.3
35	157.1	0.269	78.4	7.4	6.24	2.383	20.646	19.364	43.4	24.0	36.0	16.6	2.17	0.38	33.7	9.7	26.3
36	158.2	0.273	78.4	7.4	6.25	2.459	20.816	19.514	43.5	24.0	36.1	16.6	2.17	0.38	33.8	9.8	26.4
37	159.0	0.278	78.4	7.4	6.25	2.535	20.949	19.628	43.6	24.0	36.2	16.6	2.18	0.38	33.8	9.8	26.4
38	159.9	0.283	78.4	7.4	6.26	2.611	21.100	19.759	43.8	24.0	36.4	16.6	2.19	0.37	33.9	9.9	26.5
39	160.6	0.288	78.4	7.4	6.26	2.696	21.214	19.852	43.9	24.0	36.5	16.6	2.19	0.37	33.9	9.9	26.5
40	161.3	0.292	78.4	7.4	6.27	2.772	21.327	19.946	44.0	24.0	36.5	16.6	2.20	0.37	34.0	10.0	26.6
41	161.6	0.297	78.4	7.4	6.27	2.848	21.384	19.985	44.0	24.0	36.6	16.6	2.21	0.37	34.0	10.0	26.6
42	162.6	0.301	78.4	7.4	6.28	2.924	21.535	20.116	44.1	24.0	36.7	16.6	2.21	0.37	34.1	10.1	26.7
43	162.7	0.307	78.4	7.4	6.28	3.009	21.554	20.116	44.1	24.0	36.7	16.6	2.21	0.37	34.1	10.1	26.7
44	163.5	0.311	78.4	7.4	6.29	3.085	21.687	20.228	44.2	24.0	36.8	16.6	2.22	0.37	34.1	10.1	26.7
45	163.5	0.316	78.4	7.4	6.29	3.161	21.687	20.211	44.2	24.0	36.8	16.6	2.22	0.37	34.1	10.1	26.7
46	163.9	0.320	78.4	7.4	6.30	3.237	21.762	20.268	44.3	24.0	36.9	16.6	2.22	0.36	34.1	10.1	26.8
47	164.5	0.325	78.4	7.4	6.30	3.313	21.857	20.343	44.4	24.0	37.0	16.6	2.22	0.36	34.2	10.2	26.8
48	165.0	0.330	78.4	7.4	6.31	3.399	21.933	20.397	44.4	24.0	37.0	16.6	2.23	0.36	34.2	10.2	26.8
49	165.2	0.335	78.3	7.3	6.31	3.475	21.971	20.417	44.4	24.0	37.1	16.7	2.22	0.36	34.2	10.2	26.9
50	165.6	0.339	78.3	7.3	6.32	3.551	22.027	20.455	44.5	24.0	37.1	16.7	2.23	0.36	34.2	10.2	26.9
51	166.0	0.344	78.3	7.3	6.32	3.627	22.103	20.512	44.5	24.0	37.2	16.7	2.23	0.36	34.3	10.3	27.0
52	166.3	0.348	78.3	7.3	6.33	3.702	22.141	20.531	44.5	24.0	37.2	16.7	2.23	0.36	34.3	10.3	27.0
53	166.5	0.353	78.3	7.3	6.33	3.778	22.179	20.551	44.6	24.0	37.3	16.7	2.23	0.35	34.3	10.3	27.0
54	166.6	0.357	78.3	7.3	6.34	3.854	22.198	20.552	44.6	24.0	37.3	16.7	2.23	0.35	34.3	10.3	27.0
55	166.8	0.363	78.3	7.3	6.34	3.940	22.235	20.570	44.6	24.0	37.3	16.7	2.23	0.35	34.3	10.3	27.0
56	167.4	0.367	78.3	7.3	6.35	4.016	22.330	20.643	44.7	24.0	37.4	16.7	2.23	0.35	34.3	10.3	27.1
57	168.0	0.372	78.2	7.2	6.35	4.092	22.425	20.717	44.7	24.0	37.5	16.8	2.24	0.35	34.4	10.4	27.1
58	169.0	0.376	78.2	7.2	6.36	4.168	22.595	20.863	44.9	24.0	37.6	16.8	2.24	0.35	34.4	10.4	27.2
59	169.5	0.381	78.2	7.2	6.36	4.244	22.671	20.919	44.9	24.0	37.7	16.8	2.25	0.35	34.5	10.5	27.2
60	169.9	0.385	78.2	7.2	6.37	4.320	22.746	20.974	45.0	24.0	37.8	16.8	2.25	0.34	34.5	10.5	27.3

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
61	170.4	0.390	78.2	7.2	6.37	4.395	22.822	21.029	45.0	24.0	37.8	16.8	2.25	0.34	34.5	10.5	27.3
62	170.5	0.395	78.2	7.2	6.38	4.481	22.841	21.028	45.0	24.0	37.8	16.8	2.25	0.34	34.5	10.5	27.3
63	171.0	0.400	78.2	7.2	6.38	4.557	22.917	21.083	45.1	24.0	37.9	16.8	2.26	0.34	34.6	10.5	27.3
64	171.2	0.404	78.2	7.2	6.39	4.633	22.955	21.101	45.1	24.0	37.9	16.8	2.26	0.34	34.6	10.6	27.3
65	171.6	0.409	78.2	7.2	6.39	4.709	23.011	21.138	45.1	24.0	37.9	16.8	2.26	0.34	34.6	10.6	27.4
66	171.7	0.413	78.2	7.2	6.40	4.785	23.030	21.138	45.1	24.0	37.9	16.8	2.26	0.34	34.6	10.6	27.4
67	172.1	0.418	78.2	7.2	6.40	4.861	23.106	21.193	45.2	24.0	38.0	16.8	2.26	0.34	34.6	10.6	27.4
68	172.0	0.423	78.2	7.2	6.41	4.946	23.087	21.155	45.2	24.0	38.0	16.8	2.26	0.34	34.6	10.6	27.4
69	172.0	0.428	78.2	7.2	6.41	5.022	23.087	21.138	45.1	24.0	37.9	16.8	2.26	0.34	34.6	10.6	27.4
70	172.2	0.432	78.2	7.2	6.42	5.098	23.125	21.156	45.2	24.0	38.0	16.8	2.26	0.34	34.6	10.6	27.4
71	172.2	0.437	78.2	7.2	6.42	5.174	23.125	21.139	45.1	24.0	38.0	16.8	2.26	0.34	34.6	10.6	27.4
72	172.6	0.441	78.2	7.2	6.43	5.250	23.182	21.175	45.2	24.0	38.0	16.8	2.26	0.34	34.6	10.6	27.4
73	172.9	0.446	78.2	7.2	6.44	5.335	23.238	21.209	45.2	24.0	38.0	16.8	2.26	0.34	34.6	10.6	27.4
74	172.9	0.451	78.2	7.2	6.44	5.411	23.238	21.191	45.2	24.0	38.0	16.8	2.26	0.34	34.6	10.6	27.4
75	173.2	0.456	78.2	7.2	6.45	5.487	23.276	21.209	45.2	24.0	38.0	16.8	2.26	0.34	34.6	10.6	27.4
76	173.5	0.460	78.2	7.2	6.45	5.563	23.333	21.245	45.3	24.0	38.1	16.8	2.26	0.34	34.6	10.6	27.4
77	173.4	0.465	78.2	7.2	6.46	5.639	23.314	21.210	45.2	24.0	38.0	16.8	2.26	0.34	34.6	10.6	27.4
78	174.2	0.470	78.2	7.2	6.46	5.725	23.447	21.314	45.3	24.0	38.1	16.8	2.27	0.34	34.7	10.7	27.5
79	174.6	0.474	78.2	7.2	6.47	5.801	23.503	21.350	45.4	24.0	38.2	16.8	2.27	0.34	34.7	10.7	27.5
80	174.9	0.479	78.2	7.2	6.47	5.876	23.560	21.386	45.4	24.0	38.2	16.8	2.27	0.34	34.7	10.7	27.5
81	175.1	0.484	78.2	7.2	6.48	5.952	23.598	21.403	45.4	24.0	38.2	16.8	2.27	0.34	34.7	10.7	27.5
82	175.6	0.488	78.2	7.2	6.48	6.028	23.674	21.457	45.5	24.0	38.3	16.8	2.28	0.34	34.7	10.7	27.5
83	175.6	0.493	78.2	7.2	6.49	6.104	23.674	21.439	45.4	24.0	38.3	16.8	2.27	0.34	34.7	10.7	27.5
84	175.5	0.498	78.2	7.2	6.49	6.190	23.655	21.401	45.4	24.0	38.2	16.8	2.27	0.34	34.7	10.7	27.5
85	175.6	0.502	78.2	7.2	6.50	6.266	23.674	21.400	45.4	24.0	38.2	16.8	2.27	0.34	34.7	10.7	27.5
86	175.8	0.507	78.2	7.2	6.51	6.342	23.712	21.418	45.4	24.0	38.2	16.8	2.28	0.34	34.7	10.7	27.5
87	175.9	0.512	78.2	7.2	6.51	6.418	23.730	21.418	45.4	24.0	38.2	16.8	2.28	0.34	34.7	10.7	27.5
88	175.9	0.516	78.2	7.2	6.52	6.494	23.730	21.400	45.4	24.0	38.2	16.8	2.28	0.34	34.7	10.7	27.5
89	176.4	0.521	78.2	7.2	6.52	6.570	23.806	21.452	45.5	24.0	38.2	16.8	2.28	0.34	34.7	10.7	27.5
90	176.7	0.525	78.2	7.2	6.53	6.645	23.863	21.487	45.5	24.0	38.3	16.8	2.28	0.34	34.8	10.7	27.5
91	177.6	0.530	78.2	7.2	6.53	6.721	23.995	21.593	45.6	24.0	38.4	16.8	2.29	0.34	34.8	10.8	27.6
92	177.9	0.534	78.2	7.2	6.54	6.797	24.052	21.627	45.6	24.0	38.4	16.8	2.29	0.34	34.8	10.8	27.6
93	178.4	0.539	78.2	7.2	6.54	6.873	24.128	21.680	45.7	24.0	38.4	16.8	2.29	0.33	34.8	10.8	27.6
94	178.5	0.544	78.3	7.3	6.55	6.949	24.147	21.679	45.7	24.0	38.4	16.7	2.30	0.34	34.8	10.8	27.6
95	179.2	0.549	78.3	7.3	6.55	7.035	24.260	21.764	45.8	24.0	38.5	16.7	2.30	0.33	34.9	10.9	27.6
96	179.2	0.553	78.3	7.3	6.56	7.111	24.260	21.745	45.8	24.0	38.5	16.7	2.30	0.33	34.9	10.9	27.6
97	179.2	0.558	78.3	7.3	6.56	7.187	24.260	21.727	45.7	24.0	38.5	16.7	2.30	0.33	34.9	10.9	27.6
98	179.7	0.562	78.3	7.3	6.57	7.263	24.355	21.796	45.8	24.0	38.5	16.7	2.30	0.33	34.9	10.9	27.6
99	179.9	0.567	78.3	7.3	6.58	7.338	24.374	21.795	45.8	24.0	38.5	16.7	2.30	0.34	34.9	10.9	27.6
100	180.2	0.572	78.3	7.3	6.58	7.414	24.431	21.829	45.8	24.0	38.5	16.7	2.31	0.33	34.9	10.9	27.6
101	180.3	0.577	78.3	7.3	6.59	7.500	24.450	21.826	45.8	24.0	38.5	16.7	2.31	0.34	34.9	10.9	27.6

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
102	180.7	0.581	78.3	7.3	6.59	7.566	24.506	21.862	45.9	24.0	38.5	16.7	2.31	0.34	34.9	10.9	27.6
103	180.7	0.586	78.3	7.3	6.60	7.652	24.506	21.841	45.9	24.0	38.5	16.7	2.31	0.34	34.9	10.9	27.6
104	181.0	0.590	78.3	7.3	6.60	7.728	24.563	21.875	45.9	24.0	38.5	16.7	2.31	0.34	34.9	10.9	27.6
105	181.5	0.595	78.3	7.3	6.61	7.804	24.639	21.926	45.9	24.0	38.6	16.7	2.31	0.33	35.0	11.0	27.7
106	181.7	0.599	78.4	7.4	6.61	7.880	24.677	21.942	46.0	24.0	38.6	16.6	2.32	0.34	35.0	11.0	27.6
107	181.5	0.605	78.4	7.4	6.62	7.965	24.639	21.886	45.9	24.0	38.5	16.6	2.32	0.34	35.0	10.9	27.6
108	181.6	0.609	78.4	7.4	6.63	8.041	24.658	21.885	45.9	24.0	38.5	16.6	2.31	0.34	35.0	10.9	27.6
109	181.8	0.614	78.4	7.4	6.63	8.117	24.696	21.901	45.9	24.0	38.5	16.6	2.32	0.34	35.0	11.0	27.6
110	181.6	0.618	78.4	7.4	6.64	8.193	24.658	21.848	45.9	24.0	38.5	16.6	2.31	0.34	34.9	10.9	27.6
111	181.7	0.623	78.4	7.4	6.64	8.269	24.677	21.846	45.9	24.0	38.5	16.6	2.31	0.34	34.9	10.9	27.6
112	181.9	0.628	78.4	7.4	6.65	8.354	24.714	21.860	45.9	24.0	38.5	16.6	2.31	0.34	34.9	10.9	27.6
113	181.8	0.633	78.4	7.4	6.65	8.430	24.696	21.824	45.8	24.0	38.4	16.6	2.31	0.34	34.9	10.9	27.5
114	182.5	0.637	78.4	7.4	6.66	8.506	24.809	21.909	45.9	24.0	38.5	16.6	2.32	0.34	35.0	11.0	27.6
115	182.7	0.642	78.4	7.4	6.66	8.582	24.847	21.925	45.9	24.0	38.5	16.6	2.32	0.34	35.0	11.0	27.6
116	183.1	0.646	78.4	7.4	6.67	8.658	24.904	21.958	46.0	24.0	38.6	16.6	2.32	0.34	35.0	11.0	27.6
117	183.9	0.651	78.4	7.4	6.68	8.734	25.036	22.060	46.1	24.0	38.6	16.6	2.33	0.34	35.0	11.0	27.6
118	184.0	0.655	78.4	7.4	6.68	8.810	25.055	22.058	46.1	24.0	38.6	16.6	2.33	0.34	35.0	11.0	27.6
119	184.4	0.660	78.4	7.4	6.69	8.886	25.112	22.091	46.1	24.0	38.7	16.6	2.33	0.34	35.1	11.0	27.6
120	184.6	0.665	78.4	7.4	6.69	8.962	25.150	22.106	46.1	24.0	38.7	16.6	2.33	0.34	35.1	11.1	27.6
121	184.1	0.669	78.4	7.5	6.70	9.038	25.074	22.018	46.0	24.0	38.6	16.6	2.33	0.34	35.0	11.0	27.6
122	184.2	0.674	78.4	7.5	6.70	9.114	25.093	22.016	46.0	24.0	38.6	16.6	2.33	0.34	35.0	11.0	27.6
123	184.8	0.678	78.4	7.5	6.71	9.190	25.188	22.083	46.1	24.0	38.6	16.6	2.33	0.34	35.1	11.0	27.6
124	184.6	0.683	78.4	7.5	6.71	9.266	25.150	22.030	46.0	24.0	38.6	16.6	2.33	0.34	35.0	11.0	27.6
125	184.7	0.687	78.4	7.5	6.72	9.342	25.169	22.028	46.0	24.0	38.6	16.6	2.33	0.34	35.0	11.0	27.6
126	184.8	0.692	78.4	7.5	6.73	9.418	25.188	22.026	46.0	24.0	38.6	16.6	2.33	0.34	35.0	11.0	27.6
127	184.8	0.697	78.4	7.5	6.73	9.494	25.188	22.006	46.0	24.0	38.6	16.6	2.33	0.34	35.0	11.0	27.6
128	185.3	0.702	78.5	7.5	6.74	9.579	25.263	22.053	46.1	24.0	38.6	16.5	2.33	0.34	35.0	11.0	27.6
129	185.2	0.706	78.5	7.5	6.74	9.655	25.244	22.017	46.0	24.0	38.5	16.5	2.33	0.34	35.0	11.0	27.5
130	185.2	0.711	78.5	7.5	6.75	9.731	25.244	21.998	46.0	24.0	38.5	16.5	2.33	0.34	35.0	11.0	27.5
131	185.3	0.715	78.5	7.5	6.75	9.807	25.263	21.996	46.0	24.0	38.5	16.5	2.33	0.34	35.0	11.0	27.5
132	185.2	0.720	78.5	7.5	6.76	9.883	25.244	21.960	46.0	24.0	38.5	16.5	2.33	0.34	35.0	11.0	27.5
133	185.2	0.725	78.5	7.5	6.77	9.959	25.244	21.940	45.9	24.0	38.4	16.5	2.33	0.34	35.0	11.0	27.5
134	185.4	0.729	78.5	7.5	6.77	10.035	25.282	21.955	46.0	24.0	38.5	16.5	2.33	0.34	35.0	11.0	27.5
135	185.7	0.734	78.5	7.5	6.78	10.120	25.339	21.985	46.0	24.0	38.5	16.5	2.33	0.34	35.0	11.0	27.5
136	186.0	0.739	78.5	7.5	6.78	10.196	25.377	21.999	46.0	24.0	38.5	16.5	2.33	0.34	35.0	11.0	27.5
137	185.6	0.743	78.5	7.5	6.79	10.272	25.320	21.929	45.9	24.0	38.4	16.5	2.33	0.34	35.0	11.0	27.5
138	185.6	0.748	78.5	7.5	6.80	10.348	25.320	21.910	45.9	24.0	38.4	16.5	2.33	0.34	35.0	11.0	27.5
139	185.4	0.752	78.5	7.5	6.80	10.424	25.282	21.857	45.9	24.0	38.3	16.5	2.33	0.35	34.9	10.9	27.4
140	185.5	0.758	78.5	7.5	6.81	10.509	25.301	21.852	45.9	24.0	38.3	16.5	2.33	0.35	34.9	10.9	27.4
141	185.4	0.762	78.5	7.5	6.81	10.585	25.282	21.816	45.8	24.0	38.3	16.5	2.32	0.34	34.9	10.9	27.4
142	185.9	0.767	78.5	7.5	6.82	10.661	25.358	21.865	45.9	24.0	38.3	16.5	2.33	0.34	34.9	10.9	27.4

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
143	185.9	0.771	78.5	7.5	6.83	10.737	25.358	21.845	45.9	24.0	38.3	16.5	2.33	0.35	34.9	10.9	27.4
144	185.7	0.776	78.5	7.5	6.83	10.813	25.339	21.809	45.8	24.0	38.3	16.5	2.32	0.35	34.9	10.9	27.4
145	186.0	0.781	78.5	7.5	6.84	10.899	25.377	21.821	45.8	24.0	38.3	16.5	2.33	0.35	34.9	10.9	27.4
146	186.2	0.786	78.5	7.5	6.84	10.974	25.415	21.836	45.8	24.0	38.3	16.5	2.33	0.35	34.9	10.9	27.4
147	186.9	0.790	78.5	7.5	6.85	11.050	25.528	21.917	45.9	24.0	38.4	16.5	2.33	0.34	35.0	11.0	27.4
148	186.8	0.795	78.5	7.5	6.86	11.126	25.509	21.881	45.9	24.0	38.3	16.5	2.33	0.34	35.0	10.9	27.4
149	187.1	0.799	78.6	7.6	6.86	11.202	25.566	21.912	45.9	24.0	38.4	16.4	2.33	0.35	35.0	11.0	27.4
150	187.1	0.804	78.6	7.6	6.87	11.278	25.566	21.893	45.9	24.0	38.3	16.4	2.33	0.35	35.0	10.9	27.4
151	187.0	0.808	78.6	7.6	6.87	11.354	25.547	21.857	45.9	24.0	38.3	16.4	2.33	0.35	34.9	10.9	27.4
152	187.1	0.813	78.6	7.6	6.88	11.430	25.566	21.854	45.9	24.0	38.3	16.4	2.33	0.35	34.9	10.9	27.4
153	187.4	0.818	78.6	7.6	6.88	11.506	25.604	21.868	45.9	24.0	38.3	16.4	2.33	0.35	34.9	10.9	27.4
154	187.1	0.822	78.6	7.6	6.89	11.582	25.566	21.815	45.8	24.0	38.2	16.4	2.33	0.35	34.9	10.9	27.3
155	187.2	0.827	78.6	7.6	6.90	11.658	25.585	21.812	45.8	24.0	38.3	16.4	2.33	0.35	34.9	10.9	27.3
156	187.6	0.831	78.6	7.6	6.90	11.734	25.642	21.843	45.9	24.0	38.3	16.4	2.33	0.35	34.9	10.9	27.3
157	187.7	0.836	78.6	7.6	6.91	11.810	25.661	21.840	45.8	24.0	38.2	16.4	2.33	0.35	34.9	10.9	27.3
158	187.8	0.840	78.6	7.6	6.91	11.886	25.680	21.837	45.8	24.0	38.2	16.4	2.33	0.35	34.9	10.9	27.3
159	187.6	0.845	78.6	7.6	6.92	11.962	25.642	21.785	45.8	24.0	38.2	16.4	2.33	0.35	34.9	10.9	27.3
160	187.8	0.850	78.6	7.6	6.93	12.038	25.680	21.798	45.8	24.0	38.2	16.4	2.33	0.35	34.9	10.9	27.3
161	187.8	0.854	78.6	7.6	6.93	12.114	25.680	21.779	45.8	24.0	38.2	16.4	2.33	0.35	34.9	10.9	27.3
162	187.8	0.859	78.6	7.6	6.94	12.199	25.680	21.757	45.8	24.0	38.2	16.4	2.33	0.35	34.9	10.9	27.3
163	187.6	0.864	78.6	7.6	6.95	12.275	25.642	21.704	45.7	24.0	38.1	16.4	2.33	0.35	34.9	10.9	27.2
164	187.4	0.868	78.6	7.6	6.95	12.351	25.604	21.652	45.7	24.0	38.0	16.4	2.32	0.35	34.8	10.8	27.2
165	187.5	0.873	78.6	7.6	6.96	12.427	25.623	21.649	45.7	24.0	38.0	16.4	2.32	0.35	34.8	10.8	27.2
166	187.5	0.878	78.6	7.6	6.96	12.512	25.623	21.627	45.6	24.0	38.0	16.4	2.32	0.35	34.8	10.8	27.2
167	187.2	0.883	78.7	7.7	6.97	12.588	25.585	21.574	45.6	24.0	37.9	16.3	2.32	0.36	34.8	10.8	27.1
168	187.4	0.887	78.7	7.7	6.98	12.664	25.604	21.571	45.6	24.0	37.9	16.3	2.32	0.36	34.8	10.8	27.1
169	187.7	0.892	78.6	7.6	6.98	12.740	25.661	21.602	45.6	24.0	38.0	16.4	2.32	0.35	34.8	10.8	27.2
170	188.4	0.897	78.7	7.7	6.99	12.826	25.774	21.679	45.7	24.0	38.0	16.3	2.33	0.35	34.8	10.8	27.2
171	189.0	0.902	78.7	7.7	6.99	12.902	25.869	21.741	45.8	24.0	38.1	16.3	2.33	0.35	34.9	10.9	27.2
172	189.1	0.906	78.7	7.7	7.00	12.978	25.888	21.738	45.7	24.0	38.1	16.3	2.33	0.35	34.9	10.9	27.2
173	188.7	0.911	78.7	7.7	7.01	13.054	25.831	21.669	45.7	24.0	38.0	16.3	2.33	0.35	34.8	10.8	27.2
174	188.7	0.915	78.7	7.7	7.01	13.130	25.831	21.650	45.7	24.0	38.0	16.3	2.33	0.36	34.8	10.8	27.1
175	189.0	0.920	78.7	7.7	7.02	13.205	25.869	21.663	45.7	24.0	38.0	16.3	2.33	0.35	34.8	10.8	27.2
176	188.9	0.924	78.7	7.7	7.03	13.281	25.850	21.627	45.6	24.0	37.9	16.3	2.33	0.36	34.8	10.8	27.1
177	188.7	0.929	78.7	7.7	7.03	13.357	25.831	21.591	45.6	24.0	37.9	16.3	2.32	0.36	34.8	10.8	27.1
178	188.5	0.933	78.7	7.7	7.04	13.433	25.793	21.538	45.5	24.0	37.8	16.3	2.32	0.36	34.8	10.8	27.1
179	188.4	0.938	78.7	7.7	7.04	13.509	25.774	21.502	45.5	24.0	37.8	16.3	2.32	0.36	34.8	10.8	27.0
180	188.7	0.943	78.7	7.7	7.05	13.585	25.831	21.532	45.5	24.0	37.8	16.3	2.32	0.36	34.8	10.8	27.1
181	188.7	0.947	78.7	7.7	7.06	13.661	25.831	21.512	45.5	24.0	37.8	16.3	2.32	0.36	34.8	10.8	27.0
182	188.7	0.952	78.7	7.7	7.06	13.747	25.831	21.490	45.5	24.0	37.8	16.3	2.32	0.36	34.8	10.7	27.0
183	188.6	0.957	78.7	7.7	7.07	13.823	25.812	21.454	45.5	24.0	37.7	16.3	2.32	0.36	34.7	10.7	27.0

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
184	188.9	0.961	78.7	7.7	7.08	13.898	25.850	21.467	45.5	24.0	37.7	16.3	2.32	0.36	34.7	10.7	27.0
185	188.6	0.966	78.7	7.7	7.08	13.974	25.812	21.415	45.4	24.0	37.7	16.3	2.32	0.36	34.7	10.7	27.0
186	189.0	0.971	78.7	7.7	7.09	14.050	25.869	21.444	45.5	24.0	37.7	16.3	2.32	0.36	34.7	10.7	27.0
187	189.1	0.975	78.8	7.8	7.09	14.126	25.888	21.441	45.5	24.0	37.7	16.2	2.32	0.36	34.7	10.7	27.0
188	188.7	0.980	78.8	7.8	7.10	14.202	25.831	21.373	45.4	24.0	37.6	16.2	2.32	0.36	34.7	10.7	26.9
189	188.9	0.984	78.8	7.8	7.11	14.278	25.850	21.369	45.4	24.0	37.6	16.2	2.32	0.37	34.7	10.7	26.9
190	189.4	0.989	78.8	7.8	7.11	14.354	25.945	21.431	45.4	24.0	37.7	16.2	2.32	0.36	34.7	10.7	26.9
191	188.6	0.993	78.8	7.8	7.12	14.430	25.812	21.297	45.3	24.0	37.5	16.2	2.31	0.37	34.7	10.6	26.9
192	188.4	0.998	78.8	7.8	7.13	14.506	25.774	21.245	45.3	24.0	37.4	16.2	2.31	0.37	34.6	10.6	26.8
193	188.3	1.003	78.8	7.8	7.13	14.582	25.755	21.210	45.2	24.0	37.4	16.2	2.31	0.37	34.6	10.6	26.8
194	188.2	1.008	78.8	7.8	7.14	14.667	25.736	21.172	45.2	24.0	37.3	16.2	2.31	0.37	34.6	10.6	26.8
195	188.2	1.012	78.8	7.8	7.15	14.743	25.736	21.152	45.2	24.0	37.3	16.2	2.31	0.37	34.6	10.6	26.7
196	187.9	1.017	78.9	7.9	7.15	14.819	25.699	21.100	45.1	24.0	37.2	16.1	2.31	0.37	34.6	10.6	26.7
197	188.3	1.021	78.9	7.9	7.16	14.895	25.755	21.129	45.1	24.0	37.3	16.1	2.31	0.37	34.6	10.6	26.7
198	188.2	1.026	78.9	7.9	7.17	14.971	25.736	21.093	45.1	24.0	37.2	16.1	2.31	0.37	34.6	10.5	26.7
199	187.9	1.031	78.9	7.9	7.17	15.057	25.699	21.039	45.0	24.0	37.2	16.1	2.31	0.38	34.5	10.5	26.6
200	188.2	1.036	78.9	7.9	7.18	15.133	25.736	21.052	45.1	24.0	37.2	16.1	2.31	0.37	34.5	10.5	26.6
201	188.6	1.040	78.9	7.9	7.19	15.209	25.812	21.097	45.1	24.0	37.2	16.1	2.31	0.37	34.6	10.5	26.7
202	188.5	1.045	78.9	7.9	7.19	15.294	25.793	21.058	45.1	24.0	37.2	16.1	2.31	0.37	34.5	10.5	26.6
203	188.7	1.050	78.9	7.9	7.20	15.370	25.831	21.071	45.1	24.0	37.2	16.1	2.31	0.38	34.5	10.5	26.6
204	188.7	1.055	78.9	7.9	7.21	15.446	25.831	21.051	45.1	24.0	37.1	16.1	2.31	0.38	34.5	10.5	26.6
205	188.6	1.059	78.9	7.9	7.21	15.522	25.812	21.016	45.0	24.0	37.1	16.1	2.30	0.38	34.5	10.5	26.6
206	188.5	1.064	78.9	8.0	7.22	15.598	25.793	20.980	45.0	24.0	37.0	16.1	2.31	0.38	34.5	10.5	26.5
207	188.3	1.068	78.9	8.0	7.22	15.674	25.755	20.929	44.9	24.0	37.0	16.1	2.30	0.38	34.5	10.5	26.5
208	187.9	1.073	78.9	8.0	7.23	15.759	25.699	20.859	44.9	24.0	36.9	16.1	2.30	0.38	34.4	10.4	26.5
209	187.8	1.078	79.0	8.0	7.24	15.835	25.680	20.823	44.8	24.0	36.9	16.0	2.30	0.38	34.4	10.4	26.4
210	187.5	1.083	79.0	8.0	7.25	15.911	25.623	20.756	44.8	24.0	36.8	16.0	2.30	0.38	34.4	10.4	26.4
211	187.4	1.087	79.0	8.0	7.25	15.987	25.604	20.721	44.7	24.0	36.7	16.0	2.29	0.39	34.4	10.4	26.4
212	187.1	1.092	79.0	8.0	7.26	16.063	25.566	20.669	44.7	24.0	36.7	16.0	2.29	0.39	34.3	10.3	26.4
213	186.8	1.096	79.0	8.0	7.27	16.139	25.509	20.602	44.6	24.0	36.6	16.0	2.29	0.39	34.3	10.3	26.3
214	186.7	1.101	79.0	8.0	7.27	16.215	25.490	20.567	44.6	24.0	36.5	16.0	2.29	0.39	34.3	10.3	26.3
215	186.7	1.105	79.0	8.0	7.28	16.291	25.490	20.548	44.6	24.0	36.5	16.0	2.29	0.39	34.3	10.3	26.2
216	186.7	1.110	79.1	8.1	7.28	16.367	25.490	20.529	44.5	24.0	36.5	15.9	2.29	0.39	34.3	10.3	26.2
217	186.7	1.114	79.1	8.1	7.29	16.443	25.490	20.509	44.5	24.0	36.4	15.9	2.29	0.39	34.3	10.3	26.2
218	186.4	1.119	79.1	8.1	7.30	16.519	25.453	20.458	44.5	24.0	36.4	15.9	2.29	0.40	34.2	10.2	26.1
219	186.0	1.124	79.1	8.1	7.30	16.595	25.377	20.376	44.4	24.0	36.3	15.9	2.28	0.40	34.2	10.2	26.1
220	185.7	1.128	79.1	8.1	7.31	16.671	25.339	20.325	44.3	24.0	36.2	15.9	2.28	0.40	34.2	10.2	26.1
221	185.2	1.133	79.1	8.1	7.32	16.747	25.244	20.227	44.2	24.0	36.1	15.9	2.27	0.40	34.1	10.1	26.0
222	185.3	1.137	79.1	8.1	7.32	16.822	25.263	20.223	44.2	24.0	36.1	15.9	2.27	0.40	34.1	10.1	26.0
223	185.2	1.142	79.1	8.2	7.33	16.898	25.244	20.189	44.2	24.0	36.0	15.9	2.27	0.40	34.1	10.1	25.9
224	185.4	1.146	79.1	8.2	7.34	16.974	25.282	20.201	44.2	24.0	36.1	15.9	2.27	0.40	34.1	10.1	26.0

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
225	186.1	1.151	79.2	8.2	7.34	17.050	25.396	20.276	44.3	24.0	36.1	15.8	2.28	0.40	34.1	10.1	26.0
226	186.0	1.156	79.2	8.2	7.35	17.126	25.377	20.241	44.3	24.0	36.1	15.8	2.28	0.40	34.1	10.1	25.9
227	185.9	1.160	79.1	8.2	7.36	17.202	25.358	20.206	44.2	24.0	36.1	15.9	2.27	0.40	34.1	10.1	26.0
228	185.9	1.165	79.2	8.2	7.37	17.278	25.358	20.187	44.2	24.0	36.0	15.8	2.28	0.41	34.1	10.1	25.9
229	185.7	1.169	79.2	8.2	7.37	17.354	25.339	20.152	44.2	24.0	35.9	15.8	2.28	0.41	34.1	10.1	25.9
230	185.6	1.174	79.2	8.2	7.38	17.430	25.320	20.117	44.1	24.0	35.9	15.8	2.27	0.41	34.1	10.1	25.9
231	185.4	1.178	79.2	8.2	7.39	17.506	25.282	20.066	44.1	24.0	35.9	15.8	2.27	0.41	34.0	10.0	25.8
232	185.2	1.183	79.2	8.2	7.39	17.582	25.244	20.016	44.0	24.0	35.8	15.8	2.27	0.41	34.0	10.0	25.8
233	184.7	1.188	79.2	8.2	7.40	17.658	25.169	19.934	43.9	24.0	35.7	15.8	2.26	0.41	34.0	10.0	25.7
234	184.5	1.193	79.2	8.2	7.41	17.743	25.131	19.882	43.9	24.0	35.6	15.8	2.26	0.41	34.0	9.9	25.7
235	184.4	1.197	79.3	8.3	7.41	17.819	25.112	19.847	43.9	24.0	35.6	15.7	2.26	0.42	33.9	9.9	25.7
236	184.5	1.202	79.3	8.3	7.42	17.895	25.131	19.844	43.9	24.0	35.6	15.7	2.26	0.42	33.9	9.9	25.7
237	184.4	1.206	79.3	8.3	7.43	17.971	25.112	19.809	43.8	24.0	35.5	15.7	2.26	0.42	33.9	9.9	25.6
238	184.5	1.211	79.3	8.3	7.43	18.047	25.131	19.806	43.8	24.0	35.5	15.7	2.26	0.42	33.9	9.9	25.6
239	184.1	1.216	79.3	8.3	7.44	18.133	25.074	19.738	43.7	24.0	35.4	15.7	2.26	0.42	33.9	9.9	25.6
240	184.0	1.221	79.3	8.3	7.45	18.209	25.055	19.703	43.7	24.0	35.4	15.7	2.25	0.42	33.9	9.9	25.6
241	184.4	1.225	79.3	8.3	7.46	18.284	25.112	19.730	43.7	24.0	35.4	15.7	2.26	0.42	33.9	9.9	25.6
242	184.2	1.230	79.3	8.3	7.46	18.360	25.093	19.696	43.7	24.0	35.4	15.7	2.25	0.42	33.9	9.8	25.6
243	184.2	1.234	79.3	8.3	7.47	18.436	25.093	19.677	43.7	24.0	35.4	15.7	2.26	0.42	33.8	9.8	25.5
244	183.9	1.239	79.3	8.3	7.48	18.512	25.036	19.612	43.6	24.0	35.3	15.7	2.25	0.42	33.8	9.8	25.5
245	183.8	1.244	79.3	8.3	7.48	18.588	25.017	19.577	43.6	24.0	35.3	15.7	2.25	0.43	33.8	9.8	25.5
246	183.7	1.248	79.4	8.4	7.49	18.664	24.998	19.543	43.6	24.0	35.2	15.6	2.25	0.43	33.8	9.8	25.4
247	183.7	1.253	79.4	8.4	7.50	18.740	24.998	19.524	43.5	24.0	35.2	15.6	2.25	0.43	33.8	9.8	25.4
248	183.5	1.257	79.4	8.4	7.50	18.816	24.979	19.489	43.5	24.0	35.1	15.6	2.25	0.43	33.8	9.7	25.4
249	183.7	1.262	79.4	8.4	7.51	18.892	24.998	19.486	43.5	24.0	35.1	15.6	2.25	0.43	33.8	9.7	25.4
250	183.8	1.266	79.4	8.4	7.52	18.968	25.017	19.482	43.5	24.0	35.1	15.6	2.25	0.43	33.8	9.7	25.4
251	183.8	1.271	79.4	8.4	7.53	19.044	25.017	19.463	43.5	24.0	35.1	15.6	2.25	0.43	33.7	9.7	25.3
252	183.5	1.275	79.4	8.4	7.53	19.120	24.979	19.413	43.4	24.0	35.0	15.6	2.24	0.43	33.7	9.7	25.3
253	183.3	1.280	79.4	8.4	7.54	19.196	24.942	19.364	43.4	24.0	35.0	15.6	2.24	0.43	33.7	9.7	25.3
254	183.8	1.285	79.4	8.4	7.55	19.272	25.017	19.406	43.4	24.0	35.0	15.6	2.25	0.43	33.7	9.7	25.3
255	183.9	1.289	79.4	8.4	7.55	19.348	25.036	19.402	43.4	24.0	35.0	15.6	2.24	0.43	33.7	9.7	25.3
256	183.4	1.294	79.4	8.4	7.56	19.424	24.960	19.322	43.3	24.0	34.9	15.6	2.24	0.43	33.7	9.7	25.3
257	183.3	1.298	79.4	8.4	7.57	19.500	24.942	19.288	43.3	24.0	34.9	15.6	2.24	0.44	33.7	9.6	25.2
258	183.2	1.303	79.4	8.4	7.58	19.576	24.923	19.254	43.3	24.0	34.8	15.6	2.24	0.44	33.6	9.6	25.2
259	183.0	1.307	79.4	8.4	7.58	19.652	24.885	19.205	43.2	24.0	34.8	15.6	2.23	0.44	33.6	9.6	25.2
260	183.1	1.312	79.4	8.5	7.59	19.727	24.904	19.201	43.2	24.0	34.8	15.6	2.23	0.44	33.6	9.6	25.2
261	183.1	1.317	79.4	8.5	7.60	19.813	24.904	19.180	43.2	24.0	34.7	15.6	2.23	0.44	33.6	9.6	25.1
262	182.9	1.322	79.4	8.5	7.61	19.889	24.866	19.130	43.1	24.0	34.7	15.6	2.23	0.44	33.6	9.6	25.1
263	182.7	1.326	79.4	8.5	7.61	19.965	24.847	19.096	43.1	24.0	34.7	15.6	2.23	0.44	33.6	9.5	25.1

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. U-2412B

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project 39406.1.1 **County** GUILFORD **Owner**

Date: Sampled 3/22/13 **Received** 5/13/13 **Reported** 5/15/13

Sampled from **By** NEIL ROBERSON

Submitted by SURIYATI B S 1995 **Standard Specifications**

785457 TO 785459
5/20/13

TEST RESULTS

Proj. Sample No.		ST-3#1	ST-3#2	ST-3#3			
Lab. Sample No.		785457	785458	785459			
Retained #4 Sieve	%	-	-	-			
Passing #10 Sieve	%	100	100	100			
Passing #40 Sieve	%	98	98	97			
Passing #200 Sieve	%	80	73	77			

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	6.9	8.9	8.5			
Fine Sand Ret - #270	%	18.3	25.8	21.8			
Silt 0.05 - 0.005 mm	%	50.6	55.2	57.7			
Clay < 0.005 mm	%	24.2	10.1	12.1			
T-#		T-5671	T-5671	T-5671			
Specific Gravity		2.764	2.788	2.804			

L. L.		60	55	56			
P. I.		16	8	14			
AASHTO Classification		A-7-5(17)	A-5(9)	A-7-5(14)			
Station		405+70	405+70	405+70			
Offset		3 RT	3 RT	3 RT			
Alignment		L	L	L			
Location							
Depth (Ft)		30.00	30.00	30.00			
	to	32.00	32.00	32.00			
Final Moisture	%	54.39	57.64	49.4			

cc: NEIL ROBERSON
GREG BODENHEIMER

Soils Engineer

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	53.30	45.50	**Plastic Limits:**	0	
Dry Density (pcf):	66.54	78.82	**Plasticity Index (%):**	0	
Saturation (%):	91.71	104.58			
Void Ratio:	1.6243	1.2156	**Specific Gravity:**	2.801	Measured

Soil Description: Soft tannish grey colored clay

Project Number: 39406.1.1 **Depth:** 30.0 - 32.0 ft

Sample Number: ST-3 **Boring Number:**

Project: U-2412B

Client: T-5671

Location: Guilford County (Sta. 405+70)

Remarks:
Solid Height 0.38171 inches ; Est. Blows/Ft= NA

Consolidation Test
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Soil Description:	Soft tannish grey colored clay			
Project Number:	39406.1.1	**Depth:**	30.0 - 32.0 ft	**Remarks:**
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Location:	Guilford County (Sta. 405+70)		

Consolidation Test Results
Summary

Project: U-2412B
Location: Guilford County (Sta. 405+70)
Job Number: T-5671

Project Number: 39406.1.1

Sample Number: ST-3
Boring Number:
Depth: 30.0 - 32.0 ft
Sample Type: Undisturbed

Soil Description:
Soft tannish grey colored clay
Remarks:
Solid Height 0.38171 inches ; Est. Blows/Ft= NA

Test Number:
Test Date:

Index	Load Sequence (tsf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	1.0004	0.6192	0.00	1.6243	0.000		0.000	
1	0.031	0.0008	0.9996	0.6184	0.08	1.6222	3.294		234.724	
2	0.063	0.0011	0.9993	0.6181	0.11	1.6215	0.347		2228.777	
3	0.125	0.0025	0.9979	0.6167	0.25	1.6178	7.426		103.764	
4	0.250	0.0052	0.9952	0.6140	0.52	1.6107	0.339		2264.075	
5	0.500	0.0101	0.9903	0.6091	1.01	1.5978	0.118		6420.145	
6	1.000	0.0173	0.9831	0.6019	1.73	1.5790	0.694		1076.997	
7	2.000	0.0267	0.9737	0.5925	2.67	1.5543	1.563		469.375	
8	4.000	0.0505	0.9499	0.5687	5.05	1.4919	0.149		4692.254	
9	2.000	0.0460	0.9544	0.5732	4.60	1.5037	0.000		0.000	
10	1.000	0.0424	0.9580	0.5768	4.24	1.5131	0.000		0.000	
11	0.500	0.0385	0.9619	0.5807	3.85	1.5233	0.000		0.000	
12	1.000	0.0415	0.9589	0.5777	4.15	1.5155	0.000		0.000	
13	2.000	0.0455	0.9549	0.5737	4.55	1.5050	0.000		0.000	
14	4.000	0.0534	0.9470	0.5658	5.34	1.4843	0.000		0.000	
15	8.000	0.1210	0.8794	0.4982	12.10	1.3069	1.000		598.414	
16	16.000	0.2093	0.7911	0.4099	20.92	1.0753	0.840		576.311	
17	4.000	0.2012	0.7992	0.4180	20.11	1.0965	0.000		0.000	
18	0.016	0.1558	0.8446	0.4634	15.57	1.2156	0.000		0.000	

Tested By:

Checked By:

Consolidation Test
Consolidation Specimen Information

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County (Sta. 405+70)
Job Number: T-5671 **Test Date:**

Sample Number: ST-3 **Soil Description:**
Boring Number: Soft tannish grey colored clay
Depth: 30.0 - 32.0 ft **Remarks:**
Sample Type: Undisturbed Solid Height 0.38171 inches ; Est. Blows/Ft= NA

Test Number:
Liquid Limit: 0.0000 **Initial Void Ratio:** 1.6243 **Initial Height (in):** 1.0004
Plastic Limit: 0.0000 **Plasticity Index (%):** 0.0000 **Initial Diameter (in):** 2.4998
Specific Gravity: 2.8010 Measured **Weight of Ring (g):** 111.0800

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	131.47	124.78
Dry Soil + Container (g)	85.76	85.76
Weight of Container (g)	0.00	0.00
Moisture Content (%)	53.30	45.50
Void Ratio	1.6243	1.2156
Saturation (%)	91.71	104.58
Dry Density (pcf)	66.54	78.82

Tested By: **Checked By:**

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Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date

Tested By:

Effective Stress at Maximum Deviator Stress Criterion

Deviator Stress Vs. Axial Strain

Initial	Specimen A	B	C	D
Water Content (%)	49.2	52.3	46.6	
Dry Density (pcf)	69.6	66.8	72.7	
Saturation (%)	91.96	90.75	92.83	
Void Ratio	1.472	1.600	1.402	
Diameter (in)	2.837	2.861	2.864	
Height (in)	6.018	6.159	6.144	
Specific Gravity	2.76	2.79	2.80	
Liquid Limit	0	0	0	
Plastic Limit	0	0	0	
After Consolidation	**A**	**B**	**C**	**D**
B-Value	0.00	0.00	0.00	
Water Content (%)	50.5	54.1	49.7	
Dry Density (pcf)	71.14	68.19	75.54	
Saturation (%)	100.00	100.00	100.00	
Void Ratio	1.426	1.553	1.317	
Effective Stress (psi)	6.0	12.0	24.0	
Back Press. (psi)	59.6	60.1	60.0	
Rate of Strain	0.009	0.009	0.009	

Maximium Deviator Stress Criterion	
C (psi)	0.0
C' (psi)	0.0
Ø (deg)	0.0
Ø' (deg)	0.0

After Shear	A	B	C	D
σ'1 at Failure (psi)	12.37	33.36	50.72	
σ'3 at Failure (psi)	4.54	7.19	13.52	

Project:	U-2412B
Location:	Guilford County (Sta. 405 + 70)
Project Number:	39406.1.1
Boring Number:	0
Sample Number:	ST-3
Depth:	30.0 - 32.0 ft
Sample Type:	Undisturbed
Description:	
Test Type	Consolidated Undrained
Remarks	

Failure Photographs

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Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date:

Tested By:

Deviator Stress vs. Axial Strain

Principal Stress Ratio vs. Axial Strain

Change in Pore Pressure vs. Axial Strain
Change in Pore Pressure (psi)
12.0
10.0
8.0
6.0
4.0
2.0
0.0
0.000
5.000
10.000
15.000
20.000
25.000
Axial Strain (%)
Specimen A
Specimen B
Specimen C
Specimen D

Mohr Stress Circles at Maximum Deviator Stress Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at Maximum Principal Stress Ratio Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at 15% Axial Strain Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)
Q (psi)
P' (psi)
0.0
10.0
20.0
30.0
40.0
Specimen A
Specimen B
Specimen C
Specimen D
Tangent Line

Stress Paths (Total)
(C' = 0.0 Ø' = 0.0)
Q (psi)
P (psi)
0.0
10.0
20.0
30.0
40.0
50.0

Specimen A Shear Data

CU Triaxial Test

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File Location
T-5671.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5671
Sample Location: Guilford County (Sta. 405 + 70)
Sample Description: Orange-tan colored clay
Remarks: Mushroom-like shear, and carbon spots at bottom of sample.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.7639999
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.837	2.812	
Height (in)	6.018	5.993	
Weight (grams)	1037.00		1073.00
Moisture (%)	49.21		54.39
Dry Density (pcf)	69.60	71.14	
Saturation (%)	91.96	100.00	
Void Ratio	1.472	1.426	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 65.600
Effective Confining Stress (psi): 6.0
Corrected Peak Deviator Stress (psi): 7.833 at reading number: 272

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	30.7	0.064	59.6	0.0	6.21	0.000	0.000	0.000	6.0	6.0	6.0	6.0	1.00	0.00	6.0	0.0	6.0
1	41.1	0.069	60.1	0.5	6.22	0.084	1.668	1.634	7.6	6.0	7.1	5.5	1.30	0.31	6.8	0.8	6.3
2	44.0	0.071	60.3	0.7	6.22	0.115	2.137	2.090	8.1	6.0	7.4	5.3	1.39	0.34	7.1	1.0	6.4
3	46.4	0.075	60.5	0.9	6.22	0.184	2.531	2.454	8.5	6.0	7.6	5.1	1.48	0.37	7.2	1.2	6.3
4	48.9	0.079	60.6	1.1	6.23	0.253	2.924	2.818	8.8	6.0	7.8	5.0	1.57	0.38	7.4	1.4	6.4
5	50.5	0.084	60.8	1.2	6.23	0.330	3.187	3.047	9.1	6.0	7.8	4.8	1.64	0.41	7.5	1.5	6.3
6	50.9	0.088	60.9	1.4	6.23	0.399	3.243	3.074	9.1	6.0	7.7	4.7	1.66	0.44	7.5	1.5	6.2
7	51.5	0.091	61.0	1.4	6.24	0.460	3.337	3.141	9.2	6.0	7.7	4.6	1.69	0.46	7.6	1.6	6.1
8	53.4	0.095	61.1	1.5	6.24	0.522	3.655	3.432	9.4	6.0	7.9	4.5	1.77	0.45	7.7	1.7	6.2
9	54.9	0.099	61.2	1.6	6.25	0.591	3.899	3.645	9.7	6.0	8.0	4.4	1.83	0.44	7.8	1.8	6.2
10	54.8	0.104	61.3	1.7	6.25	0.667	3.880	3.593	9.6	6.0	7.9	4.3	1.83	0.47	7.8	1.8	6.1
11	56.3	0.109	61.4	1.8	6.26	0.744	4.124	3.802	9.8	6.0	8.0	4.2	1.90	0.46	7.9	1.9	6.1
12	57.0	0.113	61.4	1.8	6.26	0.813	4.237	3.884	9.9	6.0	8.1	4.2	1.93	0.47	8.0	1.9	6.1
13	58.1	0.117	61.5	1.9	6.27	0.890	4.405	4.018	10.0	6.0	8.1	4.1	1.97	0.47	8.0	2.0	6.1
14	58.7	0.121	61.5	1.9	6.27	0.959	4.499	4.081	10.1	6.0	8.2	4.1	2.00	0.48	8.1	2.0	6.1
15	59.0	0.126	61.6	2.0	6.28	1.036	4.555	4.103	10.1	6.0	8.1	4.0	2.02	0.49	8.1	2.1	6.1
16	59.1	0.131	61.6	2.1	6.28	1.112	4.574	4.088	10.1	6.0	8.0	4.0	2.03	0.50	8.1	2.0	6.0
17	60.3	0.135	61.7	2.1	6.28	1.189	4.761	4.240	10.3	6.0	8.2	3.9	2.08	0.49	8.1	2.1	6.0
18	60.4	0.140	61.7	2.1	6.29	1.266	4.780	4.225	10.2	6.0	8.1	3.9	2.09	0.50	8.1	2.1	6.0

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	61.7	0.144	61.8	2.2	6.29	1.335	4.986	4.398	10.4	6.0	8.2	3.8	2.15	0.50	8.2	2.2	6.0
20	62.5	0.149	61.8	2.2	6.30	1.412	5.118	4.493	10.5	6.0	8.3	3.8	2.18	0.49	8.3	2.2	6.1
21	62.4	0.153	61.8	2.2	6.30	1.481	5.099	4.444	10.5	6.0	8.2	3.8	2.18	0.50	8.2	2.2	6.0
22	62.7	0.157	61.8	2.2	6.31	1.557	5.155	4.466	10.5	6.0	8.2	3.8	2.18	0.50	8.2	2.2	6.0
23	63.1	0.162	61.9	2.3	6.31	1.634	5.211	4.487	10.5	6.0	8.2	3.7	2.20	0.50	8.3	2.2	6.0
24	64.4	0.166	61.9	2.3	6.32	1.711	5.418	4.656	10.7	6.0	8.4	3.7	2.25	0.49	8.3	2.3	6.0
25	63.9	0.171	61.9	2.3	6.32	1.780	5.343	4.551	10.6	6.0	8.2	3.7	2.23	0.51	8.3	2.3	6.0
26	64.1	0.175	61.9	2.4	6.33	1.856	5.380	4.554	10.6	6.0	8.2	3.7	2.24	0.52	8.3	2.3	5.9
27	64.6	0.179	61.9	2.4	6.33	1.926	5.455	4.597	10.6	6.0	8.3	3.7	2.26	0.51	8.3	2.3	6.0
28	65.5	0.184	62.0	2.4	6.34	2.002	5.605	4.710	10.7	6.0	8.3	3.6	2.30	0.51	8.4	2.4	6.0
29	65.3	0.188	62.0	2.4	6.34	2.071	5.568	4.670	10.7	6.0	8.3	3.6	2.29	0.51	8.3	2.3	6.0
30	65.4	0.192	62.0	2.4	6.35	2.140	5.586	4.684	10.7	6.0	8.3	3.6	2.30	0.52	8.4	2.3	5.9
31	66.4	0.196	62.0	2.4	6.35	2.209	5.736	4.827	10.8	6.0	8.4	3.6	2.34	0.50	8.4	2.4	6.0
32	67.1	0.201	62.0	2.4	6.36	2.286	5.849	4.933	10.9	6.0	8.5	3.6	2.38	0.50	8.5	2.5	6.0
33	66.5	0.206	62.0	2.4	6.36	2.363	5.755	4.837	10.8	6.0	8.4	3.6	2.35	0.50	8.4	2.4	6.0
34	67.5	0.210	62.0	2.4	6.36	2.432	5.924	4.997	11.0	6.0	8.6	3.6	2.40	0.49	8.5	2.5	6.1
35	67.9	0.214	62.1	2.5	6.37	2.501	5.980	5.048	11.1	6.0	8.6	3.5	2.43	0.49	8.5	2.5	6.1
36	67.4	0.218	62.1	2.5	6.37	2.570	5.905	4.971	11.0	6.0	8.5	3.5	2.40	0.50	8.5	2.5	6.0
37	68.1	0.222	62.1	2.5	6.38	2.639	6.017	5.076	11.1	6.0	8.6	3.5	2.43	0.49	8.6	2.5	6.1
38	67.9	0.227	62.1	2.5	6.38	2.716	5.980	5.035	11.0	6.0	8.6	3.5	2.42	0.49	8.5	2.5	6.1
39	68.3	0.231	62.1	2.5	6.39	2.785	6.055	5.104	11.1	6.0	8.6	3.5	2.44	0.48	8.6	2.6	6.1
40	68.5	0.235	62.1	2.5	6.39	2.861	6.074	5.118	11.1	6.0	8.6	3.5	2.46	0.49	8.6	2.6	6.1
41	68.2	0.240	62.1	2.5	6.40	2.938	6.036	5.076	11.1	6.0	8.6	3.5	2.45	0.49	8.6	2.5	6.0
42	68.8	0.245	62.1	2.5	6.40	3.015	6.130	5.163	11.2	6.0	8.7	3.5	2.47	0.48	8.6	2.6	6.1
43	69.5	0.249	62.1	2.5	6.41	3.084	6.242	5.268	11.3	6.0	8.8	3.5	2.50	0.47	8.6	2.6	6.1
44	70.0	0.254	62.1	2.5	6.41	3.168	6.317	5.335	11.3	6.0	8.8	3.5	2.52	0.47	8.7	2.7	6.2
45	70.2	0.258	62.1	2.5	6.42	3.237	6.355	5.367	11.4	6.0	8.9	3.5	2.53	0.47	8.7	2.7	6.2
46	70.7	0.263	62.1	2.5	6.42	3.314	6.430	5.434	11.4	6.0	8.9	3.5	2.55	0.46	8.7	2.7	6.2
47	71.1	0.268	62.1	2.5	6.43	3.398	6.505	5.501	11.5	6.0	9.0	3.5	2.57	0.45	8.8	2.8	6.3
48	71.4	0.272	62.1	2.5	6.43	3.475	6.542	5.533	11.5	6.0	9.0	3.5	2.58	0.45	8.8	2.8	6.3
49	71.1	0.277	62.1	2.5	6.44	3.552	6.505	5.491	11.5	6.0	9.0	3.5	2.56	0.46	8.8	2.7	6.3
50	72.2	0.281	62.1	2.5	6.44	3.629	6.674	5.649	11.7	6.0	9.2	3.5	2.61	0.44	8.8	2.8	6.3
51	71.4	0.286	62.1	2.5	6.45	3.705	6.542	5.518	11.5	6.0	9.0	3.5	2.57	0.45	8.8	2.8	6.3
52	72.5	0.291	62.1	2.5	6.45	3.782	6.730	5.693	11.7	6.0	9.2	3.5	2.61	0.43	8.9	2.8	6.4
53	72.5	0.295	62.1	2.5	6.46	3.851	6.730	5.688	11.7	6.0	9.2	3.5	2.62	0.44	8.9	2.8	6.4
54	73.1	0.299	62.1	2.5	6.46	3.928	6.824	5.773	11.8	6.0	9.3	3.5	2.63	0.43	8.9	2.9	6.4
55	72.4	0.304	62.1	2.5	6.47	4.004	6.711	5.660	11.7	6.0	9.2	3.5	2.60	0.44	8.8	2.8	6.4
56	72.9	0.308	62.1	2.5	6.47	4.074	6.786	5.727	11.7	6.0	9.3	3.5	2.62	0.43	8.9	2.9	6.4
57	73.6	0.312	62.1	2.5	6.48	4.143	6.899	5.830	11.8	6.0	9.4	3.5	2.65	0.42	8.9	2.9	6.5
58	74.2	0.317	62.1	2.5	6.48	4.219	6.992	5.915	11.9	6.0	9.5	3.5	2.67	0.42	9.0	3.0	6.5
59	74.4	0.321	62.1	2.5	6.49	4.288	7.030	5.946	12.0	6.0	9.5	3.5	2.68	0.42	9.0	3.0	6.5

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	75.1	0.326	62.1	2.5	6.49	4.365	7.142	6.048	12.1	6.0	9.6	3.5	2.71	0.41	9.0	3.0	6.6
61	74.2	0.330	62.1	2.5	6.50	4.442	6.992	5.899	11.9	6.0	9.4	3.5	2.67	0.42	9.0	2.9	6.5
62	75.0	0.335	62.1	2.5	6.50	4.518	7.123	6.019	12.0	6.0	9.6	3.5	2.70	0.41	9.0	3.0	6.5
63	74.9	0.339	62.1	2.5	6.51	4.595	7.105	5.996	12.0	6.0	9.5	3.5	2.69	0.41	9.0	3.0	6.5
64	75.6	0.343	62.1	2.5	6.51	4.664	7.217	6.098	12.1	6.0	9.6	3.5	2.72	0.41	9.1	3.0	6.6
65	75.7	0.348	62.0	2.4	6.52	4.741	7.236	6.111	12.1	6.0	9.7	3.6	2.71	0.40	9.1	3.1	6.6
66	75.8	0.353	62.0	2.4	6.52	4.818	7.255	6.123	12.1	6.0	9.7	3.6	2.72	0.40	9.1	3.1	6.6
67	75.9	0.357	62.0	2.4	6.53	4.894	7.273	6.135	12.1	6.0	9.7	3.6	2.72	0.40	9.1	3.1	6.6
68	76.3	0.362	62.0	2.4	6.53	4.971	7.330	6.183	12.2	6.0	9.8	3.6	2.73	0.40	9.1	3.1	6.7
69	76.3	0.366	62.0	2.4	6.54	5.048	7.330	6.177	12.2	6.0	9.8	3.6	2.72	0.39	9.1	3.1	6.7
70	76.4	0.371	62.0	2.4	6.54	5.117	7.348	6.190	12.2	6.0	9.8	3.6	2.72	0.39	9.1	3.1	6.7
71	76.6	0.375	62.0	2.4	6.55	5.194	7.386	6.220	12.2	6.0	9.8	3.6	2.73	0.39	9.1	3.1	6.7
72	75.8	0.379	62.0	2.4	6.56	5.263	7.255	6.091	12.1	6.0	9.7	3.6	2.69	0.40	9.1	3.0	6.6
73	76.5	0.384	62.0	2.4	6.56	5.339	7.367	6.191	12.2	6.0	9.8	3.6	2.72	0.39	9.1	3.1	6.7
74	77.1	0.388	62.0	2.4	6.57	5.408	7.461	6.275	12.3	6.0	9.9	3.6	2.74	0.38	9.1	3.1	6.7
75	77.5	0.392	62.0	2.4	6.57	5.477	7.536	6.341	12.4	6.0	10.0	3.6	2.75	0.38	9.2	3.2	6.8
76	77.3	0.397	62.0	2.4	6.58	5.554	7.498	6.300	12.3	6.0	9.9	3.6	2.74	0.38	9.2	3.1	6.8
78	77.5	0.406	62.0	2.4	6.59	5.700	7.536	6.324	12.3	6.0	10.0	3.6	2.74	0.38	9.2	3.2	6.8
79	77.8	0.410	61.9	2.4	6.59	5.769	7.573	6.354	12.4	6.0	10.0	3.7	2.74	0.37	9.2	3.2	6.8
80	78.5	0.414	61.9	2.4	6.60	5.838	7.686	6.455	12.5	6.0	10.1	3.7	2.76	0.36	9.2	3.2	6.9
81	78.0	0.418	61.9	2.4	6.60	5.907	7.611	6.379	12.4	6.0	10.0	3.7	2.74	0.37	9.2	3.2	6.8
82	78.7	0.422	61.9	2.4	6.60	5.976	7.723	6.479	12.5	6.0	10.1	3.7	2.77	0.36	9.3	3.2	6.9
83	78.6	0.427	61.9	2.4	6.61	6.053	7.705	6.456	12.5	6.0	10.1	3.7	2.76	0.36	9.2	3.2	6.9
84	78.9	0.431	61.9	2.3	6.62	6.122	7.761	6.503	12.5	6.0	10.2	3.7	2.76	0.36	9.3	3.3	6.9
85	78.7	0.435	61.9	2.3	6.62	6.198	7.723	6.462	12.5	6.0	10.1	3.7	2.75	0.36	9.2	3.2	6.9
86	80.0	0.440	61.9	2.3	6.63	6.275	7.930	6.650	12.7	6.0	10.3	3.7	2.80	0.35	9.3	3.3	7.0
87	78.8	0.444	61.9	2.3	6.63	6.344	7.742	6.469	12.5	6.0	10.2	3.7	2.74	0.35	9.2	3.2	7.0
88	79.5	0.449	61.9	2.3	6.64	6.421	7.855	6.568	12.6	6.0	10.3	3.7	2.77	0.35	9.3	3.3	7.0
89	79.9	0.453	61.9	2.3	6.64	6.490	7.911	6.615	12.6	6.0	10.3	3.7	2.78	0.35	9.3	3.3	7.0
90	80.0	0.457	61.9	2.3	6.65	6.567	7.930	6.626	12.6	6.0	10.3	3.7	2.78	0.35	9.3	3.3	7.0
91	79.7	0.463	61.9	2.3	6.65	6.651	7.892	6.585	12.6	6.0	10.3	3.7	2.77	0.35	9.3	3.3	7.0
92	80.2	0.467	61.9	2.3	6.66	6.728	7.967	6.649	12.7	6.0	10.4	3.7	2.77	0.34	9.3	3.3	7.1
93	81.0	0.472	61.9	2.3	6.66	6.805	8.098	6.765	12.8	6.0	10.5	3.7	2.81	0.33	9.4	3.4	7.1
94	80.9	0.476	61.9	2.3	6.67	6.881	8.080	6.741	12.8	6.0	10.5	3.7	2.80	0.34	9.4	3.4	7.1
95	82.0	0.481	61.9	2.3	6.67	6.958	8.248	6.892	12.9	6.0	10.6	3.7	2.84	0.33	9.5	3.4	7.2
96	80.7	0.486	61.8	2.2	6.68	7.035	8.042	6.694	12.7	6.0	10.5	3.8	2.77	0.33	9.4	3.3	7.1
97	81.6	0.490	61.8	2.2	6.68	7.104	8.192	6.828	12.8	6.0	10.6	3.8	2.81	0.33	9.4	3.4	7.2
98	81.4	0.494	61.8	2.2	6.69	7.180	8.155	6.787	12.8	6.0	10.6	3.8	2.80	0.33	9.4	3.4	7.2
99	81.1	0.499	61.8	2.2	6.70	7.257	8.117	6.746	12.8	6.0	10.5	3.8	2.79	0.33	9.4	3.4	7.1
100	81.0	0.503	61.8	2.2	6.70	7.334	8.098	6.722	12.7	6.0	10.5	3.8	2.77	0.33	9.4	3.4	7.2
101	80.2	0.508	61.8	2.2	6.71	7.403	7.967	6.595	12.6	6.0	10.4	3.8	2.73	0.33	9.3	3.3	7.1

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
102	81.8	0.512	61.8	2.2	6.71	7.480	8.229	6.832	12.8	6.0	10.6	3.8	2.80	0.32	9.4	3.4	7.2
103	82.2	0.517	61.8	2.2	6.72	7.556	8.286	6.877	12.9	6.0	10.7	3.8	2.81	0.32	9.5	3.4	7.2
104	83.4	0.521	61.8	2.2	6.72	7.633	8.473	7.044	13.1	6.0	10.9	3.8	2.84	0.31	9.5	3.5	7.4
105	82.0	0.526	61.8	2.2	6.73	7.710	8.248	6.830	12.8	6.0	10.7	3.8	2.78	0.32	9.4	3.4	7.2
106	82.2	0.531	61.8	2.2	6.74	7.794	8.286	6.858	12.9	6.0	10.7	3.8	2.79	0.32	9.4	3.4	7.3
107	81.7	0.535	61.8	2.2	6.74	7.863	8.211	6.783	12.8	6.0	10.6	3.8	2.77	0.32	9.4	3.4	7.2
108	82.8	0.540	61.8	2.2	6.75	7.940	8.379	6.932	12.9	6.0	10.8	3.8	2.81	0.31	9.5	3.5	7.3
109	83.4	0.544	61.7	2.1	6.75	8.017	8.473	7.012	13.0	6.0	10.9	3.9	2.81	0.31	9.5	3.5	7.4
110	83.5	0.549	61.7	2.1	6.76	8.093	8.492	7.022	13.0	6.0	10.9	3.9	2.82	0.31	9.5	3.5	7.4
111	83.4	0.554	61.7	2.1	6.76	8.170	8.473	6.999	13.0	6.0	10.9	3.9	2.81	0.31	9.5	3.5	7.4
112	83.7	0.558	61.7	2.1	6.77	8.239	8.529	7.044	13.1	6.0	10.9	3.9	2.82	0.30	9.5	3.5	7.4
113	84.1	0.562	61.7	2.1	6.77	8.316	8.586	7.089	13.1	6.0	11.0	3.9	2.82	0.30	9.6	3.5	7.4
114	84.1	0.567	61.7	2.1	6.78	8.393	8.586	7.083	13.1	6.0	11.0	3.9	2.81	0.29	9.6	3.5	7.5
115	84.4	0.571	61.7	2.1	6.78	8.462	8.642	7.128	13.1	6.0	11.0	3.9	2.83	0.30	9.6	3.6	7.5
116	84.9	0.575	61.7	2.1	6.79	8.531	8.717	7.191	13.2	6.0	11.1	3.9	2.85	0.29	9.6	3.6	7.5
117	84.7	0.579	61.7	2.1	6.79	8.600	8.698	7.168	13.2	6.0	11.1	3.9	2.83	0.29	9.6	3.6	7.5
118	85.2	0.584	61.7	2.1	6.80	8.676	8.773	7.230	13.2	6.0	11.2	3.9	2.84	0.29	9.6	3.6	7.5
119	84.7	0.588	61.7	2.1	6.81	8.745	8.698	7.155	13.2	6.0	11.1	3.9	2.82	0.29	9.6	3.6	7.5
120	85.2	0.593	61.7	2.1	6.81	8.822	8.773	7.217	13.2	6.0	11.1	3.9	2.84	0.29	9.6	3.6	7.5
121	85.0	0.597	61.6	2.1	6.82	8.891	8.736	7.177	13.2	6.0	11.1	4.0	2.82	0.29	9.6	3.6	7.5
122	85.6	0.601	61.6	2.1	6.82	8.968	8.829	7.255	13.3	6.0	11.2	4.0	2.84	0.28	9.6	3.6	7.6
123	84.6	0.606	61.6	2.1	6.83	9.037	8.679	7.113	13.1	6.0	11.1	4.0	2.80	0.29	9.6	3.6	7.5
124	85.6	0.610	61.6	2.1	6.83	9.106	8.829	7.243	13.3	6.0	11.2	4.0	2.83	0.28	9.6	3.6	7.6
125	86.1	0.614	61.6	2.1	6.84	9.183	8.923	7.321	13.3	6.0	11.3	4.0	2.85	0.28	9.7	3.7	7.6
126	85.9	0.618	61.6	2.0	6.84	9.252	8.886	7.281	13.3	6.0	11.3	4.0	2.83	0.28	9.7	3.6	7.6
127	85.8	0.623	61.6	2.0	6.85	9.321	8.867	7.258	13.3	6.0	11.2	4.0	2.82	0.28	9.6	3.6	7.6
128	86.1	0.627	61.6	2.0	6.85	9.397	8.923	7.302	13.3	6.0	11.3	4.0	2.83	0.28	9.7	3.7	7.6
129	85.6	0.632	61.6	2.0	6.86	9.474	8.829	7.210	13.2	6.0	11.2	4.0	2.81	0.28	9.6	3.6	7.6
130	86.4	0.636	61.6	2.0	6.87	9.543	8.961	7.323	13.3	6.0	11.3	4.0	2.83	0.27	9.7	3.7	7.7
131	86.5	0.640	61.6	2.0	6.87	9.620	8.979	7.333	13.3	6.0	11.3	4.0	2.83	0.27	9.7	3.7	7.7
132	86.5	0.645	61.6	2.0	6.88	9.697	8.979	7.326	13.3	6.0	11.3	4.0	2.83	0.27	9.7	3.7	7.7
133	87.2	0.649	61.6	2.0	6.88	9.766	9.092	7.422	13.4	6.0	11.4	4.0	2.85	0.27	9.7	3.7	7.7
134	87.5	0.654	61.6	2.0	6.89	9.842	9.148	7.465	13.5	6.0	11.5	4.0	2.86	0.27	9.7	3.7	7.7
135	86.7	0.658	61.6	2.0	6.89	9.919	9.017	7.340	13.4	6.0	11.4	4.0	2.82	0.27	9.7	3.7	7.7
136	87.5	0.663	61.6	2.0	6.90	9.996	9.148	7.451	13.5	6.0	11.5	4.0	2.84	0.26	9.7	3.7	7.8
137	87.5	0.668	61.6	2.0	6.91	10.073	9.148	7.444	13.5	6.0	11.5	4.0	2.84	0.26	9.7	3.7	7.8
138	87.2	0.672	61.6	2.0	6.91	10.142	9.092	7.387	13.4	6.0	11.4	4.0	2.83	0.27	9.7	3.7	7.7
139	87.9	0.676	61.5	1.9	6.92	10.218	9.204	7.481	13.5	6.0	11.6	4.1	2.84	0.26	9.8	3.7	7.8
140	87.2	0.681	61.5	1.9	6.92	10.295	9.092	7.373	13.4	6.0	11.4	4.1	2.81	0.26	9.7	3.7	7.8
141	87.8	0.685	61.5	1.9	6.93	10.364	9.186	7.451	13.5	6.0	11.5	4.1	2.83	0.26	9.7	3.7	7.8
142	88.1	0.689	61.5	1.9	6.93	10.433	9.242	7.495	13.5	6.0	11.6	4.1	2.83	0.26	9.8	3.7	7.8

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
143	88.6	0.694	61.5	1.9	6.94	10.510	9.317	7.555	13.6	6.0	11.6	4.1	2.86	0.26	9.8	3.8	7.8
144	87.9	0.698	61.5	1.9	6.94	10.579	9.204	7.448	13.5	6.0	11.5	4.1	2.82	0.26	9.7	3.7	7.8
145	88.4	0.703	61.5	1.9	6.95	10.656	9.279	7.508	13.5	6.0	11.6	4.1	2.83	0.25	9.8	3.8	7.9
146	88.2	0.707	61.5	1.9	6.96	10.732	9.261	7.484	13.5	6.0	11.6	4.1	2.83	0.26	9.8	3.7	7.8
147	88.6	0.712	61.5	1.9	6.96	10.809	9.317	7.527	13.5	6.0	11.6	4.1	2.84	0.25	9.8	3.8	7.9
148	88.7	0.716	61.5	1.9	6.97	10.878	9.336	7.538	13.5	6.0	11.7	4.1	2.83	0.25	9.8	3.8	7.9
149	89.2	0.720	61.5	1.9	6.97	10.955	9.410	7.597	13.6	6.0	11.7	4.1	2.84	0.25	9.8	3.8	7.9
150	89.4	0.725	61.5	1.9	6.98	11.031	9.448	7.623	13.6	6.0	11.8	4.1	2.85	0.25	9.8	3.8	7.9
151	88.8	0.730	61.5	1.9	6.99	11.108	9.354	7.154	13.2	6.0	11.3	4.1	2.73	0.26	9.6	3.6	7.7
152	89.3	0.734	61.5	1.9	6.99	11.177	9.429	7.211	13.2	6.0	11.3	4.1	2.75	0.26	9.6	3.6	7.7
153	89.9	0.738	61.5	1.9	7.00	11.254	9.523	7.285	13.3	6.0	11.4	4.1	2.76	0.26	9.7	3.6	7.8
154	89.4	0.743	61.4	1.9	7.00	11.331	9.448	7.208	13.2	6.0	11.4	4.2	2.73	0.26	9.6	3.6	7.8
155	89.9	0.748	61.4	1.9	7.01	11.407	9.523	7.265	13.3	6.0	11.4	4.2	2.75	0.26	9.6	3.6	7.8
156	90.3	0.752	61.4	1.9	7.02	11.484	9.598	7.321	13.3	6.0	11.5	4.2	2.76	0.25	9.7	3.7	7.8
157	89.9	0.757	61.4	1.9	7.02	11.561	9.523	7.245	13.3	6.0	11.4	4.2	2.74	0.26	9.6	3.6	7.8
158	90.3	0.761	61.4	1.9	7.03	11.638	9.598	7.301	13.3	6.0	11.5	4.2	2.76	0.25	9.7	3.7	7.8
159	90.7	0.766	61.4	1.8	7.03	11.707	9.654	7.342	13.4	6.0	11.5	4.2	2.75	0.25	9.7	3.7	7.9
160	90.9	0.770	61.4	1.8	7.04	11.783	9.692	7.365	13.4	6.0	11.6	4.2	2.76	0.25	9.7	3.7	7.9
161	90.3	0.775	61.4	1.8	7.05	11.860	9.598	7.272	13.3	6.0	11.5	4.2	2.74	0.25	9.6	3.6	7.8
162	91.0	0.779	61.4	1.8	7.05	11.929	9.710	7.362	13.4	6.0	11.5	4.2	2.76	0.25	9.7	3.7	7.9
163	90.3	0.783	61.4	1.8	7.06	12.006	9.598	7.253	13.3	6.0	11.4	4.2	2.73	0.25	9.6	3.6	7.8
164	90.3	0.788	61.4	1.8	7.06	12.075	9.598	7.244	13.3	6.0	11.5	4.2	2.72	0.25	9.6	3.6	7.8
165	91.9	0.792	61.4	1.8	7.07	12.144	9.842	7.450	13.5	6.0	11.7	4.2	2.77	0.24	9.7	3.7	7.9
166	91.0	0.796	61.4	1.8	7.07	12.213	9.710	7.325	13.3	6.0	11.5	4.2	2.74	0.25	9.7	3.7	7.9
167	90.5	0.800	61.4	1.8	7.08	12.290	9.617	7.233	13.2	6.0	11.4	4.2	2.72	0.25	9.6	3.6	7.8
168	91.4	0.805	61.4	1.8	7.09	12.359	9.767	7.355	13.4	6.0	11.6	4.2	2.74	0.24	9.7	3.7	7.9
169	91.5	0.809	61.4	1.8	7.09	12.428	9.785	7.363	13.4	6.0	11.6	4.2	2.73	0.24	9.7	3.7	7.9
170	91.2	0.813	61.4	1.8	7.10	12.497	9.729	7.304	13.3	6.0	11.6	4.2	2.72	0.24	9.7	3.7	7.9
171	92.2	0.817	61.4	1.8	7.10	12.573	9.898	7.442	13.5	6.0	11.7	4.2	2.75	0.24	9.7	3.7	8.0
172	91.4	0.822	61.4	1.8	7.11	12.642	9.767	7.318	13.3	6.0	11.6	4.2	2.72	0.24	9.7	3.7	7.9
173	91.4	0.826	61.4	1.8	7.11	12.712	9.767	7.309	13.3	6.0	11.6	4.2	2.72	0.24	9.7	3.7	7.9
174	92.0	0.830	61.4	1.8	7.12	12.788	9.860	7.380	13.4	6.0	11.6	4.2	2.74	0.24	9.7	3.7	7.9
175	92.2	0.834	61.4	1.8	7.13	12.857	9.898	7.404	13.4	6.0	11.7	4.2	2.74	0.24	9.7	3.7	7.9
176	91.7	0.839	61.3	1.7	7.13	12.934	9.823	7.328	13.3	6.0	11.6	4.3	2.71	0.24	9.7	3.7	7.9
177	92.3	0.844	61.3	1.7	7.14	13.011	9.917	7.400	13.4	6.0	11.7	4.3	2.73	0.23	9.7	3.7	8.0
178	92.0	0.848	61.3	1.7	7.15	13.087	9.860	7.341	13.4	6.0	11.6	4.3	2.72	0.24	9.7	3.7	7.9
179	92.3	0.852	61.3	1.7	7.15	13.156	9.917	7.380	13.4	6.0	11.7	4.3	2.73	0.24	9.7	3.7	8.0
180	93.5	0.857	61.3	1.7	7.16	13.233	10.104	7.533	13.5	6.0	11.8	4.3	2.76	0.23	9.8	3.8	8.0
181	93.2	0.862	61.3	1.7	7.16	13.310	10.067	7.490	13.5	6.0	11.8	4.3	2.75	0.23	9.8	3.7	8.0
182	92.9	0.867	61.3	1.7	7.17	13.394	10.010	7.430	13.4	6.0	11.7	4.3	2.74	0.23	9.7	3.7	8.0
183	93.5	0.871	61.3	1.7	7.18	13.471	10.104	7.501	13.5	6.0	11.8	4.3	2.74	0.23	9.8	3.8	8.1

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
184	93.6	0.876	61.3	1.7	7.18	13.548	10.123	7.507	13.5	6.0	11.8	4.3	2.74	0.23	9.8	3.8	8.1
185	93.1	0.880	61.3	1.7	7.19	13.617	10.048	7.432	13.4	6.0	11.7	4.3	2.73	0.23	9.7	3.7	8.0
186	93.6	0.885	61.3	1.7	7.20	13.693	10.123	7.487	13.5	6.0	11.8	4.3	2.74	0.23	9.8	3.7	8.0
187	93.5	0.889	61.3	1.7	7.20	13.770	10.104	7.460	13.5	6.0	11.8	4.3	2.73	0.23	9.7	3.7	8.0
188	93.5	0.894	61.3	1.7	7.21	13.847	10.104	7.450	13.5	6.0	11.8	4.3	2.73	0.23	9.7	3.7	8.0
189	94.3	0.898	61.3	1.7	7.21	13.924	10.235	7.552	13.6	6.0	11.9	4.3	2.74	0.22	9.8	3.8	8.1
190	93.6	0.903	61.3	1.7	7.22	13.993	10.123	7.446	13.5	6.0	11.8	4.3	2.72	0.23	9.7	3.7	8.1
191	93.8	0.907	61.3	1.7	7.23	14.069	10.160	7.468	13.5	6.0	11.8	4.3	2.72	0.22	9.7	3.7	8.1
192	94.5	0.912	61.3	1.7	7.23	14.146	10.273	7.554	13.6	6.0	11.9	4.3	2.74	0.22	9.8	3.8	8.1
193	94.5	0.916	61.3	1.7	7.24	14.223	10.273	7.544	13.6	6.0	11.9	4.3	2.74	0.22	9.8	3.8	8.1
194	93.5	0.920	61.3	1.7	7.25	14.292	10.104	7.390	13.4	6.0	11.7	4.3	2.70	0.23	9.7	3.7	8.0
195	94.3	0.925	61.3	1.7	7.25	14.369	10.235	7.492	13.5	6.0	11.8	4.3	2.73	0.22	9.8	3.7	8.1
196	94.2	0.930	61.2	1.6	7.26	14.445	10.217	7.465	13.5	6.0	11.8	4.4	2.71	0.22	9.7	3.7	8.1
197	95.0	0.934	61.2	1.6	7.26	14.514	10.348	7.568	13.6	6.0	11.9	4.4	2.73	0.22	9.8	3.8	8.1
198	95.0	0.938	61.2	1.6	7.27	14.591	10.348	7.557	13.6	6.0	11.9	4.4	2.73	0.22	9.8	3.8	8.1
199	94.5	0.943	61.2	1.6	7.28	14.668	10.273	7.483	13.5	6.0	11.8	4.4	2.71	0.22	9.8	3.7	8.1
200	94.9	0.947	61.2	1.6	7.28	14.737	10.329	7.521	13.5	6.0	11.9	4.4	2.72	0.22	9.8	3.8	8.1
201	95.0	0.952	61.2	1.6	7.29	14.813	10.348	7.527	13.5	6.0	11.9	4.4	2.72	0.22	9.8	3.8	8.1
202	95.1	0.956	61.2	1.6	7.30	14.890	10.367	7.532	13.5	6.0	11.9	4.4	2.73	0.22	9.8	3.8	8.1
203	95.7	0.961	61.2	1.6	7.30	14.967	10.460	7.601	13.6	6.0	12.0	4.4	2.73	0.21	9.8	3.8	8.2
204	95.2	0.965	61.2	1.6	7.31	15.036	10.385	7.528	13.5	6.0	11.9	4.4	2.71	0.21	9.8	3.8	8.2
205	95.3	0.969	61.2	1.6	7.32	15.105	10.404	7.534	13.5	6.0	11.9	4.4	2.71	0.21	9.8	3.8	8.2
206	95.8	0.974	61.2	1.6	7.32	15.182	10.479	7.587	13.6	6.0	12.0	4.4	2.73	0.21	9.8	3.8	8.2
207	95.7	0.978	61.2	1.6	7.33	15.258	10.460	7.561	13.6	6.0	12.0	4.4	2.72	0.21	9.8	3.8	8.2
208	95.2	0.983	61.2	1.6	7.33	15.327	10.385	7.488	13.5	6.0	11.9	4.4	2.70	0.22	9.8	3.7	8.1
209	95.5	0.987	61.2	1.6	7.34	15.397	10.423	7.510	13.5	6.0	11.9	4.4	2.71	0.22	9.8	3.8	8.1
210	96.4	0.991	61.2	1.6	7.35	15.473	10.573	7.626	13.6	6.0	12.0	4.4	2.74	0.21	9.8	3.8	8.2
211	96.2	0.995	61.2	1.6	7.35	15.542	10.535	7.585	13.6	6.0	12.0	4.4	2.71	0.21	9.8	3.8	8.2
212	96.2	1.000	61.2	1.6	7.36	15.619	10.535	7.574	13.6	6.0	12.0	4.4	2.71	0.21	9.8	3.8	8.2
213	96.5	1.004	61.2	1.6	7.37	15.688	10.591	7.612	13.6	6.0	12.0	4.4	2.72	0.21	9.8	3.8	8.2
214	96.2	1.008	61.2	1.6	7.37	15.757	10.535	7.555	13.6	6.0	12.0	4.4	2.71	0.21	9.8	3.8	8.2
215	96.4	1.013	61.2	1.6	7.38	15.834	10.573	7.576	13.6	6.0	12.0	4.4	2.71	0.21	9.8	3.8	8.2
216	96.6	1.017	61.2	1.6	7.39	15.910	10.610	7.597	13.6	6.0	12.0	4.4	2.72	0.21	9.8	3.8	8.2
217	96.2	1.022	61.2	1.6	7.39	15.980	10.535	7.524	13.5	6.0	11.9	4.4	2.70	0.21	9.8	3.8	8.2
218	96.6	1.027	61.1	1.6	7.40	16.064	10.610	7.575	13.6	6.0	12.0	4.5	2.70	0.21	9.8	3.8	8.2
219	96.4	1.031	61.2	1.6	7.40	16.133	10.573	7.534	13.5	6.0	12.0	4.4	2.70	0.21	9.8	3.8	8.2
220	96.3	1.035	61.2	1.6	7.41	16.210	10.554	7.507	13.5	6.0	11.9	4.4	2.70	0.21	9.8	3.8	8.2
221	96.3	1.040	61.1	1.6	7.42	16.279	10.554	7.498	13.5	6.0	12.0	4.5	2.68	0.21	9.8	3.7	8.2
222	96.6	1.044	61.1	1.6	7.42	16.355	10.610	7.534	13.5	6.0	12.0	4.5	2.69	0.21	9.8	3.8	8.2
223	97.2	1.049	61.1	1.6	7.43	16.432	10.704	7.602	13.6	6.0	12.1	4.5	2.71	0.21	9.8	3.8	8.3
224	96.7	1.053	61.1	1.6	7.44	16.501	10.629	7.529	13.5	6.0	12.0	4.5	2.69	0.21	9.8	3.8	8.2

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
225	96.6	1.057	61.1	1.6	7.44	16.570	10.610	7.504	13.5	6.0	12.0	4.5	2.69	0.21	9.8	3.8	8.2
226	96.5	1.062	61.1	1.6	7.45	16.655	10.591	7.477	13.5	6.0	11.9	4.5	2.68	0.21	9.8	3.7	8.2
227	97.8	1.066	61.1	1.6	7.46	16.724	10.798	7.639	13.7	6.0	12.1	4.5	2.72	0.20	9.8	3.8	8.3
228	97.4	1.070	61.1	1.6	7.46	16.793	10.741	7.582	13.6	6.0	12.0	4.5	2.70	0.21	9.8	3.8	8.2
229	97.3	1.075	61.1	1.6	7.47	16.869	10.723	7.556	13.6	6.0	12.0	4.5	2.70	0.21	9.8	3.8	8.2
230	97.0	1.080	61.1	1.6	7.48	16.946	10.666	7.498	13.5	6.0	12.0	4.5	2.68	0.21	9.8	3.7	8.2
231	98.3	1.084	61.1	1.5	7.48	17.023	10.873	7.658	13.7	6.0	12.1	4.5	2.71	0.20	9.8	3.8	8.3
232	97.1	1.088	61.1	1.5	7.49	17.092	10.685	7.493	13.5	6.0	12.0	4.5	2.67	0.20	9.8	3.7	8.2
233	97.6	1.093	61.1	1.5	7.50	17.169	10.760	7.544	13.6	6.0	12.0	4.5	2.68	0.20	9.8	3.8	8.3
234	97.8	1.097	61.1	1.5	7.50	17.238	10.798	7.566	13.6	6.0	12.0	4.5	2.69	0.20	9.8	3.8	8.3
235	98.4	1.102	61.1	1.5	7.51	17.314	10.891	7.632	13.6	6.0	12.1	4.5	2.70	0.20	9.8	3.8	8.3
236	98.6	1.106	61.1	1.5	7.52	17.391	10.929	7.652	13.7	6.0	12.1	4.5	2.71	0.20	9.8	3.8	8.3
237	99.1	1.110	61.1	1.5	7.52	17.460	11.004	7.704	13.7	6.0	12.2	4.5	2.72	0.20	9.9	3.9	8.3
238	98.6	1.115	61.1	1.5	7.53	17.544	10.929	7.630	13.6	6.0	12.1	4.5	2.70	0.20	9.8	3.8	8.3
239	99.2	1.120	61.1	1.5	7.54	17.621	11.023	7.696	13.7	6.0	12.2	4.5	2.72	0.20	9.9	3.8	8.3
240	99.9	1.125	61.1	1.5	7.55	17.698	11.135	7.778	13.8	6.0	12.3	4.5	2.74	0.20	9.9	3.9	8.4
241	98.8	1.129	61.1	1.5	7.55	17.767	10.966	7.629	13.6	6.0	12.1	4.5	2.70	0.20	9.8	3.8	8.3
242	99.4	1.133	61.1	1.5	7.56	17.844	11.060	7.695	13.7	6.0	12.2	4.5	2.72	0.20	9.9	3.8	8.3
243	99.5	1.138	61.1	1.5	7.57	17.920	11.079	7.699	13.7	6.0	12.2	4.5	2.71	0.19	9.9	3.8	8.4
244	99.3	1.143	61.1	1.5	7.57	17.997	11.041	7.657	13.7	6.0	12.2	4.5	2.70	0.20	9.8	3.8	8.3
245	99.4	1.147	61.1	1.5	7.58	18.074	11.060	7.662	13.7	6.0	12.2	4.5	2.70	0.20	9.8	3.8	8.3
246	100.6	1.151	61.1	1.5	7.59	18.143	11.248	7.805	13.8	6.0	12.3	4.5	2.73	0.19	9.9	3.9	8.4
247	99.7	1.156	61.1	1.5	7.59	18.227	11.098	7.670	13.7	6.0	12.2	4.5	2.70	0.20	9.8	3.8	8.3
248	100.0	1.160	61.1	1.5	7.60	18.296	11.154	7.706	13.7	6.0	12.2	4.5	2.71	0.19	9.9	3.9	8.4
249	100.5	1.165	61.1	1.5	7.61	18.373	11.229	7.756	13.8	6.0	12.3	4.5	2.72	0.19	9.9	3.9	8.4
250	99.7	1.169	61.1	1.5	7.61	18.442	11.098	7.639	13.7	6.0	12.2	4.5	2.69	0.20	9.8	3.8	8.3
251	100.1	1.173	61.1	1.5	7.62	18.511	11.173	7.690	13.7	6.0	12.2	4.5	2.70	0.20	9.9	3.8	8.4
252	100.8	1.177	61.1	1.5	7.63	18.580	11.285	7.772	13.8	6.0	12.3	4.5	2.71	0.19	9.9	3.9	8.4
253	100.6	1.182	61.1	1.5	7.63	18.657	11.248	7.730	13.7	6.0	12.2	4.5	2.71	0.19	9.9	3.9	8.4
254	100.7	1.186	61.1	1.5	7.64	18.726	11.266	7.735	13.7	6.0	12.2	4.5	2.71	0.19	9.9	3.9	8.4
255	100.1	1.190	61.1	1.5	7.65	18.795	11.173	7.649	13.7	6.0	12.2	4.5	2.68	0.19	9.8	3.8	8.4
256	100.1	1.194	61.1	1.5	7.65	18.864	11.173	7.639	13.7	6.0	12.2	4.5	2.68	0.19	9.8	3.8	8.4
257	100.6	1.199	61.1	1.5	7.66	18.933	11.248	7.689	13.7	6.0	12.2	4.5	2.69	0.19	9.9	3.8	8.4
258	101.2	1.203	61.1	1.5	7.67	19.010	11.341	7.754	13.8	6.0	12.3	4.5	2.71	0.19	9.9	3.9	8.4
259	101.3	1.207	61.1	1.5	7.67	19.079	11.360	7.759	13.8	6.0	12.3	4.5	2.71	0.19	9.9	3.9	8.4
260	101.4	1.211	61.1	1.5	7.68	19.148	11.379	7.764	13.8	6.0	12.3	4.5	2.71	0.19	9.9	3.9	8.4
261	100.7	1.216	61.1	1.5	7.69	19.225	11.266	7.662	13.7	6.0	12.2	4.5	2.69	0.19	9.8	3.8	8.4
262	101.5	1.220	61.1	1.5	7.69	19.294	11.398	7.758	13.8	6.0	12.3	4.5	2.71	0.19	9.9	3.9	8.4
263	101.6	1.225	61.1	1.5	7.70	19.370	11.416	7.761	13.8	6.0	12.3	4.5	2.71	0.19	9.9	3.9	8.4
264	101.3	1.229	61.1	1.5	7.71	19.447	11.360	7.705	13.7	6.0	12.2	4.5	2.70	0.19	9.9	3.9	8.4
265	102.0	1.234	61.1	1.5	7.72	19.516	11.473	7.785	13.8	6.0	12.3	4.5	2.71	0.19	9.9	3.9	8.4

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
266	101.7	1.238	61.0	1.4	7.72	19.593	11.435	7.743	13.8	6.0	12.3	4.6	2.69	0.19	9.9	3.9	8.4
267	102.1	1.243	61.1	1.5	7.73	19.669	11.491	7.777	13.8	6.0	12.3	4.5	2.71	0.19	9.9	3.9	8.4
268	102.4	1.247	61.1	1.5	7.74	19.746	11.548	7.811	13.8	6.0	12.3	4.5	2.73	0.19	9.9	3.9	8.4
269	102.2	1.252	61.1	1.5	7.75	19.823	11.510	7.769	13.8	6.0	12.3	4.5	2.71	0.19	9.9	3.9	8.4
270	102.3	1.257	61.1	1.5	7.75	19.900	11.529	7.773	13.8	6.0	12.3	4.5	2.71	0.19	9.9	3.9	8.4
271	102.3	1.261	61.1	1.5	7.76	19.976	11.529	7.761	13.8	6.0	12.3	4.5	2.71	0.19	9.9	3.9	8.4
272	102.9	1.263	61.1	1.5	7.76	19.999	11.623	7.833	13.8	6.0	12.4	4.5	2.73	0.19	9.9	3.9	8.5

Specimen B Shear Data

CU Triaxial Test

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File Location
T-5671.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5671
Sample Location: Guilford County (Sta. 405 + 70)
Sample Description: Tan colored clayey silt
Remarks: 25° shear plane with slicken side.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.7880001
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.861	2.834	
Height (in)	6.159	6.145	
Weight (grams)	1057.00		1094.00
Moisture (%)	52.31		57.64
Dry Density (pcf)	66.76	68.19	
Saturation (%)	90.75	100.00	
Void Ratio	1.600	1.553	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 72.100
Effective Confining Stress (psi): 12.0
Corrected Peak Deviator Stress (psi): 26.165 at reading number: 35

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	40.6	0.051	60.1	0.0	6.31	0.000	0.000	0.000	12.0	12.0	12.0	12.0	1.00	0.00	12.0	0.0	12.0
1	70.0	0.055	61.2	1.1	6.31	0.065	4.667	4.638	16.6	12.0	15.5	10.9	1.43	0.24	14.3	2.3	13.2
2	83.7	0.059	61.9	1.8	6.32	0.131	6.836	6.777	18.8	12.0	16.9	10.2	1.67	0.27	15.4	3.4	13.5
3	95.5	0.064	62.6	2.5	6.32	0.205	8.696	8.598	20.6	12.0	18.1	9.5	1.91	0.29	16.3	4.3	13.8
4	105.9	0.068	63.1	3.0	6.33	0.271	10.355	10.222	22.2	12.0	19.2	9.0	2.14	0.29	17.1	5.1	14.1
5	111.5	0.070	63.4	3.3	6.33	0.308	11.230	11.076	23.1	12.0	19.7	8.7	2.28	0.30	17.5	5.5	14.2
6	122.5	0.075	63.8	3.7	6.33	0.383	12.980	12.782	24.8	12.0	21.1	8.3	2.54	0.29	18.4	6.4	14.7
7	127.6	0.077	64.0	3.9	6.34	0.430	13.782	13.556	25.6	12.0	21.6	8.1	2.68	0.29	18.8	6.8	14.9
8	134.6	0.081	64.3	4.2	6.34	0.495	14.894	14.628	26.6	12.0	22.5	7.8	2.87	0.28	19.3	7.3	15.1
9	141.8	0.085	64.5	4.4	6.34	0.551	16.042	15.740	27.7	12.0	23.3	7.6	3.07	0.28	19.9	7.9	15.5
10	149.1	0.090	64.7	4.6	6.35	0.635	17.191	16.835	28.8	12.0	24.2	7.4	3.28	0.27	20.4	8.4	15.8
11	155.4	0.095	64.9	4.8	6.36	0.719	18.194	17.784	29.8	12.0	25.0	7.2	3.46	0.27	20.9	8.9	16.1
12	160.8	0.100	65.0	4.9	6.36	0.794	19.050	18.591	30.6	12.0	25.7	7.1	3.63	0.27	21.3	9.3	16.4
13	165.9	0.105	65.1	5.0	6.37	0.878	19.853	19.338	31.3	12.0	26.3	7.0	3.78	0.26	21.7	9.7	16.6
14	171.2	0.109	65.2	5.1	6.37	0.943	20.691	20.130	32.1	12.0	27.0	6.9	3.93	0.25	22.1	10.1	16.9
15	176.0	0.114	65.3	5.2	6.37	1.018	21.457	20.843	32.8	12.0	27.6	6.8	4.07	0.25	22.4	10.4	17.2
16	180.1	0.118	65.3	5.2	6.38	1.083	22.113	21.453	33.5	12.0	28.2	6.8	4.18	0.24	22.7	10.7	17.5
17	184.3	0.122	65.4	5.3	6.38	1.149	22.769	22.062	34.1	12.0	28.8	6.7	4.29	0.24	23.0	11.0	17.7
18	188.1	0.126	65.4	5.3	6.39	1.214	23.371	22.616	34.6	12.0	29.3	6.7	4.37	0.23	23.3	11.3	18.0

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	180.8	0.129	65.2	5.1	6.39	1.261	22.223	21.453	33.5	12.0	28.3	6.9	4.12	0.24	22.7	10.7	17.6
20	193.1	0.132	65.4	5.3	6.39	1.317	24.173	23.344	35.3	12.0	30.1	6.7	4.48	0.23	23.7	11.7	18.4
21	195.9	0.137	65.4	5.3	6.40	1.391	24.611	23.728	35.7	12.0	30.4	6.7	4.54	0.22	23.9	11.9	18.6
22	198.4	0.141	65.3	5.2	6.40	1.457	25.012	24.082	36.1	12.0	30.8	6.8	4.57	0.22	24.0	12.0	18.8
23	200.3	0.145	65.3	5.2	6.41	1.522	25.303	24.327	36.3	12.0	31.1	6.8	4.60	0.22	24.2	12.2	18.9
24	201.9	0.149	65.3	5.2	6.41	1.597	25.559	24.531	36.5	12.0	31.3	6.8	4.61	0.21	24.3	12.3	19.1
25	203.6	0.153	65.2	5.1	6.42	1.662	25.832	24.758	36.8	12.0	31.6	6.9	4.60	0.21	24.4	12.4	19.3
26	205.8	0.158	65.2	5.1	6.42	1.737	26.178	25.050	37.0	12.0	31.9	6.9	4.65	0.20	24.5	12.5	19.4
27	206.9	0.162	65.2	5.1	6.43	1.802	26.361	25.186	37.2	12.0	32.1	6.9	4.64	0.20	24.6	12.6	19.5
28	208.5	0.166	65.1	5.0	6.43	1.868	26.616	25.394	37.4	12.0	32.3	7.0	4.65	0.20	24.7	12.7	19.6
29	209.8	0.170	65.1	5.0	6.43	1.933	26.816	25.548	37.5	12.0	32.5	7.0	4.65	0.20	24.8	12.8	19.8
30	211.1	0.174	65.1	5.0	6.44	2.008	27.017	25.698	37.7	12.0	32.7	7.0	4.65	0.19	24.8	12.8	19.9
31	212.0	0.178	65.0	4.9	6.44	2.073	27.163	25.824	37.8	12.0	32.9	7.1	4.65	0.19	24.9	12.9	20.0
32	212.7	0.182	64.9	4.8	6.45	2.129	27.272	25.915	37.9	12.0	33.1	7.2	4.62	0.19	25.0	13.0	20.1
33	212.9	0.186	65.0	4.9	6.45	2.195	27.309	25.933	37.9	12.0	33.0	7.1	4.65	0.19	25.0	13.0	20.1
34	213.4	0.190	64.9	4.8	6.46	2.260	27.382	25.987	38.0	12.0	33.1	7.2	4.63	0.19	25.0	13.0	20.1
35	214.6	0.194	64.9	4.8	6.46	2.325	27.582	26.165	38.2	12.0	33.4	7.2	4.64	0.18	25.1	13.1	20.3
36	214.7	0.199	64.9	4.8	6.46	2.400	27.600	26.162	38.2	12.0	33.4	7.2	4.62	0.18	25.1	13.1	20.3
37	214.9	0.204	64.8	4.7	6.47	2.484	27.619	26.156	38.2	12.0	33.5	7.3	4.58	0.18	25.1	13.1	20.4
38	215.0	0.208	64.7	4.6	6.48	2.559	27.637	26.153	38.2	12.0	33.5	7.4	4.56	0.18	25.1	13.1	20.4
39	215.0	0.213	64.7	4.6	6.48	2.643	27.637	26.130	38.1	12.0	33.6	7.4	4.52	0.17	25.1	13.1	20.5
40	215.2	0.218	64.7	4.6	6.49	2.718	27.673	26.145	38.1	12.0	33.6	7.4	4.52	0.17	25.1	13.1	20.5
41	215.4	0.223	64.6	4.5	6.49	2.802	27.710	26.157	38.2	12.0	33.6	7.5	4.50	0.17	25.1	13.1	20.6
42	215.2	0.228	64.6	4.5	6.50	2.876	27.673	26.101	38.1	12.0	33.6	7.5	4.47	0.17	25.1	13.1	20.6
43	215.1	0.232	64.6	4.5	6.50	2.951	27.655	26.063	38.1	12.0	33.6	7.5	4.47	0.17	25.0	13.0	20.5
44	214.4	0.238	64.5	4.4	6.51	3.035	27.546	25.933	37.9	12.0	33.5	7.6	4.43	0.17	25.0	13.0	20.5
45	214.2	0.242	64.5	4.4	6.51	3.100	27.509	25.880	37.9	12.0	33.5	7.6	4.41	0.17	24.9	12.9	20.5
46	213.8	0.246	64.5	4.4	6.52	3.175	27.455	25.807	37.8	12.0	33.4	7.6	4.38	0.17	24.9	12.9	20.5
47	213.3	0.251	64.5	4.4	6.52	3.250	27.363	25.698	37.7	12.0	33.3	7.6	4.37	0.17	24.8	12.8	20.5
48	212.8	0.255	64.4	4.3	6.53	3.325	27.290	25.607	37.6	12.0	33.3	7.7	4.34	0.17	24.8	12.8	20.5
49	212.4	0.260	64.4	4.3	6.53	3.399	27.236	25.534	37.5	12.0	33.2	7.7	4.31	0.17	24.8	12.8	20.5
50	212.1	0.264	64.4	4.3	6.54	3.465	27.181	25.463	37.5	12.0	33.2	7.7	4.30	0.17	24.7	12.7	20.4
51	211.3	0.269	64.3	4.2	6.54	3.539	27.053	25.320	37.3	12.0	33.1	7.8	4.27	0.17	24.7	12.7	20.4
52	211.2	0.273	64.3	4.2	6.55	3.614	27.035	25.282	37.3	12.0	33.1	7.8	4.24	0.17	24.6	12.6	20.4
53	211.0	0.278	64.3	4.2	6.55	3.689	26.999	25.227	37.2	12.0	33.0	7.8	4.24	0.17	24.6	12.6	20.4
54	210.7	0.282	64.3	4.2	6.56	3.764	26.962	25.171	37.2	12.0	33.0	7.8	4.23	0.17	24.6	12.6	20.4
55	209.7	0.288	64.3	4.2	6.56	3.848	26.798	24.991	37.0	12.0	32.8	7.8	4.19	0.17	24.5	12.5	20.3
56	209.0	0.293	64.2	4.1	6.57	3.932	26.689	24.863	36.9	12.0	32.7	7.9	4.16	0.17	24.4	12.4	20.3
57	208.0	0.298	64.2	4.1	6.57	4.016	26.525	24.683	36.7	12.0	32.6	7.9	4.14	0.17	24.3	12.3	20.2
58	207.2	0.302	64.2	4.1	6.58	4.090	26.397	24.541	36.5	12.0	32.4	7.9	4.12	0.17	24.3	12.3	20.1
59	206.2	0.307	64.2	4.1	6.58	4.165	26.251	24.382	36.4	12.0	32.3	7.9	4.08	0.17	24.2	12.2	20.1

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	206.1	0.311	64.1	4.0	6.59	4.230	26.233	24.347	36.3	12.0	32.3	8.0	4.06	0.17	24.2	12.2	20.1
61	206.1	0.315	64.1	4.0	6.59	4.296	26.233	24.330	36.3	12.0	32.3	8.0	4.06	0.17	24.2	12.2	20.1
62	206.1	0.320	64.1	4.0	6.60	4.380	26.233	24.308	36.3	12.0	32.3	8.0	4.04	0.16	24.2	12.2	20.1
63	205.0	0.325	64.1	4.0	6.60	4.464	26.051	24.112	36.1	12.0	32.1	8.0	4.00	0.16	24.1	12.1	20.1
64	204.5	0.331	64.0	3.9	6.61	4.548	25.978	24.020	36.0	12.0	32.1	8.1	3.98	0.16	24.0	12.0	20.1
65	202.9	0.336	64.0	3.9	6.62	4.632	25.723	23.755	35.8	12.0	31.8	8.1	3.94	0.17	23.9	11.9	20.0
66	202.2	0.340	63.9	3.8	6.62	4.697	25.613	23.634	35.6	12.0	31.8	8.2	3.90	0.16	23.8	11.8	20.0
67	201.4	0.344	63.9	3.8	6.62	4.763	25.486	23.496	35.5	12.0	31.6	8.2	3.88	0.16	23.7	11.7	19.9
68	200.6	0.348	63.9	3.8	6.63	4.828	25.358	23.358	35.4	12.0	31.5	8.2	3.86	0.16	23.7	11.7	19.8
69	200.1	0.352	63.9	3.8	6.63	4.903	25.285	23.269	35.3	12.0	31.5	8.2	3.84	0.16	23.6	11.6	19.8
70	199.2	0.356	63.9	3.8	6.64	4.968	25.139	23.114	35.1	12.0	31.3	8.2	3.81	0.16	23.6	11.6	19.8
71	198.9	0.361	63.9	3.8	6.64	5.043	25.085	23.043	35.0	12.0	31.3	8.2	3.80	0.16	23.5	11.5	19.8
72	198.4	0.365	63.9	3.8	6.65	5.108	25.012	22.958	35.0	12.0	31.2	8.2	3.79	0.16	23.5	11.5	19.7
73	198.1	0.370	63.8	3.7	6.65	5.183	24.957	22.887	34.9	12.0	31.2	8.3	3.77	0.16	23.4	11.4	19.7
74	197.6	0.374	63.8	3.7	6.66	5.248	24.884	22.802	34.8	12.0	31.1	8.3	3.76	0.16	23.4	11.4	19.7
75	197.1	0.378	63.8	3.7	6.66	5.323	24.811	22.714	34.7	12.0	31.0	8.3	3.75	0.16	23.4	11.4	19.6
76	196.9	0.383	63.8	3.7	6.67	5.398	24.775	22.661	34.7	12.0	31.0	8.3	3.73	0.16	23.3	11.3	19.6
77	196.0	0.387	63.8	3.7	6.67	5.473	24.629	22.505	34.5	12.0	30.8	8.3	3.71	0.16	23.3	11.3	19.6
78	195.2	0.392	63.8	3.7	6.68	5.547	24.501	22.366	34.4	12.0	30.7	8.3	3.69	0.16	23.2	11.2	19.5
79	194.4	0.397	63.8	3.7	6.69	5.622	24.374	22.227	34.2	12.0	30.5	8.3	3.67	0.17	23.1	11.1	19.4
80	193.8	0.401	63.7	3.6	6.69	5.697	24.283	22.123	34.1	12.0	30.5	8.4	3.65	0.16	23.1	11.1	19.4
81	193.0	0.406	63.7	3.6	6.70	5.781	24.155	21.982	34.0	12.0	30.3	8.4	3.63	0.17	23.0	11.0	19.3
82	192.0	0.411	63.7	3.6	6.70	5.865	23.991	21.808	33.8	12.0	30.2	8.4	3.61	0.17	22.9	10.9	19.3
83	191.2	0.416	63.7	3.6	6.71	5.939	23.863	21.670	33.7	12.0	30.1	8.4	3.58	0.17	22.8	10.8	19.2
84	190.5	0.421	63.7	3.6	6.71	6.024	23.754	21.547	33.5	12.0	29.9	8.4	3.57	0.17	22.8	10.8	19.2
85	189.8	0.426	63.7	3.6	6.72	6.098	23.644	21.426	33.4	12.0	29.8	8.4	3.55	0.17	22.7	10.7	19.1
86	189.0	0.431	63.7	3.6	6.73	6.182	23.517	21.287	33.3	12.0	29.7	8.4	3.52	0.17	22.6	10.6	19.1
87	188.9	0.436	63.7	3.6	6.73	6.257	23.499	21.252	33.3	12.0	29.7	8.4	3.52	0.17	22.6	10.6	19.1
88	188.3	0.440	63.7	3.6	6.74	6.332	23.407	21.149	33.1	12.0	29.6	8.4	3.51	0.17	22.6	10.6	19.0
89	187.5	0.444	63.7	3.6	6.74	6.397	23.280	21.014	33.0	12.0	29.4	8.4	3.49	0.17	22.5	10.5	18.9
90	186.8	0.449	63.6	3.5	6.75	6.472	23.170	20.895	32.9	12.0	29.4	8.5	3.47	0.17	22.4	10.4	18.9
91	186.3	0.453	63.6	3.5	6.75	6.547	23.098	20.809	32.8	12.0	29.3	8.5	3.46	0.17	22.4	10.4	18.9
92	185.8	0.458	63.6	3.5	6.76	6.621	23.006	20.707	32.7	12.0	29.2	8.5	3.44	0.17	22.4	10.4	18.8
93	185.1	0.463	63.6	3.5	6.76	6.696	22.897	20.588	32.6	12.0	29.1	8.5	3.43	0.17	22.3	10.3	18.8
94	184.8	0.467	63.6	3.5	6.77	6.771	22.861	20.537	32.5	12.0	29.1	8.5	3.41	0.17	22.3	10.3	18.8
95	184.7	0.472	63.6	3.5	6.77	6.845	22.842	20.502	32.5	12.0	29.0	8.5	3.42	0.17	22.3	10.3	18.7
96	184.1	0.476	63.6	3.5	6.78	6.920	22.751	20.401	32.4	12.0	28.9	8.5	3.40	0.17	22.2	10.2	18.7
97	183.3	0.481	63.6	3.5	6.78	6.995	22.624	20.265	32.3	12.0	28.8	8.5	3.38	0.17	22.1	10.1	18.6
98	183.0	0.486	63.6	3.5	6.79	7.069	22.569	20.197	32.2	12.0	28.7	8.5	3.37	0.17	22.1	10.1	18.6
99	182.2	0.490	63.6	3.5	6.79	7.144	22.441	20.062	32.1	12.0	28.6	8.5	3.36	0.17	22.0	10.0	18.5
100	180.8	0.495	63.6	3.5	6.80	7.228	22.223	19.840	31.8	12.0	28.4	8.5	3.33	0.18	21.9	9.9	18.4

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	179.7	0.500	63.5	3.4	6.81	7.312	22.040	19.652	31.7	12.0	28.2	8.6	3.30	0.18	21.8	9.8	18.4
102	174.3	0.505	63.5	3.4	6.81	7.387	21.183	18.842	30.8	12.0	27.4	8.6	3.19	0.18	21.4	9.4	18.0
103	178.1	0.510	63.5	3.4	6.82	7.462	21.785	19.383	31.4	12.0	27.9	8.6	3.27	0.18	21.7	9.7	18.2
104	178.3	0.514	63.5	3.4	6.82	7.527	21.821	19.403	31.4	12.0	28.0	8.6	3.27	0.18	21.7	9.7	18.3
105	178.1	0.518	63.5	3.4	6.83	7.602	21.785	19.353	31.4	12.0	27.9	8.6	3.26	0.18	21.7	9.7	18.2
106	178.5	0.522	63.5	3.4	6.83	7.667	21.858	19.406	31.4	12.0	28.0	8.6	3.27	0.18	21.7	9.7	18.3
107	178.7	0.526	63.5	3.4	6.84	7.733	21.894	19.425	31.4	12.0	28.0	8.6	3.26	0.18	21.7	9.7	18.3
108	179.1	0.530	63.5	3.4	6.84	7.798	21.949	19.461	31.5	12.0	28.1	8.6	3.25	0.17	21.7	9.7	18.4
109	179.0	0.534	63.5	3.4	6.85	7.863	21.931	19.430	31.4	12.0	28.0	8.6	3.26	0.18	21.7	9.7	18.3
110	179.0	0.539	63.5	3.4	6.85	7.938	21.931	19.414	31.4	12.0	28.0	8.6	3.26	0.18	21.7	9.7	18.3
111	179.2	0.543	63.5	3.4	6.86	8.003	21.967	19.433	31.4	12.0	28.0	8.6	3.26	0.18	21.7	9.7	18.3
112	178.9	0.547	63.5	3.4	6.86	8.069	21.913	19.368	31.4	12.0	28.0	8.6	3.25	0.18	21.7	9.7	18.3
113	177.2	0.551	63.5	3.4	6.87	8.134	21.657	19.120	31.1	12.0	27.8	8.6	3.21	0.18	21.6	9.6	18.2
114	177.5	0.555	63.5	3.4	6.87	8.199	21.694	19.139	31.1	12.0	27.8	8.6	3.22	0.18	21.6	9.6	18.2
115	177.9	0.560	63.4	3.3	6.88	8.274	21.767	19.190	31.2	12.0	27.9	8.7	3.21	0.17	21.6	9.6	18.3
116	177.9	0.564	63.5	3.4	6.88	8.340	21.767	19.175	31.2	12.0	27.8	8.6	3.22	0.18	21.6	9.6	18.2
117	177.9	0.568	63.5	3.4	6.89	8.414	21.767	19.159	31.2	12.0	27.8	8.6	3.22	0.18	21.6	9.6	18.2
118	178.1	0.573	63.5	3.4	6.89	8.489	21.785	19.159	31.2	12.0	27.8	8.6	3.22	0.18	21.6	9.6	18.2
119	177.8	0.577	63.5	3.4	6.90	8.554	21.749	19.112	31.1	12.0	27.7	8.6	3.21	0.18	21.6	9.6	18.2
120	177.5	0.581	63.5	3.4	6.91	8.629	21.694	19.046	31.0	12.0	27.7	8.6	3.21	0.18	21.5	9.5	18.2
121	177.1	0.587	63.4	3.3	6.91	8.713	21.639	18.978	31.0	12.0	27.7	8.7	3.19	0.18	21.5	9.5	18.2
122	175.4	0.591	63.4	3.3	6.92	8.788	21.366	18.712	30.7	12.0	27.4	8.7	3.16	0.18	21.4	9.4	18.0
123	175.3	0.596	63.4	3.3	6.92	8.863	21.347	18.679	30.7	12.0	27.4	8.7	3.15	0.18	21.3	9.3	18.0
124	174.7	0.600	63.4	3.3	6.93	8.937	21.256	18.580	30.6	12.0	27.3	8.7	3.14	0.18	21.3	9.3	18.0
125	174.4	0.605	63.4	3.3	6.94	9.021	21.202	18.513	30.5	12.0	27.2	8.7	3.13	0.18	21.3	9.3	17.9
126	174.3	0.610	63.4	3.3	6.94	9.096	21.183	18.480	30.5	12.0	27.2	8.7	3.13	0.18	21.2	9.2	17.9
127	173.7	0.615	63.4	3.3	6.95	9.180	21.092	18.380	30.4	12.0	27.1	8.7	3.12	0.18	21.2	9.2	17.9
128	173.2	0.620	63.4	3.3	6.95	9.264	21.019	18.296	30.3	12.0	27.0	8.7	3.10	0.18	21.1	9.1	17.9
129	172.6	0.625	63.4	3.3	6.96	9.339	20.928	18.198	30.2	12.0	26.9	8.7	3.09	0.18	21.1	9.1	17.8
130	171.4	0.630	63.4	3.3	6.97	9.414	20.728	18.000	30.0	12.0	26.7	8.7	3.07	0.18	21.0	9.0	17.7
131	171.0	0.634	63.4	3.3	6.97	9.488	20.673	17.935	29.9	12.0	26.6	8.7	3.06	0.18	21.0	9.0	17.7
132	171.0	0.639	63.4	3.3	6.98	9.563	20.673	17.920	29.9	12.0	26.6	8.7	3.06	0.18	21.0	9.0	17.7
133	171.0	0.643	63.4	3.3	6.98	9.638	20.673	17.904	29.9	12.0	26.6	8.7	3.05	0.18	21.0	9.0	17.7
134	171.2	0.648	63.4	3.3	6.99	9.712	20.691	17.905	29.9	12.0	26.6	8.7	3.05	0.18	21.0	9.0	17.7
135	171.0	0.652	63.4	3.3	6.99	9.778	20.673	17.875	29.9	12.0	26.6	8.7	3.05	0.18	20.9	8.9	17.7
136	170.8	0.657	63.3	3.2	7.00	9.852	20.636	17.827	29.8	12.0	26.6	8.8	3.04	0.18	20.9	8.9	17.7
137	170.6	0.661	63.4	3.3	7.00	9.927	20.600	17.779	29.8	12.0	26.5	8.7	3.04	0.18	20.9	8.9	17.6
138	169.9	0.666	63.3	3.2	7.01	10.002	20.491	17.665	29.7	12.0	26.4	8.8	3.02	0.18	20.8	8.8	17.6
139	170.0	0.670	63.3	3.2	7.02	10.077	20.509	17.666	29.7	12.0	26.4	8.8	3.02	0.18	20.8	8.8	17.6
140	170.0	0.674	63.3	3.2	7.02	10.142	20.509	17.653	29.7	12.0	26.4	8.8	3.02	0.18	20.8	8.8	17.6
141	170.2	0.679	63.3	3.2	7.03	10.217	20.545	17.670	29.7	12.0	26.4	8.8	3.02	0.18	20.8	8.8	17.6

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	170.6	0.684	63.3	3.2	7.03	10.291	20.600	17.704	29.7	12.0	26.5	8.8	3.02	0.18	20.9	8.9	17.6
143	170.3	0.688	63.3	3.2	7.04	10.366	20.564	17.656	29.7	12.0	26.4	8.8	3.02	0.18	20.8	8.8	17.6
144	169.9	0.693	63.3	3.2	7.05	10.450	20.491	17.573	29.6	12.0	26.3	8.8	3.01	0.18	20.8	8.8	17.5
145	168.3	0.698	63.3	3.2	7.05	10.534	20.235	17.328	29.3	12.0	26.1	8.8	2.97	0.18	20.7	8.7	17.5
146	168.6	0.703	63.3	3.2	7.06	10.609	20.290	17.361	29.4	12.0	26.2	8.8	2.97	0.18	20.7	8.7	17.5
147	168.7	0.708	63.3	3.2	7.06	10.684	20.308	17.362	29.4	12.0	26.2	8.8	2.97	0.18	20.7	8.7	17.5
148	169.0	0.712	63.3	3.2	7.07	10.749	20.345	17.382	29.4	12.0	26.2	8.8	2.98	0.18	20.7	8.7	17.5
149	169.4	0.716	63.3	3.2	7.08	10.824	20.418	17.432	29.4	12.0	26.2	8.8	2.98	0.18	20.7	8.7	17.5
150	168.7	0.720	63.3	3.2	7.08	10.889	20.308	17.321	29.3	12.0	26.1	8.8	2.97	0.19	20.7	8.7	17.5
151	169.2	0.725	63.3	3.2	7.09	10.964	20.381	17.371	29.4	12.0	26.2	8.8	2.98	0.18	20.7	8.7	17.5
152	169.5	0.729	63.3	3.2	7.09	11.029	20.436	17.406	29.4	12.0	26.2	8.8	2.97	0.18	20.7	8.7	17.5
153	169.8	0.733	63.3	3.2	7.10	11.094	20.472	17.425	29.4	12.0	26.3	8.8	2.97	0.18	20.7	8.7	17.5
154	169.1	0.737	63.3	3.2	7.10	11.160	20.363	17.314	29.3	12.0	26.1	8.8	2.96	0.18	20.7	8.7	17.5
155	169.4	0.741	63.3	3.2	7.11	11.225	20.418	17.350	29.3	12.0	26.2	8.8	2.96	0.18	20.7	8.7	17.5
156	170.1	0.745	63.2	3.1	7.11	11.300	20.527	17.431	29.4	12.0	26.3	8.9	2.96	0.18	20.7	8.7	17.6
157	169.4	0.749	63.3	3.2	7.12	11.365	20.418	17.321	29.3	12.0	26.2	8.8	2.96	0.18	20.7	8.7	17.5
158	169.8	0.754	63.2	3.1	7.12	11.431	20.472	17.356	29.4	12.0	26.2	8.9	2.96	0.18	20.7	8.7	17.6
159	170.2	0.758	63.2	3.1	7.13	11.496	20.545	17.407	29.4	12.0	26.3	8.9	2.96	0.18	20.7	8.7	17.6
160	170.1	0.762	63.2	3.1	7.14	11.571	20.527	17.376	29.4	12.0	26.3	8.9	2.96	0.18	20.7	8.7	17.6
161	170.7	0.767	63.2	3.1	7.14	11.645	20.618	17.441	29.4	12.0	26.3	8.9	2.97	0.18	20.7	8.7	17.6
162	171.3	0.771	63.2	3.1	7.15	11.720	20.709	17.506	29.5	12.0	26.4	8.9	2.97	0.18	20.8	8.8	17.6
163	171.0	0.776	63.2	3.1	7.15	11.795	20.673	17.458	29.5	12.0	26.4	8.9	2.96	0.18	20.7	8.7	17.6
164	171.0	0.780	63.2	3.1	7.16	11.870	20.673	17.443	29.4	12.0	26.4	8.9	2.96	0.18	20.7	8.7	17.6
165	170.9	0.785	63.2	3.1	7.17	11.944	20.655	17.411	29.4	12.0	26.3	8.9	2.95	0.18	20.7	8.7	17.6
166	171.0	0.790	63.1	3.0	7.17	12.019	20.673	17.412	29.4	12.0	26.4	9.0	2.94	0.17	20.7	8.7	17.7
167	170.9	0.794	63.1	3.0	7.18	12.094	20.655	17.381	29.4	12.0	26.3	9.0	2.94	0.18	20.7	8.7	17.6
168	170.0	0.799	63.1	3.0	7.18	12.168	20.509	17.237	29.2	12.0	26.2	9.0	2.92	0.18	20.6	8.6	17.6
169	169.5	0.803	63.2	3.1	7.19	12.243	20.436	17.158	29.2	12.0	26.1	8.9	2.92	0.18	20.6	8.6	17.5
170	169.0	0.809	63.1	3.0	7.20	12.327	20.345	17.061	29.1	12.0	26.1	9.0	2.90	0.18	20.5	8.5	17.5
171	169.2	0.813	63.1	3.0	7.20	12.402	20.381	17.077	29.1	12.0	26.1	9.0	2.90	0.18	20.5	8.5	17.5
172	168.4	0.818	63.1	3.0	7.21	12.477	20.254	16.950	29.0	12.0	25.9	9.0	2.88	0.18	20.5	8.5	17.5
173	168.7	0.822	63.1	3.0	7.22	12.551	20.308	16.983	29.0	12.0	26.0	9.0	2.89	0.18	20.5	8.5	17.5
174	168.7	0.827	63.1	3.0	7.22	12.626	20.308	16.968	29.0	12.0	26.0	9.0	2.88	0.17	20.5	8.5	17.5
175	168.9	0.832	63.1	3.0	7.23	12.710	20.327	16.967	29.0	12.0	26.0	9.0	2.88	0.17	20.5	8.5	17.5
176	168.9	0.836	63.1	3.0	7.23	12.775	20.327	16.954	29.0	12.0	26.0	9.0	2.88	0.17	20.5	8.5	17.5
177	168.4	0.841	63.0	2.9	7.24	12.850	20.254	16.875	28.9	12.0	25.9	9.1	2.86	0.17	20.4	8.4	17.5
178	169.1	0.845	63.1	3.0	7.25	12.925	20.363	16.955	29.0	12.0	26.0	9.0	2.88	0.17	20.5	8.5	17.5
179	168.6	0.850	63.0	2.9	7.25	13.000	20.290	16.876	28.9	12.0	26.0	9.1	2.86	0.17	20.4	8.4	17.5
180	167.4	0.854	63.0	2.9	7.26	13.065	20.090	16.689	28.7	12.0	25.8	9.1	2.83	0.17	20.3	8.3	17.5
181	168.5	0.859	63.0	2.9	7.26	13.140	20.272	16.832	28.8	12.0	25.9	9.1	2.85	0.17	20.4	8.4	17.5
182	168.5	0.863	63.0	2.9	7.27	13.214	20.272	16.817	28.8	12.0	25.9	9.1	2.84	0.17	20.4	8.4	17.5

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	168.0	0.868	63.0	2.9	7.28	13.289	20.199	16.739	28.7	12.0	25.9	9.1	2.84	0.17	20.4	8.4	17.5
184	168.5	0.872	62.9	2.8	7.28	13.364	20.272	16.787	28.8	12.0	25.9	9.2	2.83	0.17	20.4	8.4	17.5
185	168.5	0.877	63.0	2.9	7.29	13.439	20.272	16.771	28.8	12.0	25.9	9.1	2.84	0.17	20.4	8.4	17.5
186	167.8	0.881	62.9	2.8	7.30	13.513	20.163	16.662	28.7	12.0	25.8	9.2	2.82	0.17	20.3	8.3	17.5
187	167.1	0.886	62.9	2.8	7.30	13.588	20.053	16.552	28.6	12.0	25.7	9.2	2.81	0.17	20.3	8.3	17.4
188	166.8	0.891	62.9	2.8	7.31	13.663	19.998	16.490	28.5	12.0	25.7	9.2	2.79	0.17	20.2	8.2	17.4
189	166.9	0.896	62.9	2.8	7.32	13.747	20.017	16.489	28.5	12.0	25.6	9.2	2.80	0.17	20.2	8.2	17.4
190	166.3	0.901	62.9	2.8	7.32	13.831	19.926	16.393	28.4	12.0	25.6	9.2	2.78	0.17	20.2	8.2	17.4
191	166.6	0.905	62.9	2.8	7.33	13.896	19.962	16.412	28.4	12.0	25.6	9.2	2.78	0.17	20.2	8.2	17.4
192	167.0	0.910	62.9	2.8	7.33	13.971	20.035	16.460	28.5	12.0	25.7	9.2	2.78	0.17	20.2	8.2	17.5
193	166.8	0.914	62.9	2.8	7.34	14.036	19.998	16.415	28.4	12.0	25.7	9.2	2.78	0.17	20.2	8.2	17.4
194	167.4	0.918	62.8	2.7	7.35	14.111	20.090	16.479	28.5	12.0	25.8	9.3	2.78	0.17	20.2	8.2	17.5
195	167.7	0.922	62.9	2.8	7.35	14.176	20.144	16.512	28.5	12.0	25.7	9.2	2.79	0.17	20.3	8.3	17.5
196	167.4	0.927	62.8	2.7	7.36	14.251	20.090	16.450	28.5	12.0	25.7	9.3	2.77	0.17	20.2	8.2	17.5
197	167.7	0.931	62.8	2.7	7.36	14.316	20.144	16.484	28.5	12.0	25.8	9.3	2.78	0.17	20.2	8.2	17.5
198	167.8	0.935	62.8	2.7	7.37	14.382	20.163	16.487	28.5	12.0	25.8	9.3	2.77	0.16	20.2	8.2	17.6
199	167.8	0.939	62.8	2.7	7.37	14.447	20.163	16.473	28.5	12.0	25.8	9.3	2.77	0.16	20.2	8.2	17.6
200	168.0	0.943	62.8	2.7	7.38	14.512	20.199	16.491	28.5	12.0	25.8	9.3	2.77	0.16	20.2	8.2	17.6
201	167.6	0.947	62.8	2.7	7.39	14.587	20.126	16.414	28.4	12.0	25.7	9.3	2.76	0.16	20.2	8.2	17.5
202	168.0	0.952	62.8	2.7	7.39	14.653	20.199	16.463	28.5	12.0	25.8	9.3	2.77	0.16	20.2	8.2	17.5
203	168.0	0.956	62.7	2.6	7.40	14.718	20.199	16.450	28.4	12.0	25.8	9.4	2.76	0.16	20.2	8.2	17.6
204	167.8	0.960	62.8	2.7	7.40	14.793	20.163	16.404	28.4	12.0	25.7	9.3	2.76	0.16	20.2	8.2	17.5
205	168.2	0.965	62.7	2.6	7.41	14.867	20.217	16.435	28.4	12.0	25.8	9.4	2.76	0.16	20.2	8.2	17.6
206	168.6	0.969	62.7	2.6	7.42	14.933	20.290	16.484	28.5	12.0	25.8	9.4	2.76	0.16	20.2	8.2	17.6
207	168.6	0.973	62.7	2.6	7.42	15.007	20.290	16.469	28.5	12.0	25.8	9.4	2.76	0.16	20.2	8.2	17.6
208	168.7	0.978	62.7	2.6	7.43	15.082	20.308	16.469	28.5	12.0	25.9	9.4	2.75	0.16	20.2	8.2	17.6
209	168.3	0.982	62.7	2.6	7.44	15.157	20.235	16.392	28.4	12.0	25.8	9.4	2.74	0.16	20.2	8.2	17.6
210	168.4	0.987	62.7	2.6	7.44	15.232	20.254	16.393	28.4	12.0	25.8	9.4	2.74	0.16	20.2	8.2	17.6
211	168.5	0.992	62.7	2.6	7.45	15.306	20.272	16.393	28.4	12.0	25.8	9.4	2.74	0.16	20.2	8.2	17.6
212	168.7	0.996	62.7	2.6	7.46	15.381	20.308	16.409	28.4	12.0	25.8	9.4	2.75	0.16	20.2	8.2	17.6
213	168.3	1.001	62.7	2.6	7.46	15.465	20.235	16.330	28.3	12.0	25.8	9.4	2.73	0.16	20.2	8.2	17.6
214	169.2	1.006	62.7	2.6	7.47	15.540	20.381	16.438	28.4	12.0	25.9	9.4	2.74	0.16	20.2	8.2	17.7
215	168.9	1.011	62.7	2.6	7.48	15.624	20.327	16.375	28.4	12.0	25.8	9.4	2.74	0.16	20.2	8.2	17.6
216	168.5	1.016	62.7	2.6	7.48	15.699	20.272	16.313	28.3	12.0	25.7	9.4	2.73	0.16	20.2	8.2	17.6
217	169.3	1.020	62.7	2.6	7.49	15.773	20.399	16.406	28.4	12.0	25.8	9.4	2.74	0.16	20.2	8.2	17.6
218	169.9	1.025	62.6	2.5	7.50	15.848	20.491	16.467	28.5	12.0	25.9	9.5	2.74	0.15	20.2	8.2	17.7
219	170.7	1.030	62.7	2.6	7.50	15.923	20.618	16.559	28.6	12.0	26.0	9.4	2.75	0.15	20.3	8.3	17.7
220	170.8	1.034	62.6	2.5	7.51	15.997	20.636	16.559	28.6	12.0	26.0	9.5	2.75	0.15	20.3	8.3	17.8
221	171.3	1.039	62.6	2.5	7.52	16.072	20.709	16.605	28.6	12.0	26.1	9.5	2.75	0.15	20.3	8.3	17.8
222	171.4	1.043	62.6	2.5	7.52	16.147	20.728	16.605	28.6	12.0	26.1	9.5	2.75	0.15	20.3	8.3	17.8
223	171.5	1.047	62.6	2.5	7.53	16.212	20.746	16.606	28.6	12.0	26.1	9.5	2.75	0.15	20.3	8.3	17.8

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	171.0	1.052	62.6	2.5	7.54	16.287	20.673	16.530	28.5	12.0	26.0	9.5	2.74	0.15	20.3	8.3	17.7
225	170.9	1.057	62.6	2.5	7.54	16.362	20.655	16.499	28.5	12.0	26.0	9.5	2.74	0.15	20.2	8.2	17.7
226	171.3	1.061	62.6	2.5	7.55	16.436	20.709	16.529	28.5	12.0	26.0	9.5	2.74	0.15	20.3	8.3	17.7
227	171.2	1.066	62.6	2.5	7.56	16.511	20.691	16.499	28.5	12.0	26.0	9.5	2.74	0.15	20.2	8.2	17.7
228	171.0	1.070	62.6	2.5	7.56	16.586	20.673	16.468	28.5	12.0	25.9	9.5	2.74	0.15	20.2	8.2	17.7
229	171.5	1.075	62.6	2.5	7.57	16.660	20.746	16.513	28.5	12.0	26.0	9.5	2.74	0.15	20.3	8.3	17.7
230	172.0	1.079	62.6	2.5	7.58	16.735	20.819	16.559	28.6	12.0	26.1	9.5	2.74	0.15	20.3	8.3	17.8
231	172.1	1.084	62.6	2.5	7.58	16.810	20.837	16.558	28.6	12.0	26.1	9.5	2.74	0.15	20.3	8.3	17.8
232	171.8	1.089	62.5	2.4	7.59	16.885	20.801	16.512	28.5	12.0	26.1	9.6	2.73	0.15	20.3	8.3	17.8
233	172.3	1.093	62.6	2.5	7.60	16.959	20.873	16.557	28.6	12.0	26.1	9.5	2.74	0.15	20.3	8.3	17.8
234	172.5	1.098	62.6	2.5	7.61	17.043	20.910	16.570	28.6	12.0	26.1	9.5	2.74	0.15	20.3	8.3	17.8
235	172.6	1.103	62.6	2.5	7.61	17.118	20.928	16.569	28.6	12.0	26.1	9.5	2.74	0.15	20.3	8.3	17.8
236	172.5	1.107	62.5	2.4	7.62	17.183	20.910	16.541	28.5	12.0	26.1	9.6	2.73	0.15	20.3	8.3	17.8
237	173.0	1.112	62.6	2.5	7.63	17.258	20.983	16.585	28.6	12.0	26.1	9.5	2.74	0.15	20.3	8.3	17.8
238	173.7	1.116	62.5	2.4	7.63	17.323	21.092	16.662	28.7	12.0	26.2	9.6	2.74	0.15	20.3	8.3	17.9
239	174.0	1.120	62.5	2.4	7.64	17.398	21.147	16.692	28.7	12.0	26.3	9.6	2.74	0.14	20.3	8.3	17.9
240	174.3	1.124	62.5	2.4	7.64	17.464	21.183	16.708	28.7	12.0	26.3	9.6	2.75	0.15	20.4	8.4	17.9
241	174.9	1.128	62.6	2.5	7.65	17.529	21.293	16.784	28.8	12.0	26.3	9.5	2.76	0.15	20.4	8.4	17.9
242	175.5	1.133	62.5	2.4	7.66	17.604	21.384	16.843	28.8	12.0	26.4	9.6	2.76	0.15	20.4	8.4	18.0
243	175.3	1.137	62.5	2.4	7.66	17.669	21.347	16.799	28.8	12.0	26.4	9.6	2.76	0.15	20.4	8.4	18.0
244	175.6	1.141	62.5	2.4	7.67	17.734	21.402	16.830	28.8	12.0	26.4	9.6	2.76	0.15	20.4	8.4	18.0
245	176.0	1.145	62.5	2.4	7.68	17.809	21.457	16.859	28.9	12.0	26.4	9.6	2.76	0.14	20.4	8.4	18.0
246	176.1	1.149	62.5	2.4	7.68	17.874	21.475	16.860	28.9	12.0	26.5	9.6	2.76	0.14	20.4	8.4	18.0
247	175.9	1.154	62.5	2.4	7.69	17.940	21.439	16.816	28.8	12.0	26.4	9.6	2.75	0.14	20.4	8.4	18.0
248	176.0	1.158	62.5	2.4	7.70	18.015	21.457	16.815	28.8	12.0	26.4	9.6	2.75	0.14	20.4	8.4	18.0
249	176.6	1.163	62.5	2.4	7.70	18.089	21.548	16.874	28.9	12.0	26.5	9.6	2.76	0.14	20.4	8.4	18.0
250	176.4	1.167	62.5	2.4	7.71	18.164	21.530	16.843	28.8	12.0	26.4	9.6	2.76	0.14	20.4	8.4	18.0
251	176.6	1.171	62.5	2.4	7.72	18.229	21.548	16.844	28.8	12.0	26.4	9.6	2.76	0.14	20.4	8.4	18.0
252	176.6	1.176	62.5	2.4	7.72	18.304	21.548	16.828	28.8	12.0	26.4	9.6	2.76	0.15	20.4	8.4	18.0
253	176.8	1.180	62.5	2.4	7.73	18.379	21.584	16.841	28.8	12.0	26.5	9.6	2.75	0.14	20.4	8.4	18.1
254	176.9	1.185	62.5	2.4	7.74	18.453	21.603	16.840	28.8	12.0	26.4	9.6	2.75	0.14	20.4	8.4	18.0
255	176.8	1.190	62.5	2.4	7.75	18.538	21.584	16.807	28.8	12.0	26.4	9.6	2.75	0.14	20.4	8.4	18.0
256	177.1	1.195	62.5	2.4	7.75	18.612	21.639	16.835	28.8	12.0	26.4	9.6	2.75	0.14	20.4	8.4	18.0
257	177.1	1.200	62.5	2.4	7.76	18.696	21.639	16.817	28.8	12.0	26.4	9.6	2.75	0.14	20.4	8.4	18.0
258	177.5	1.205	62.5	2.4	7.77	18.771	21.694	16.845	28.8	12.0	26.4	9.6	2.76	0.14	20.4	8.4	18.0
259	177.2	1.209	62.5	2.4	7.77	18.846	21.657	16.800	28.8	12.0	26.4	9.6	2.74	0.14	20.4	8.4	18.0
260	177.5	1.214	62.5	2.4	7.78	18.930	21.694	16.811	28.8	12.0	26.4	9.6	2.74	0.14	20.4	8.4	18.0
261	177.7	1.218	62.5	2.4	7.79	18.995	21.730	16.826	28.8	12.0	26.5	9.6	2.75	0.14	20.4	8.4	18.0
262	177.8	1.223	62.5	2.4	7.80	19.070	21.749	16.825	28.8	12.0	26.5	9.6	2.75	0.14	20.4	8.4	18.0
263	178.1	1.228	62.5	2.4	7.80	19.145	21.785	16.838	28.8	12.0	26.5	9.6	2.75	0.14	20.4	8.4	18.1
264	178.1	1.232	62.5	2.4	7.81	19.219	21.785	16.822	28.8	12.0	26.5	9.6	2.75	0.14	20.4	8.4	18.0

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
265	178.5	1.237	62.5	2.4	7.82	19.294	21.858	16.864	28.9	12.0	26.5	9.6	2.75	0.14	20.4	8.4	18.1
266	178.5	1.241	62.4	2.3	7.82	19.359	21.858	16.850	28.8	12.0	26.5	9.7	2.74	0.14	20.4	8.4	18.1
267	178.6	1.245	62.4	2.3	7.83	19.434	21.876	16.849	28.8	12.0	26.5	9.7	2.74	0.14	20.4	8.4	18.1
268	179.3	1.250	62.5	2.4	7.84	19.509	21.986	16.920	28.9	12.0	26.6	9.6	2.76	0.14	20.5	8.5	18.1
269	179.7	1.255	62.4	2.3	7.85	19.583	22.040	16.948	28.9	12.0	26.6	9.7	2.75	0.14	20.5	8.5	18.1
270	180.0	1.259	62.4	2.3	7.85	19.649	22.095	16.977	29.0	12.0	26.7	9.7	2.75	0.14	20.5	8.5	18.2
271	180.6	1.263	62.4	2.3	7.86	19.724	22.186	17.034	29.0	12.0	26.7	9.7	2.76	0.14	20.5	8.5	18.2
272	181.0	1.268	62.4	2.3	7.87	19.798	22.259	17.076	29.1	12.0	26.8	9.7	2.76	0.14	20.5	8.5	18.2
273	181.8	1.272	62.4	2.3	7.87	19.873	22.387	17.162	29.2	12.0	26.8	9.7	2.77	0.14	20.6	8.6	18.3
274	182.4	1.277	62.4	2.3	7.88	19.948	22.478	17.218	29.2	12.0	26.9	9.7	2.78	0.13	20.6	8.6	18.3
275	183.1	1.281	62.4	2.3	7.89	20.013	22.587	17.291	29.3	12.0	27.0	9.7	2.79	0.13	20.6	8.6	18.3

Specimen C Shear Data

CU Triaxial Test

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File Location
T-5671.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5671
Sample Location: Guilford County (Sta. 405 + 70)
Sample Description: Tan colored clay.
Remarks: 30° shear plane with slicken side and carbon streak on the plane.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.8039999
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.864	2.813	
Height (in)	6.143	6.128	
Weight (grams)	1107.00		1128.00
Moisture (%)	46.62		49.40
Dry Density (pcf)	72.69	75.54	
Saturation (%)	92.83	100.00	
Void Ratio	1.402	1.317	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 84.000
Effective Confining Stress (psi): 24.0
Corrected Peak Deviator Stress (psi): 37.196 at reading number: 50

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	31.1	0.049	60.0	0.0	6.21	0.000	0.000	0.000	24.0	24.0	24.0	24.0	1.00	0.00	24.0	0.0	24.0
1	49.1	0.054	60.5	0.6	6.22	0.084	2.895	2.860	26.9	24.0	26.3	23.5	1.12	0.20	25.4	1.4	24.9
2	50.5	0.059	60.7	0.7	6.22	0.158	3.117	3.051	27.1	24.0	26.4	23.3	1.13	0.22	25.5	1.5	24.9
3	52.6	0.063	60.9	0.9	6.23	0.233	3.451	3.352	27.4	24.0	26.4	23.1	1.15	0.28	25.7	1.7	24.8
4	59.3	0.068	61.3	1.3	6.23	0.307	4.528	4.394	28.4	24.0	27.1	22.7	1.19	0.30	26.2	2.2	24.9
5	65.9	0.073	61.7	1.8	6.24	0.382	5.604	5.433	29.5	24.0	27.7	22.3	1.24	0.33	26.7	2.7	25.0
6	76.0	0.078	62.3	2.3	6.24	0.466	7.218	7.003	31.0	24.0	28.7	21.7	1.32	0.33	27.5	3.5	25.2
7	82.0	0.083	62.8	2.8	6.25	0.550	8.183	7.923	31.9	24.0	29.1	21.2	1.37	0.36	28.0	4.0	25.2
8	98.5	0.088	63.6	3.7	6.25	0.643	10.837	10.516	34.5	24.0	30.9	20.4	1.52	0.35	29.3	5.3	25.6
9	111.3	0.094	64.4	4.4	6.26	0.727	12.897	12.519	36.5	24.0	32.2	19.6	1.64	0.35	30.3	6.3	25.9
10	122.1	0.098	65.0	5.0	6.26	0.801	14.641	14.210	38.2	24.0	33.2	19.0	1.75	0.35	31.1	7.1	26.1
11	132.6	0.103	65.6	5.6	6.27	0.885	16.329	15.839	39.9	24.0	34.2	18.4	1.86	0.36	31.9	7.9	26.3
12	142.3	0.108	66.1	6.2	6.27	0.960	17.888	17.341	41.4	24.0	35.2	17.9	1.97	0.35	32.7	8.7	26.5
13	151.3	0.113	66.6	6.6	6.28	1.043	19.335	18.726	42.7	24.0	36.1	17.4	2.07	0.35	33.4	9.4	26.8
14	159.9	0.118	67.0	7.0	6.28	1.118	20.727	20.058	44.1	24.0	37.0	17.0	2.18	0.35	34.0	10.0	27.0
15	167.8	0.123	67.4	7.4	6.29	1.202	21.989	21.255	45.3	24.0	37.9	16.6	2.28	0.35	34.6	10.6	27.2
16	175.2	0.127	67.7	7.7	6.29	1.276	23.195	22.400	46.4	24.0	38.7	16.3	2.37	0.34	35.2	11.2	27.5
17	182.4	0.132	68.0	8.0	6.30	1.351	24.346	23.488	47.5	24.0	39.5	16.0	2.47	0.34	35.8	11.7	27.7
18	189.5	0.137	68.3	8.3	6.30	1.435	25.496	24.569	48.6	24.0	40.3	15.7	2.57	0.34	36.3	12.3	28.0

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	195.7	0.142	68.5	8.6	6.31	1.509	26.480	25.490	49.5	24.0	40.9	15.5	2.65	0.34	36.8	12.7	28.2
20	202.0	0.146	68.7	8.8	6.31	1.584	27.500	26.445	50.5	24.0	41.7	15.3	2.73	0.33	37.2	13.2	28.5
21	208.2	0.151	69.0	9.0	6.32	1.658	28.502	27.381	51.4	24.0	42.4	15.0	2.82	0.33	37.7	13.7	28.7
22	214.8	0.156	69.2	9.2	6.32	1.742	29.560	28.364	52.4	24.0	43.2	14.8	2.91	0.32	38.2	14.2	29.0
23	220.3	0.160	69.4	9.4	6.33	1.817	30.451	29.187	53.2	24.0	43.8	14.6	2.99	0.32	38.6	14.6	29.2
24	225.1	0.165	69.5	9.5	6.33	1.891	31.211	29.882	53.9	24.0	44.4	14.5	3.06	0.32	39.0	14.9	29.5
25	229.7	0.170	69.6	9.7	6.34	1.966	31.954	30.557	54.6	24.0	44.9	14.4	3.13	0.32	39.3	15.3	29.6
26	233.5	0.174	69.8	9.8	6.34	2.040	32.566	31.119	55.1	24.0	45.4	14.2	3.18	0.31	39.6	15.6	29.8
27	237.2	0.179	69.9	9.9	6.35	2.115	33.160	31.676	55.7	24.0	45.8	14.1	3.24	0.31	39.9	15.8	30.0
28	240.6	0.183	70.0	10.0	6.35	2.189	33.717	32.196	56.2	24.0	46.2	14.0	3.29	0.31	40.1	16.1	30.1
29	244.3	0.188	70.0	10.1	6.36	2.273	34.310	32.748	56.8	24.0	46.7	14.0	3.35	0.31	40.4	16.4	30.3
30	247.8	0.193	70.1	10.1	6.36	2.348	34.867	33.266	57.3	24.0	47.1	13.9	3.40	0.30	40.7	16.6	30.5
31	250.8	0.198	70.2	10.2	6.37	2.422	35.349	33.711	57.7	24.0	47.5	13.8	3.44	0.30	40.9	16.9	30.7
32	253.9	0.202	70.2	10.3	6.37	2.497	35.850	34.173	58.2	24.0	47.9	13.8	3.48	0.30	41.1	17.1	30.8
33	256.2	0.207	70.3	10.3	6.38	2.571	36.222	34.508	58.5	24.0	48.2	13.7	3.51	0.30	41.3	17.3	31.0
34	258.5	0.211	70.4	10.4	6.38	2.646	36.593	34.842	58.9	24.0	48.5	13.6	3.55	0.30	41.4	17.4	31.1
35	260.9	0.216	70.4	10.4	6.39	2.720	36.982	35.194	59.2	24.0	48.8	13.6	3.59	0.30	41.6	17.6	31.2
36	262.6	0.220	70.4	10.4	6.39	2.795	37.261	35.437	59.5	24.0	49.0	13.6	3.61	0.29	41.7	17.7	31.3
37	264.6	0.225	70.4	10.5	6.40	2.869	37.576	35.716	59.7	24.0	49.3	13.6	3.63	0.29	41.9	17.9	31.4
38	266.2	0.230	70.4	10.5	6.40	2.953	37.836	35.936	60.0	24.0	49.5	13.6	3.65	0.29	42.0	18.0	31.5
39	267.4	0.235	70.5	10.5	6.41	3.028	38.022	36.088	60.1	24.0	49.6	13.5	3.67	0.29	42.1	18.0	31.6
40	268.6	0.239	70.5	10.5	6.41	3.102	38.226	36.258	60.3	24.0	49.8	13.5	3.68	0.29	42.1	18.1	31.6
41	269.8	0.244	70.5	10.5	6.42	3.177	38.411	36.409	60.4	24.0	49.9	13.5	3.69	0.29	42.2	18.2	31.7
42	270.8	0.248	70.5	10.5	6.42	3.251	38.578	36.542	60.6	24.0	50.1	13.5	3.70	0.29	42.3	18.3	31.8
43	272.2	0.253	70.5	10.5	6.43	3.326	38.801	36.728	60.7	24.0	50.2	13.5	3.72	0.29	42.4	18.4	31.9
44	273.0	0.258	70.5	10.5	6.43	3.410	38.931	36.821	60.8	24.0	50.3	13.5	3.72	0.29	42.4	18.4	31.9
45	273.8	0.263	70.5	10.5	6.44	3.484	39.061	36.918	60.9	24.0	50.4	13.5	3.73	0.28	42.5	18.5	32.0
46	274.3	0.267	70.5	10.5	6.44	3.559	39.135	36.960	61.0	24.0	50.5	13.5	3.73	0.28	42.5	18.5	32.0
47	275.2	0.272	70.5	10.5	6.45	3.643	39.283	37.070	61.1	24.0	50.6	13.5	3.74	0.28	42.6	18.5	32.1
48	275.7	0.277	70.5	10.5	6.45	3.717	39.358	37.112	61.1	24.0	50.6	13.5	3.74	0.28	42.6	18.6	32.1
49	276.2	0.281	70.5	10.5	6.46	3.792	39.450	37.172	61.2	24.0	50.7	13.5	3.75	0.28	42.6	18.6	32.1
50	276.6	0.286	70.5	10.5	6.46	3.866	39.506	37.196	61.2	24.0	50.7	13.5	3.75	0.28	42.6	18.6	32.1
51	276.7	0.291	70.5	10.5	6.47	3.941	39.525	37.185	61.2	24.0	50.7	13.5	3.75	0.28	42.6	18.6	32.1
52	276.9	0.295	70.5	10.5	6.47	4.015	39.562	37.191	61.2	24.0	50.7	13.5	3.75	0.28	42.6	18.6	32.1
53	276.6	0.300	70.4	10.5	6.48	4.099	39.506	37.104	61.1	24.0	50.7	13.6	3.74	0.28	42.6	18.6	32.1
54	276.5	0.305	70.4	10.4	6.48	4.174	39.487	37.057	61.1	24.0	50.7	13.6	3.72	0.28	42.5	18.5	32.1
55	276.1	0.310	70.4	10.5	6.49	4.257	39.432	36.971	61.0	24.0	50.5	13.6	3.73	0.28	42.5	18.5	32.0
56	275.8	0.314	70.4	10.4	6.49	4.323	39.376	36.892	60.9	24.0	50.5	13.6	3.71	0.28	42.5	18.4	32.0
57	275.1	0.319	70.4	10.4	6.50	4.407	39.265	36.752	60.8	24.0	50.4	13.6	3.70	0.28	42.4	18.4	32.0
58	273.8	0.324	70.4	10.4	6.50	4.481	39.061	36.528	60.5	24.0	50.2	13.6	3.68	0.28	42.3	18.3	31.9
59	272.8	0.328	70.4	10.4	6.51	4.556	38.894	36.340	60.4	24.0	50.0	13.6	3.66	0.29	42.2	18.2	31.8

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	271.5	0.333	70.3	10.3	6.51	4.630	38.690	36.116	60.1	24.0	49.8	13.7	3.64	0.29	42.1	18.1	31.7
61	270.5	0.337	70.3	10.3	6.52	4.705	38.523	35.928	59.9	24.0	49.6	13.7	3.63	0.29	42.0	18.0	31.6
62	268.9	0.342	70.3	10.3	6.53	4.779	38.263	35.652	59.7	24.0	49.3	13.7	3.61	0.29	41.8	17.8	31.5
63	267.6	0.347	70.3	10.3	6.53	4.854	38.059	35.429	59.4	24.0	49.1	13.7	3.59	0.29	41.7	17.7	31.4
64	266.3	0.351	70.3	10.3	6.54	4.928	37.855	35.207	59.2	24.0	48.9	13.7	3.57	0.29	41.6	17.6	31.3
65	264.4	0.356	70.3	10.3	6.54	5.003	37.539	34.879	58.9	24.0	48.6	13.7	3.54	0.30	41.5	17.4	31.2
66	263.4	0.360	70.3	10.3	6.55	5.077	37.391	34.710	58.7	24.0	48.4	13.7	3.53	0.30	41.4	17.4	31.1
67	261.6	0.365	70.2	10.3	6.55	5.161	37.094	34.397	58.4	24.0	48.2	13.8	3.50	0.30	41.2	17.2	31.0
68	260.1	0.370	70.2	10.3	6.56	5.236	36.852	34.141	58.2	24.0	47.9	13.8	3.48	0.30	41.1	17.1	30.8
69	258.6	0.375	70.2	10.3	6.56	5.310	36.611	33.885	57.9	24.0	47.6	13.8	3.46	0.30	41.0	16.9	30.7
70	256.9	0.379	70.2	10.2	6.57	5.385	36.333	33.594	57.6	24.0	47.4	13.8	3.43	0.30	40.8	16.8	30.6
71	255.1	0.384	70.2	10.2	6.57	5.459	36.055	33.304	57.3	24.0	47.1	13.8	3.41	0.31	40.7	16.7	30.5
72	253.0	0.388	70.2	10.2	6.58	5.534	35.702	32.944	57.0	24.0	46.7	13.8	3.39	0.31	40.5	16.5	30.3
73	250.9	0.393	70.2	10.2	6.58	5.618	35.368	32.599	56.6	24.0	46.4	13.8	3.36	0.31	40.3	16.3	30.1
74	249.4	0.398	70.2	10.2	6.59	5.692	35.127	32.345	56.4	24.0	46.2	13.8	3.34	0.31	40.2	16.2	30.0
75	248.0	0.403	70.2	10.2	6.59	5.767	34.904	32.109	56.1	24.0	46.0	13.8	3.32	0.32	40.1	16.1	29.9
76	246.5	0.407	70.2	10.2	6.60	5.841	34.663	31.856	55.9	24.0	45.7	13.8	3.30	0.32	39.9	15.9	29.8
77	245.8	0.412	70.1	10.1	6.60	5.916	34.552	31.725	55.7	24.0	45.6	13.9	3.29	0.32	39.9	15.9	29.7
78	244.2	0.417	70.1	10.1	6.61	6.000	34.292	31.452	55.5	24.0	45.3	13.9	3.27	0.32	39.7	15.7	29.6
79	242.6	0.421	70.1	10.1	6.62	6.074	34.032	31.183	55.2	24.0	45.1	13.9	3.25	0.33	39.6	15.6	29.5
80	240.8	0.426	70.1	10.1	6.62	6.149	33.754	30.896	54.9	24.0	44.8	13.9	3.23	0.33	39.5	15.4	29.3
81	239.1	0.430	70.1	10.1	6.63	6.223	33.475	30.610	54.6	24.0	44.5	13.9	3.20	0.33	39.3	15.3	29.2
82	237.2	0.436	70.1	10.1	6.63	6.307	33.160	30.286	54.3	24.0	44.2	13.9	3.18	0.33	39.2	15.1	29.0
83	235.7	0.440	70.1	10.1	6.64	6.382	32.919	30.036	54.1	24.0	43.9	13.9	3.16	0.34	39.0	15.0	28.9
84	233.8	0.445	70.1	10.1	6.64	6.456	32.622	29.733	53.8	24.0	43.7	13.9	3.14	0.34	38.9	14.9	28.8
85	232.0	0.449	70.1	10.1	6.65	6.531	32.325	29.432	53.5	24.0	43.4	13.9	3.11	0.34	38.7	14.7	28.6
86	230.7	0.454	70.1	10.1	6.65	6.605	32.121	29.217	53.2	24.0	43.1	13.9	3.10	0.35	38.6	14.6	28.5
87	229.7	0.458	70.1	10.1	6.66	6.680	31.954	29.037	53.1	24.0	42.9	13.9	3.09	0.35	38.5	14.5	28.4
88	228.4	0.463	70.1	10.1	6.66	6.754	31.750	28.823	52.8	24.0	42.7	13.9	3.07	0.35	38.4	14.4	28.3
89	227.1	0.468	70.1	10.1	6.67	6.829	31.545	28.609	52.6	24.0	42.5	13.9	3.05	0.35	38.3	14.3	28.2
90	225.6	0.473	70.1	10.1	6.67	6.913	31.304	28.358	52.4	24.0	42.3	13.9	3.04	0.36	38.2	14.2	28.1
91	224.5	0.477	70.1	10.1	6.68	6.987	31.119	28.162	52.2	24.0	42.1	13.9	3.02	0.36	38.1	14.1	28.0
92	222.7	0.482	70.1	10.1	6.69	7.062	30.840	27.880	51.9	24.0	41.8	13.9	3.00	0.36	38.0	13.9	27.9
93	221.0	0.486	70.1	10.1	6.69	7.136	30.562	27.599	51.6	24.0	41.5	13.9	2.98	0.37	37.8	13.8	27.7
94	219.4	0.491	70.1	10.1	6.70	7.211	30.302	27.335	51.4	24.0	41.3	13.9	2.96	0.37	37.7	13.7	27.6
95	217.7	0.496	70.1	10.1	6.70	7.285	30.024	27.054	51.1	24.0	41.0	13.9	2.94	0.37	37.5	13.5	27.5
96	216.8	0.500	70.0	10.1	6.71	7.360	29.875	26.894	50.9	24.0	40.9	14.0	2.93	0.37	37.5	13.4	27.4
97	215.6	0.505	70.1	10.1	6.71	7.434	29.690	26.700	50.7	24.0	40.6	13.9	2.92	0.38	37.4	13.4	27.3
98	214.4	0.509	70.0	10.1	6.72	7.509	29.504	26.507	50.5	24.0	40.5	14.0	2.90	0.38	37.3	13.3	27.2
99	213.6	0.514	70.0	10.1	6.72	7.583	29.374	26.365	50.4	24.0	40.3	14.0	2.89	0.38	37.2	13.2	27.1
100	212.7	0.518	70.0	10.1	6.73	7.658	29.226	26.206	50.2	24.0	40.2	14.0	2.88	0.38	37.1	13.1	27.1

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	211.4	0.523	70.0	10.1	6.73	7.732	29.022	25.996	50.0	24.0	40.0	14.0	2.86	0.39	37.0	13.0	27.0
102	210.2	0.528	70.0	10.1	6.74	7.807	28.818	25.786	49.8	24.0	39.7	14.0	2.85	0.39	36.9	12.9	26.9
103	209.6	0.532	70.0	10.1	6.74	7.881	28.725	25.679	49.7	24.0	39.6	14.0	2.84	0.39	36.9	12.8	26.8
104	209.1	0.537	70.0	10.1	6.75	7.956	28.651	25.589	49.6	24.0	39.6	14.0	2.83	0.39	36.8	12.8	26.8
105	208.3	0.542	70.0	10.0	6.76	8.040	28.521	25.446	49.5	24.0	39.4	14.0	2.82	0.39	36.7	12.7	26.7
106	207.3	0.546	70.0	10.0	6.76	8.114	28.354	25.271	49.3	24.0	39.3	14.0	2.80	0.40	36.7	12.6	26.6
107	206.1	0.551	70.0	10.0	6.77	8.189	28.168	25.079	49.1	24.0	39.1	14.0	2.79	0.40	36.6	12.5	26.5
108	204.8	0.556	70.0	10.0	6.77	8.263	27.946	24.854	48.9	24.0	38.9	14.0	2.77	0.40	36.4	12.4	26.4
109	204.2	0.561	70.0	10.0	6.78	8.347	27.853	24.746	48.8	24.0	38.7	14.0	2.77	0.40	36.4	12.4	26.4
110	203.3	0.565	70.0	10.0	6.78	8.422	27.704	24.589	48.6	24.0	38.6	14.0	2.76	0.41	36.3	12.3	26.3
111	202.8	0.570	70.0	10.0	6.79	8.496	27.630	24.500	48.5	24.0	38.5	14.0	2.74	0.41	36.3	12.3	26.3
112	201.4	0.574	70.0	10.0	6.80	8.571	27.407	24.276	48.3	24.0	38.3	14.0	2.73	0.41	36.2	12.1	26.2
113	200.4	0.579	70.0	10.0	6.80	8.645	27.240	24.103	48.1	24.0	38.1	14.0	2.72	0.41	36.1	12.1	26.1
114	199.2	0.584	70.0	10.0	6.81	8.729	27.055	23.911	47.9	24.0	38.0	14.0	2.70	0.42	36.0	12.0	26.0
115	198.7	0.589	70.0	10.0	6.81	8.804	26.962	23.806	47.8	24.0	37.8	14.0	2.70	0.42	35.9	11.9	25.9
116	197.5	0.593	69.9	9.9	6.82	8.878	26.777	23.617	47.6	24.0	37.7	14.1	2.68	0.42	35.8	11.8	25.9
117	197.2	0.598	69.9	9.9	6.82	8.953	26.721	23.546	47.6	24.0	37.6	14.1	2.67	0.42	35.8	11.8	25.9
118	196.2	0.602	69.9	9.9	6.83	9.027	26.572	23.391	47.4	24.0	37.5	14.1	2.66	0.42	35.7	11.7	25.8
119	195.5	0.607	69.9	9.9	6.84	9.102	26.461	23.270	47.3	24.0	37.4	14.1	2.65	0.43	35.7	11.6	25.7
120	195.1	0.612	69.9	9.9	6.84	9.186	26.387	23.181	47.2	24.0	37.3	14.1	2.65	0.43	35.6	11.6	25.7
121	194.2	0.616	69.9	9.9	6.85	9.251	26.238	23.029	47.0	24.0	37.1	14.1	2.64	0.43	35.5	11.5	25.6
122	193.6	0.621	69.9	9.9	6.85	9.335	26.146	22.923	46.9	24.0	37.0	14.1	2.63	0.43	35.5	11.5	25.5
123	193.2	0.626	69.9	9.9	6.86	9.409	26.090	22.853	46.9	24.0	37.0	14.1	2.62	0.43	35.4	11.4	25.6
124	192.3	0.630	69.9	9.9	6.86	9.475	25.941	22.701	46.7	24.0	36.8	14.1	2.61	0.44	35.4	11.4	25.5
125	191.8	0.635	69.9	9.9	6.87	9.558	25.867	22.613	46.6	24.0	36.7	14.1	2.60	0.44	35.3	11.3	25.4
126	190.8	0.639	69.9	9.9	6.88	9.633	25.700	22.442	46.5	24.0	36.6	14.1	2.59	0.44	35.2	11.2	25.3
127	190.2	0.644	69.9	9.9	6.88	9.707	25.607	22.339	46.4	24.0	36.5	14.1	2.58	0.44	35.2	11.2	25.3
128	189.7	0.649	69.8	9.9	6.89	9.782	25.515	22.237	46.3	24.0	36.4	14.2	2.57	0.44	35.1	11.1	25.3
129	189.8	0.653	69.8	9.9	6.89	9.856	25.533	22.234	46.3	24.0	36.4	14.2	2.57	0.44	35.1	11.1	25.3
130	189.4	0.658	69.8	9.8	6.90	9.931	25.478	22.165	46.2	24.0	36.4	14.2	2.56	0.44	35.1	11.1	25.3
131	189.4	0.662	69.8	9.8	6.90	10.006	25.478	22.146	46.2	24.0	36.4	14.2	2.56	0.44	35.1	11.1	25.3
132	188.6	0.667	69.8	9.8	6.91	10.080	25.348	22.010	46.0	24.0	36.2	14.2	2.55	0.45	35.0	11.0	25.2
133	187.6	0.671	69.8	9.8	6.92	10.155	25.181	21.842	45.9	24.0	36.0	14.2	2.54	0.45	34.9	10.9	25.1
134	186.7	0.676	69.8	9.8	6.92	10.229	25.032	21.689	45.7	24.0	35.9	14.2	2.53	0.45	34.9	10.8	25.0
135	186.2	0.681	69.8	9.8	6.93	10.304	24.958	21.604	45.6	24.0	35.8	14.2	2.52	0.45	34.8	10.8	25.0
136	185.2	0.685	69.8	9.8	6.93	10.378	24.791	21.436	45.5	24.0	35.7	14.2	2.50	0.46	34.7	10.7	25.0
137	184.0	0.690	69.7	9.7	6.94	10.462	24.605	21.249	45.3	24.0	35.5	14.3	2.49	0.46	34.6	10.6	24.9
138	183.8	0.695	69.7	9.7	6.95	10.537	24.568	21.197	45.2	24.0	35.5	14.3	2.48	0.46	34.6	10.6	24.9
139	183.2	0.699	69.7	9.7	6.95	10.611	24.476	21.096	45.1	24.0	35.4	14.3	2.48	0.46	34.6	10.5	24.8
140	182.7	0.704	69.7	9.7	6.96	10.686	24.401	21.012	45.0	24.0	35.3	14.3	2.47	0.46	34.5	10.5	24.8
141	181.6	0.709	69.7	9.7	6.96	10.769	24.216	20.826	44.8	24.0	35.2	14.3	2.45	0.47	34.4	10.4	24.7

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	180.9	0.714	69.7	9.7	6.97	10.844	24.104	20.708	44.7	24.0	35.0	14.3	2.45	0.47	34.4	10.4	24.7
143	180.7	0.718	69.7	9.7	6.97	10.919	24.067	20.657	44.7	24.0	35.0	14.3	2.44	0.47	34.3	10.3	24.7
144	180.0	0.723	69.6	9.7	6.98	11.002	23.956	20.538	44.6	24.0	34.9	14.4	2.43	0.47	34.3	10.3	24.6
145	179.5	0.728	69.6	9.7	6.99	11.077	23.882	20.454	44.5	24.0	34.8	14.4	2.42	0.47	34.2	10.2	24.6
146	178.9	0.733	69.6	9.7	6.99	11.151	23.789	20.354	44.4	24.0	34.7	14.4	2.42	0.47	34.2	10.2	24.5
147	178.1	0.737	69.6	9.6	7.00	11.226	23.659	20.221	44.2	24.0	34.6	14.4	2.40	0.48	34.1	10.1	24.5
148	177.8	0.742	69.6	9.6	7.00	11.300	23.603	20.154	44.2	24.0	34.6	14.4	2.40	0.48	34.1	10.1	24.5
149	177.4	0.746	69.6	9.6	7.01	11.375	23.548	20.087	44.1	24.0	34.5	14.4	2.39	0.48	34.1	10.0	24.4
150	177.3	0.751	69.6	9.6	7.02	11.450	23.529	20.053	44.1	24.0	34.5	14.4	2.39	0.48	34.0	10.0	24.4
151	176.6	0.755	69.6	9.6	7.02	11.524	23.418	19.937	44.0	24.0	34.4	14.4	2.38	0.48	34.0	10.0	24.4
152	176.1	0.760	69.6	9.6	7.03	11.599	23.325	19.838	43.9	24.0	34.3	14.4	2.37	0.48	33.9	9.9	24.4
153	176.1	0.764	69.6	9.6	7.03	11.673	23.325	19.820	43.8	24.0	34.3	14.4	2.37	0.48	33.9	9.9	24.4
154	175.6	0.769	69.5	9.5	7.04	11.748	23.251	19.737	43.8	24.0	34.2	14.5	2.36	0.48	33.9	9.9	24.4
155	175.0	0.774	69.5	9.5	7.05	11.822	23.158	19.638	43.7	24.0	34.1	14.5	2.36	0.49	33.8	9.8	24.3
156	174.8	0.778	69.5	9.5	7.05	11.897	23.121	19.588	43.6	24.0	34.1	14.5	2.35	0.49	33.8	9.8	24.3
157	174.6	0.783	69.5	9.5	7.06	11.971	23.084	19.538	43.6	24.0	34.0	14.5	2.35	0.49	33.8	9.8	24.3
158	174.0	0.788	69.5	9.5	7.06	12.055	22.991	19.437	43.5	24.0	34.0	14.5	2.34	0.49	33.7	9.7	24.2
159	173.5	0.792	69.5	9.5	7.07	12.120	22.917	19.357	43.4	24.0	33.9	14.5	2.33	0.49	33.7	9.7	24.2
160	173.2	0.796	69.5	9.5	7.08	12.195	22.861	19.291	43.3	24.0	33.8	14.5	2.33	0.49	33.7	9.6	24.2
161	172.9	0.801	69.4	9.5	7.08	12.269	22.824	19.242	43.3	24.0	33.8	14.6	2.32	0.49	33.6	9.6	24.2
162	172.5	0.806	69.4	9.5	7.09	12.353	22.750	19.157	43.2	24.0	33.7	14.6	2.32	0.49	33.6	9.6	24.1
163	172.5	0.810	69.4	9.5	7.09	12.418	22.750	19.142	43.2	24.0	33.7	14.6	2.31	0.49	33.6	9.6	24.1
164	172.0	0.815	69.4	9.5	7.10	12.502	22.676	19.058	43.1	24.0	33.6	14.6	2.31	0.50	33.5	9.5	24.1
165	172.1	0.820	69.4	9.4	7.11	12.577	22.694	19.058	43.1	24.0	33.7	14.6	2.30	0.49	33.5	9.5	24.1
166	171.6	0.824	69.4	9.4	7.11	12.651	22.601	18.960	43.0	24.0	33.6	14.6	2.30	0.50	33.5	9.5	24.1
167	171.4	0.829	69.4	9.4	7.12	12.726	22.583	18.927	42.9	24.0	33.5	14.6	2.30	0.50	33.5	9.5	24.1
168	171.1	0.834	69.4	9.4	7.13	12.800	22.527	18.861	42.9	24.0	33.5	14.6	2.29	0.50	33.5	9.4	24.0
169	170.5	0.838	69.4	9.4	7.13	12.875	22.434	18.764	42.8	24.0	33.4	14.6	2.28	0.50	33.4	9.4	24.0
170	170.7	0.843	69.4	9.4	7.14	12.959	22.471	18.777	42.8	24.0	33.4	14.6	2.29	0.50	33.4	9.4	24.0
171	170.7	0.848	69.4	9.4	7.14	13.033	22.471	18.761	42.8	24.0	33.4	14.6	2.28	0.50	33.4	9.4	24.0
172	170.4	0.852	69.4	9.4	7.15	13.108	22.416	18.695	42.7	24.0	33.3	14.6	2.28	0.50	33.4	9.3	24.0
173	169.8	0.857	69.4	9.4	7.16	13.182	22.323	18.598	42.6	24.0	33.2	14.6	2.27	0.50	33.3	9.3	23.9
174	169.5	0.862	69.4	9.4	7.16	13.266	22.267	18.531	42.6	24.0	33.2	14.6	2.27	0.51	33.3	9.3	23.9
175	169.3	0.867	69.4	9.4	7.17	13.341	22.230	18.482	42.5	24.0	33.1	14.6	2.26	0.51	33.3	9.2	23.9
176	169.1	0.871	69.3	9.3	7.18	13.415	22.212	18.450	42.5	24.0	33.1	14.7	2.26	0.51	33.2	9.2	23.9
177	168.9	0.876	69.3	9.3	7.18	13.490	22.175	18.401	42.4	24.0	33.1	14.7	2.25	0.51	33.2	9.2	23.9
178	168.9	0.880	69.3	9.3	7.19	13.564	22.175	18.385	42.4	24.0	33.1	14.7	2.25	0.51	33.2	9.2	23.9
179	168.3	0.885	69.3	9.3	7.19	13.639	22.082	18.288	42.3	24.0	33.0	14.7	2.25	0.51	33.2	9.1	23.8
180	168.2	0.890	69.3	9.3	7.20	13.723	22.063	18.253	42.3	24.0	32.9	14.7	2.24	0.51	33.1	9.1	23.8
181	168.0	0.895	69.3	9.3	7.21	13.797	22.026	18.205	42.2	24.0	32.9	14.7	2.24	0.51	33.1	9.1	23.8
182	168.4	0.899	69.3	9.3	7.21	13.872	22.100	18.252	42.3	24.0	33.0	14.7	2.24	0.51	33.1	9.1	23.9

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	168.4	0.904	69.3	9.3	7.22	13.946	22.100	18.236	42.3	24.0	33.0	14.7	2.24	0.51	33.1	9.1	23.8
184	168.4	0.908	69.3	9.3	7.23	14.021	22.100	18.220	42.2	24.0	32.9	14.7	2.24	0.51	33.1	9.1	23.8
185	169.3	0.913	69.2	9.3	7.23	14.095	22.230	18.315	42.3	24.0	33.1	14.8	2.24	0.51	33.2	9.2	23.9
186	169.0	0.917	69.2	9.3	7.24	14.170	22.193	18.266	42.3	24.0	33.0	14.8	2.24	0.51	33.2	9.1	23.9
187	169.0	0.922	69.2	9.3	7.25	14.244	22.193	18.250	42.3	24.0	33.0	14.8	2.24	0.51	33.1	9.1	23.9
188	169.0	0.927	69.2	9.3	7.25	14.319	22.193	18.233	42.3	24.0	33.0	14.8	2.23	0.51	33.1	9.1	23.9
189	168.9	0.931	69.2	9.3	7.26	14.393	22.175	18.201	42.2	24.0	33.0	14.8	2.23	0.51	33.1	9.1	23.9
190	168.4	0.936	69.2	9.2	7.26	14.468	22.100	18.121	42.1	24.0	32.9	14.8	2.22	0.51	33.1	9.1	23.9
191	168.7	0.940	69.2	9.2	7.27	14.542	22.137	18.136	42.2	24.0	32.9	14.8	2.22	0.51	33.1	9.1	23.9
192	168.4	0.945	69.2	9.2	7.28	14.617	22.100	18.088	42.1	24.0	32.9	14.8	2.22	0.51	33.1	9.0	23.9
193	168.0	0.949	69.2	9.2	7.28	14.692	22.026	18.008	42.0	24.0	32.8	14.8	2.22	0.51	33.0	9.0	23.8
194	167.9	0.954	69.2	9.2	7.29	14.766	22.008	17.976	42.0	24.0	32.8	14.8	2.21	0.51	33.0	9.0	23.8
195	168.0	0.959	69.2	9.2	7.30	14.841	22.026	17.975	42.0	24.0	32.8	14.8	2.21	0.51	33.0	9.0	23.8
196	167.9	0.963	69.2	9.2	7.30	14.915	22.008	17.943	42.0	24.0	32.8	14.8	2.21	0.51	33.0	9.0	23.8
197	167.5	0.968	69.2	9.2	7.31	14.990	21.952	17.879	41.9	24.0	32.7	14.8	2.20	0.51	33.0	8.9	23.8
198	168.0	0.972	69.2	9.2	7.32	15.064	22.026	17.926	41.9	24.0	32.8	14.8	2.21	0.51	33.0	9.0	23.8
199	167.4	0.977	69.1	9.1	7.32	15.139	21.933	17.831	41.9	24.0	32.7	14.9	2.20	0.51	32.9	8.9	23.8
200	167.5	0.981	69.1	9.1	7.33	15.213	21.952	17.830	41.9	24.0	32.7	14.9	2.20	0.51	32.9	8.9	23.8
201	167.5	0.987	69.1	9.1	7.34	15.297	21.952	17.812	41.8	24.0	32.7	14.9	2.20	0.51	32.9	8.9	23.8
202	167.1	0.991	69.1	9.1	7.34	15.372	21.878	17.733	41.8	24.0	32.6	14.9	2.19	0.51	32.9	8.9	23.8
203	167.4	0.996	69.1	9.1	7.35	15.446	21.933	17.763	41.8	24.0	32.7	14.9	2.19	0.51	32.9	8.9	23.8
204	167.2	1.000	69.1	9.1	7.35	15.521	21.896	17.716	41.7	24.0	32.6	14.9	2.19	0.51	32.9	8.9	23.8
205	166.8	1.005	69.1	9.1	7.36	15.595	21.841	17.652	41.7	24.0	32.6	14.9	2.18	0.52	32.8	8.8	23.8
206	166.6	1.010	69.0	9.1	7.37	15.679	21.803	17.603	41.6	24.0	32.6	15.0	2.18	0.51	32.8	8.8	23.8
207	166.5	1.015	69.1	9.1	7.38	15.754	21.785	17.571	41.6	24.0	32.5	14.9	2.18	0.52	32.8	8.8	23.7
208	166.3	1.019	69.0	9.1	7.38	15.828	21.748	17.523	41.5	24.0	32.5	15.0	2.17	0.52	32.8	8.8	23.7
209	166.1	1.024	69.0	9.1	7.39	15.903	21.729	17.492	41.5	24.0	32.5	15.0	2.17	0.52	32.8	8.7	23.7
210	166.4	1.029	69.0	9.1	7.40	15.986	21.766	17.504	41.5	24.0	32.5	15.0	2.17	0.52	32.8	8.8	23.7
211	166.3	1.033	69.0	9.1	7.40	16.061	21.748	17.473	41.5	24.0	32.4	15.0	2.17	0.52	32.8	8.7	23.7
212	166.0	1.038	69.0	9.0	7.41	16.136	21.711	17.425	41.4	24.0	32.4	15.0	2.16	0.52	32.7	8.7	23.7
213	166.1	1.043	69.0	9.0	7.42	16.210	21.729	17.425	41.4	24.0	32.4	15.0	2.16	0.52	32.7	8.7	23.7
214	166.1	1.047	69.0	9.0	7.42	16.285	21.729	17.409	41.4	24.0	32.4	15.0	2.16	0.52	32.7	8.7	23.7
215	166.1	1.052	69.0	9.0	7.43	16.359	21.729	17.392	41.4	24.0	32.4	15.0	2.16	0.52	32.7	8.7	23.7
216	165.8	1.056	69.0	9.0	7.44	16.434	21.674	17.330	41.3	24.0	32.3	15.0	2.15	0.52	32.7	8.7	23.7
217	165.2	1.061	69.0	9.0	7.44	16.508	21.581	17.236	41.3	24.0	32.3	15.0	2.15	0.52	32.6	8.6	23.7
218	165.6	1.065	69.0	9.0	7.45	16.583	21.636	17.266	41.3	24.0	32.3	15.0	2.15	0.52	32.7	8.6	23.7
219	165.7	1.070	69.0	9.0	7.46	16.657	21.655	17.266	41.3	24.0	32.3	15.0	2.15	0.52	32.7	8.6	23.7
220	165.4	1.075	68.9	8.9	7.46	16.732	21.618	17.219	41.2	24.0	32.3	15.1	2.14	0.52	32.6	8.6	23.7
221	165.3	1.080	69.0	9.0	7.47	16.816	21.599	17.185	41.2	24.0	32.2	15.0	2.14	0.52	32.6	8.6	23.6
222	164.9	1.084	68.9	8.9	7.48	16.881	21.525	17.109	41.1	24.0	32.2	15.1	2.13	0.52	32.6	8.6	23.6
223	165.1	1.088	68.9	8.9	7.48	16.955	21.562	17.124	41.1	24.0	32.2	15.1	2.13	0.52	32.6	8.6	23.7

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	165.4	1.093	68.9	8.9	7.49	17.030	21.618	17.154	41.2	24.0	32.2	15.1	2.14	0.52	32.6	8.6	23.7
225	164.8	1.097	68.9	8.9	7.50	17.104	21.507	17.046	41.1	24.0	32.1	15.1	2.13	0.52	32.5	8.5	23.6
226	164.6	1.102	68.9	8.9	7.50	17.179	21.488	17.014	41.0	24.0	32.1	15.1	2.12	0.52	32.5	8.5	23.6
227	165.0	1.106	68.9	8.9	7.51	17.253	21.544	17.044	41.1	24.0	32.2	15.1	2.13	0.52	32.5	8.5	23.7
228	165.1	1.111	68.9	8.9	7.52	17.328	21.562	17.044	41.1	24.0	32.2	15.1	2.13	0.52	32.5	8.5	23.7
229	165.3	1.116	68.9	8.9	7.52	17.403	21.599	17.058	41.1	24.0	32.2	15.1	2.13	0.52	32.5	8.5	23.7
230	165.2	1.121	68.8	8.9	7.53	17.486	21.581	17.025	41.0	24.0	32.2	15.2	2.12	0.52	32.5	8.5	23.7
231	165.1	1.125	68.8	8.9	7.54	17.552	21.562	16.996	41.0	24.0	32.2	15.2	2.12	0.52	32.5	8.5	23.7
232	165.1	1.130	68.8	8.9	7.54	17.635	21.562	16.977	41.0	24.0	32.1	15.2	2.12	0.52	32.5	8.5	23.7
233	164.6	1.134	68.8	8.8	7.55	17.701	21.488	16.902	40.9	24.0	32.1	15.2	2.11	0.52	32.5	8.5	23.7
234	165.0	1.138	68.8	8.8	7.56	17.775	21.544	16.932	41.0	24.0	32.1	15.2	2.11	0.52	32.5	8.5	23.7
235	164.8	1.144	68.8	8.8	7.56	17.859	21.507	16.884	40.9	24.0	32.1	15.2	2.11	0.52	32.5	8.4	23.7
236	164.9	1.148	68.7	8.8	7.57	17.934	21.525	16.883	40.9	24.0	32.1	15.3	2.11	0.52	32.5	8.4	23.7
237	165.1	1.153	68.7	8.8	7.58	18.008	21.562	16.897	40.9	24.0	32.1	15.3	2.11	0.52	32.5	8.4	23.7
238	165.6	1.157	68.7	8.8	7.58	18.083	21.636	16.942	41.0	24.0	32.2	15.3	2.11	0.52	32.5	8.5	23.7
239	166.1	1.162	68.7	8.8	7.59	18.166	21.729	17.000	41.0	24.0	32.3	15.3	2.11	0.52	32.5	8.5	23.8
240	165.8	1.166	68.7	8.7	7.60	18.232	21.674	16.940	41.0	24.0	32.2	15.3	2.11	0.52	32.5	8.5	23.8
241	165.7	1.172	68.7	8.7	7.61	18.316	21.655	16.907	40.9	24.0	32.2	15.3	2.11	0.52	32.5	8.5	23.7
242	165.4	1.176	68.7	8.7	7.61	18.390	21.618	16.860	40.9	24.0	32.2	15.3	2.10	0.52	32.5	8.4	23.7
243	165.6	1.181	68.7	8.7	7.62	18.465	21.636	16.859	40.9	24.0	32.1	15.3	2.10	0.52	32.4	8.4	23.7
244	165.6	1.185	68.7	8.7	7.63	18.539	21.636	16.843	40.9	24.0	32.2	15.3	2.10	0.52	32.4	8.4	23.8
245	164.8	1.190	68.7	8.7	7.63	18.614	21.507	16.721	40.7	24.0	32.1	15.3	2.09	0.52	32.4	8.4	23.7
246	164.8	1.194	68.7	8.7	7.64	18.688	21.507	16.705	40.7	24.0	32.0	15.3	2.09	0.52	32.4	8.4	23.7
247	165.0	1.200	68.6	8.6	7.65	18.772	21.544	16.717	40.7	24.0	32.1	15.4	2.09	0.52	32.4	8.4	23.7
248	165.1	1.204	68.7	8.7	7.66	18.847	21.562	16.716	40.7	24.0	32.0	15.3	2.09	0.52	32.4	8.4	23.7
249	164.9	1.209	68.6	8.6	7.66	18.921	21.525	16.670	40.7	24.0	32.0	15.4	2.08	0.52	32.4	8.3	23.7
250	164.8	1.213	68.7	8.7	7.67	18.996	21.507	16.639	40.7	24.0	31.9	15.3	2.09	0.52	32.3	8.3	23.6
251	164.5	1.217	68.7	8.7	7.68	19.061	21.469	16.595	40.6	24.0	31.9	15.3	2.09	0.53	32.3	8.3	23.6
252	164.4	1.222	68.7	8.7	7.68	19.135	21.451	16.564	40.6	24.0	31.9	15.3	2.08	0.53	32.3	8.3	23.6
253	164.4	1.226	68.7	8.7	7.69	19.210	21.451	16.548	40.6	24.0	31.8	15.3	2.08	0.53	32.3	8.3	23.6
254	164.6	1.231	68.7	8.7	7.70	19.284	21.488	16.562	40.6	24.0	31.9	15.3	2.08	0.52	32.3	8.3	23.6
255	164.4	1.236	68.7	8.7	7.70	19.359	21.451	16.516	40.5	24.0	31.8	15.3	2.08	0.53	32.3	8.3	23.6
256	164.5	1.240	68.7	8.7	7.71	19.433	21.469	16.515	40.5	24.0	31.8	15.3	2.08	0.53	32.3	8.3	23.6
257	164.3	1.245	68.7	8.7	7.72	19.508	21.432	16.469	40.5	24.0	31.8	15.3	2.07	0.53	32.3	8.2	23.6
258	164.4	1.249	68.7	8.7	7.73	19.583	21.451	16.468	40.5	24.0	31.8	15.3	2.07	0.53	32.3	8.2	23.6
259	164.1	1.254	68.6	8.6	7.73	19.657	21.395	16.407	40.4	24.0	31.8	15.4	2.07	0.53	32.2	8.2	23.6
260	164.1	1.258	68.6	8.6	7.74	19.732	21.395	16.391	40.4	24.0	31.8	15.4	2.07	0.53	32.2	8.2	23.6
261	163.9	1.263	68.6	8.6	7.75	19.806	21.377	16.361	40.4	24.0	31.7	15.4	2.06	0.53	32.2	8.2	23.6
262	164.3	1.267	68.6	8.6	7.75	19.881	21.432	16.389	40.4	24.0	31.8	15.4	2.07	0.53	32.2	8.2	23.6
263	163.9	1.272	68.6	8.6	7.76	19.955	21.377	16.329	40.3	24.0	31.7	15.4	2.06	0.53	32.2	8.2	23.6
264	163.7	1.275	68.6	8.6	7.77	20.002	21.340	16.289	40.3	24.0	31.7	15.4	2.06	0.53	32.2	8.1	23.6

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. U-2412B

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project 39406.1.1 **County** GUILFORD **Owner**

Date: Sampled 3/22/13 **Received** 5/28/13 **Reported** 5/30/13

Sampled from **By** NEIL ROBERSON

Submitted by SURIYATI B S 1995 **Standard Specifications**

785846 TO 785848
6/12/13

TEST RESULTS

Proj. Sample No.		ST-4#1	ST-4#2	ST-4#3			
Lab. Sample No.		785846	785847	785848			
Retained #4 Sieve	%	-	3	-			
Passing #10 Sieve	%	98	90	90			
Passing #40 Sieve	%	94	83	83			
Passing #200 Sieve	%	77	63	65			

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	8.7	14.1	14.1			
Fine Sand Ret - #270	%	18.3	24.2	21.0			
Silt 0.05 - 0.005 mm	%	38.7	43.5	46.8			
Clay < 0.005 mm	%	34.3	18.1	18.1			
T-#		T-5674	T-5674	T-5674			
Specific Gravity		2.834	2.882	2.88			

L. L.		49	42	40			
P. I.		12	4	7			
AASHTO Classification		A-7-5(12)	A-5(3)	A-4(5)			
Station		405+70	405+70	405+70			
Offset		3' RT	3' RT	3' RT			
Alignment		L	L	L			
Location							
Depth (Ft)		35.00	35.00	35.00			
	to	37.00	37.00	37.00			
Final Moistures	%	43.47	27.81	24.77			

cc: GREG BODENHEIMER
K J KIM
SURIYATI, B S

Soils Engineer

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	23.50	25.34	**Plastic Limits:**	0	
Dry Density (pcf):	97.85	106.56	**Plasticity Index (%):**	0	
Saturation (%):	81.75	107.67			
Void Ratio:	0.8165	0.6681	**Specific Gravity:**	2.853	Measured

Soil Description: Tannish orange colored clayey silt; a little brittle and dry.

Project Number: 39406.1.1 **Depth:** 35.0 - 37.0 ft **Remarks:**

Sample Number: ST-4 **Boring Number:** Solid Height 0.55147 inches ; Est. Blows/Ft= NA

Project: U-2412B

Client: T-5674

Location: Guilford County (Sta. 405 + 70)

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	23.50	25.34	**Plastic Limits:**	0	
Dry Density (pcf):	97.85	106.56	**Plasticity Index (%):**	0	
Saturation (%):	81.75	107.67			
Void Ratio:	0.8165	0.6681	**Specific Gravity:**	2.853	Measured

Soil Description: Tannish orange colored clayey silt; a little brittle and dry.

Project Number: 39406.1.1 **Depth:** 35.0 - 37.0 ft **Remarks:**

Sample Number: ST-4 **Boring Number:** Solid Height 0.55147 inches ; Est. Blows/Ft= NA

Project: U-2412B

Client: T-5674

Location: Guilford County (Sta. 405 + 70)

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	23.50	25.34	**Plastic Limits:**	0	
Dry Density (pcf):	97.85	106.56	**Plasticity Index (%):**	0	
Saturation (%):	81.75	107.67			
Void Ratio:	0.8165	0.6681	**Specific Gravity:**	2.853	Measured

Soil Description: Tannish orange colored clayey silt; a little brittle and dry.

Project Number: 39406.1.1 **Depth:** 35.0 - 37.0 ft **Remarks:**

Sample Number: ST-4 **Boring Number:** Solid Height 0.55147 inches ; Est. Blows/Ft= NA

Project: U-2412B

Client: T-5674

Location: Guilford County (Sta. 405 + 70)

Consolidation Test Results
Summary

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County (Sta. 405 + 70)
Job Number: T-5674

Sample Number: ST-4
Boring Number:
Depth: 35.0 - 37.0 ft
Sample Type: Undisturbed

Soil Description:
Tannish orange colored clayey silt; a little brittle and dry.
Remarks:
Solid Height 0.55147 inches ; Est. Blows/Ft= NA

Test Number:
Test Date:

Index	Load Sequence (tsf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	1.0011	0.4500	0.00	0.8165	0.000		0.000	
1	0.063	0.0021	0.9990	0.4479	0.21	0.8127	0.207		3730.691	
2	0.125	0.0044	0.9967	0.4456	0.44	0.8085	1.440		533.820	
3	0.250	0.0086	0.9925	0.4414	0.86	0.8009	1.082		704.470	
4	0.500	0.0151	0.9860	0.4349	1.51	0.7891	0.694		1083.360	
5	1.000	0.0232	0.9779	0.4268	2.32	0.7744	2.250		328.878	
6	2.000	0.0359	0.9652	0.4141	3.59	0.7514	0.918		785.016	
7	4.000	0.0577	0.9434	0.3923	5.76	0.7118	0.879		783.576	
8	2.000	0.0556	0.9455	0.3944	5.55	0.7156	0.000		0.000	
9	1.000	0.0519	0.9492	0.3981	5.18	0.7223	0.000		0.000	
10	0.500	0.0477	0.9534	0.4023	4.76	0.7300	0.000		0.000	
11	1.000	0.0495	0.9516	0.4005	4.94	0.7267	0.000		0.000	
12	2.000	0.0532	0.9479	0.3968	5.31	0.7200	0.000		0.000	
13	4.000	0.0604	0.9407	0.3896	6.03	0.7069	0.000		0.000	
14	8.000	0.0889	0.9122	0.3611	8.88	0.6552	2.441		263.779	
15	16.000	0.1247	0.8764	0.3253	12.46	0.5902	2.441		243.481	
16	4.000	0.1194	0.8817	0.3306	11.93	0.5999	0.000		0.000	
17	0.016	0.0818	0.9193	0.3682	8.17	0.6681	0.000		0.000	

Tested By: **Checked By:**

Consolidation Test
Consolidation Specimen Information

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County (Sta. 405 + 70)
Job Number: T-5674 **Test Date:**

Sample Number: ST-4 **Soil Description:**
Boring Number: Tannish orange colored clayey silt; a little brittle and dry.
Depth: 35.0 - 37.0 ft **Remarks:**
Sample Type: Undisturbed Solid Height 0.55147 inches ; Est. Blows/Ft= NA

Test Number:
Liquid Limit: 0.0000 **Initial Void Ratio:** 0.8165 **Initial Height (in):** 1.0011
Plastic Limit: 0.0000 **Plasticity Index (%):** 0.0000 **Initial Diameter (in):** 2.4998
Specific Gravity: 2.8530 Measured **Weight of Ring (g):** 111.1200

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	155.86	158.18
Dry Soil + Container (g)	126.20	126.20
Weight of Container (g)	0.00	0.00
Moisture Content (%)	23.50	25.34
Void Ratio	0.8165	0.6681
Saturation (%)	81.75	107.67
Dry Density (pcf)	97.85	106.56

Tested By: **Checked By:**

ncdot

Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date

Tested By:

Effective Stress at Maximum Deviator Stress Criterion

Deviator Stress Vs. Axial Strain

Initial	Specimen A	B	C	D
Water Content (%)	39.3	24.8	22.9	
Dry Density (pcf)	77.1	101.6	104.3	
Saturation (%)	86.10	92.47	91.21	
Void Ratio	1.288	0.767	0.719	
Diameter (in)	2.848	2.865	2.863	
Height (in)	5.939	5.900	6.138	
Specific Gravity	2.83	2.88	2.88	
Liquid Limit	0	0	0	
Plastic Limit	0	0	0	
After Consolidation	**A**	**B**	**C**	**D**
B-Value	0.00	0.00	0.00	
Water Content (%)	38.8	23.6	21.1	
Dry Density (pcf)	78.19	103.62	107.81	
Saturation (%)	100.00	100.00	100.00	
Void Ratio	1.263	0.736	0.668	
Effective Stress (psi)	9.0	18.0	36.0	
Back Press. (psi)	50.5	50.2	50.5	
Rate of Strain	0.009	0.009	0.009	

Maximium Deviator Stress Criterion	
C (psi)	0.0
C' (psi)	0.0
Ø (deg)	0.0
Ø' (deg)	0.0

After Shear	A	B	C	D
σ'1 at Failure (psi)	12.56	65.95	102.32	
σ'3 at Failure (psi)	4.18	16.91	28.17	

Project:	U-2412B	N/A	N/A	N/A	N/A
Location:	Guilford County (Sta. 405+70)				
Project Number:	39406.1.1				
Boring Number:	0				
Sample Number:	ST-4				
Depth:	35.0 - 37.0 ft				
Sample Type:	Undisturbed	Failure Photographs			
Description:					
Test Type	Consolidated Undrained				
Remarks	Research				

ncdot

Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date:

Tested By:

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)

Change in Pore Pressure vs. Axial Strain

Deviator Stress vs. Axial Strain

Principal Stress Ratio vs. Axial Strain

Change in Pore Pressure vs. Axial Strain

Mohr Stress Circles at Maximum Deviator Stress Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at Maximum Principal Stress Ratio Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at 15% Axial Strain Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)
Q (psi)
80.0
60.0
40.0
20.0
0.0
0.0
20.0
40.0
60.0
80.0
P' (psi)
Specimen A
Specimen B
Specimen C
Specimen D
Tangent Line

Stress Paths (Total)
(C' = 0.0 Ø' = 0.0)
Q (psi)
80.0
60.0
40.0
20.0
0.0
0.0
20.0
40.0
60.0
80.0
P (psi)

Specimen A Shear Data

CU Triaxial Test

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File Location
T-5674.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5674
Sample Location: Guilford County (Sta. 405+70)
Sample Description: Tan-reddish colored clay
Remarks: Sample was soft and brittle.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.8340001
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.848	2.848	
Height (in)	5.939	5.859	
Weight (grams)	1067.00		1099.00
Moisture (%)	39.30		43.47
Dry Density (pcf)	77.14	78.19	
Saturation (%)	86.10	100.00	
Void Ratio	1.288	1.263	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 59.500
Effective Confining Stress (psi): 9.0
Corrected Peak Deviator Stress (psi): 8.385 at reading number: 163

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	16.3	0.188	50.5	0.0	6.37	0.000	0.000	0.000	9.0	9.0	9.0	9.0	1.00	0.00	9.0	0.0	9.0
1	29.2	0.193	51.2	0.7	6.38	0.078	2.029	1.997	11.0	9.0	10.3	8.3	1.24	0.35	10.0	1.0	9.3
2	34.1	0.197	51.6	1.1	6.38	0.157	2.796	2.731	11.8	9.0	10.7	7.9	1.34	0.40	10.4	1.4	9.3
3	36.1	0.202	51.8	1.4	6.39	0.243	3.107	3.005	12.0	9.0	10.7	7.7	1.39	0.46	10.5	1.5	9.2
4	38.3	0.206	52.1	1.6	6.39	0.314	3.454	3.322	12.4	9.0	10.7	7.4	1.45	0.50	10.7	1.7	9.0
5	39.3	0.211	52.3	1.9	6.39	0.385	3.618	3.456	12.5	9.0	10.6	7.2	1.48	0.54	10.8	1.7	8.9
6	39.5	0.214	52.5	2.0	6.40	0.439	3.637	3.451	12.5	9.0	10.5	7.0	1.49	0.58	10.8	1.7	8.8
7	42.1	0.217	52.7	2.2	6.40	0.502	4.057	3.843	12.9	9.0	10.7	6.8	1.56	0.57	11.0	1.9	8.7
8	43.5	0.222	52.9	2.4	6.41	0.573	4.276	4.031	13.1	9.0	10.7	6.6	1.61	0.60	11.0	2.0	8.6
9	44.4	0.226	53.0	2.6	6.41	0.651	4.404	4.124	13.2	9.0	10.6	6.5	1.64	0.62	11.1	2.1	8.5
10	46.0	0.230	53.1	2.7	6.42	0.722	4.660	4.348	13.4	9.0	10.7	6.4	1.68	0.62	11.2	2.2	8.5
11	46.6	0.234	53.3	2.8	6.42	0.793	4.752	4.408	13.4	9.0	10.6	6.2	1.71	0.64	11.2	2.2	8.4
12	47.0	0.239	53.4	2.9	6.43	0.871	4.825	4.446	13.5	9.0	10.5	6.1	1.73	0.66	11.3	2.2	8.3
13	47.8	0.243	53.5	3.1	6.43	0.942	4.953	4.542	13.6	9.0	10.5	6.0	1.76	0.67	11.3	2.3	8.2
14	48.9	0.247	53.6	3.2	6.44	1.012	5.117	4.674	13.7	9.0	10.5	5.9	1.80	0.68	11.4	2.3	8.2
15	49.0	0.251	53.7	3.3	6.44	1.083	5.135	4.661	13.7	9.0	10.4	5.8	1.81	0.70	11.4	2.3	8.1
16	49.9	0.255	53.8	3.4	6.44	1.146	5.281	4.778	13.8	9.0	10.5	5.7	1.84	0.70	11.4	2.4	8.1
17	50.4	0.258	53.9	3.4	6.45	1.201	5.355	4.827	13.9	9.0	10.4	5.6	1.86	0.71	11.4	2.4	8.0
18	51.7	0.263	54.0	3.5	6.45	1.271	5.556	4.994	14.0	9.0	10.5	5.5	1.91	0.71	11.5	2.5	8.0

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	51.8	0.267	54.1	3.6	6.46	1.342	5.574	4.981	14.0	9.0	10.4	5.4	1.91	0.72	11.5	2.5	7.9
20	52.3	0.271	54.1	3.7	6.46	1.412	5.647	5.022	14.1	9.0	10.4	5.4	1.94	0.73	11.5	2.5	7.9
21	52.9	0.274	54.2	3.7	6.47	1.475	5.738	5.084	14.1	9.0	10.4	5.3	1.96	0.74	11.6	2.5	7.8
22	53.3	0.279	54.3	3.8	6.47	1.546	5.811	5.125	14.2	9.0	10.4	5.2	1.98	0.74	11.6	2.6	7.8
23	54.0	0.283	54.4	3.9	6.47	1.616	5.921	5.201	14.2	9.0	10.4	5.1	2.01	0.75	11.6	2.6	7.8
24	53.8	0.287	54.4	3.9	6.48	1.695	5.885	5.130	14.2	9.0	10.2	5.1	2.01	0.77	11.6	2.6	7.7
25	54.4	0.291	54.5	4.0	6.48	1.766	5.976	5.188	14.2	9.0	10.2	5.0	2.03	0.77	11.6	2.6	7.6
26	55.1	0.296	54.5	4.0	6.49	1.844	6.086	5.261	14.3	9.0	10.3	5.0	2.05	0.77	11.7	2.6	7.6
27	55.8	0.301	54.6	4.1	6.50	1.923	6.195	5.334	14.4	9.0	10.3	4.9	2.08	0.77	11.7	2.7	7.6
28	56.0	0.306	54.6	4.1	6.50	2.009	6.232	5.334	14.4	9.0	10.2	4.9	2.09	0.78	11.7	2.7	7.6
29	56.8	0.310	54.7	4.2	6.51	2.087	6.360	5.454	14.5	9.0	10.3	4.8	2.13	0.77	11.8	2.7	7.6
30	56.8	0.315	54.7	4.2	6.51	2.166	6.360	5.449	14.5	9.0	10.2	4.8	2.14	0.78	11.8	2.7	7.5
31	57.4	0.320	54.8	4.3	6.52	2.244	6.451	5.534	14.6	9.0	10.3	4.7	2.17	0.78	11.8	2.8	7.5
32	58.2	0.324	54.8	4.3	6.52	2.323	6.579	5.654	14.7	9.0	10.4	4.7	2.20	0.77	11.9	2.8	7.5
33	57.5	0.329	54.8	4.4	6.53	2.401	6.469	5.542	14.6	9.0	10.2	4.7	2.18	0.79	11.8	2.8	7.4
34	57.7	0.333	54.9	4.4	6.53	2.480	6.506	5.572	14.6	9.0	10.2	4.6	2.21	0.79	11.8	2.8	7.4
35	58.4	0.337	54.9	4.4	6.54	2.550	6.616	5.674	14.7	9.0	10.3	4.6	2.24	0.78	11.9	2.8	7.4
36	58.6	0.342	54.9	4.5	6.54	2.629	6.634	5.687	14.7	9.0	10.2	4.6	2.25	0.79	11.9	2.8	7.4
37	59.3	0.346	55.0	4.5	6.55	2.699	6.743	5.789	14.8	9.0	10.3	4.5	2.28	0.78	11.9	2.9	7.4
38	59.3	0.351	55.0	4.5	6.55	2.778	6.743	5.784	14.8	9.0	10.3	4.5	2.28	0.78	11.9	2.9	7.4
39	59.6	0.355	55.1	4.6	6.56	2.856	6.798	5.832	14.9	9.0	10.3	4.4	2.31	0.79	11.9	2.9	7.4
40	59.6	0.360	55.1	4.6	6.56	2.935	6.798	5.826	14.9	9.0	10.3	4.4	2.31	0.79	11.9	2.9	7.4
41	59.6	0.364	55.1	4.6	6.57	3.005	6.798	5.821	14.9	9.0	10.2	4.4	2.33	0.80	11.9	2.9	7.3
42	59.6	0.369	55.1	4.6	6.57	3.084	6.798	5.816	14.9	9.0	10.2	4.4	2.33	0.80	11.9	2.9	7.3
43	60.3	0.373	55.1	4.7	6.58	3.162	6.908	5.917	15.0	9.0	10.3	4.4	2.36	0.79	12.0	3.0	7.3
44	60.8	0.378	55.2	4.7	6.58	3.241	6.981	5.982	15.0	9.0	10.3	4.3	2.38	0.79	12.0	3.0	7.3
45	61.2	0.382	55.2	4.7	6.59	3.311	7.054	6.048	15.1	9.0	10.3	4.3	2.41	0.78	12.1	3.0	7.3
46	61.6	0.387	55.2	4.8	6.59	3.390	7.109	6.096	15.1	9.0	10.4	4.3	2.43	0.78	12.1	3.0	7.3
47	62.2	0.391	55.2	4.8	6.60	3.468	7.200	6.178	15.2	9.0	10.4	4.3	2.45	0.77	12.1	3.1	7.4
48	61.9	0.395	55.3	4.8	6.60	3.539	7.164	6.138	15.2	9.0	10.4	4.2	2.45	0.78	12.1	3.1	7.3
49	61.7	0.400	55.3	4.8	6.61	3.617	7.127	6.097	15.1	9.0	10.3	4.2	2.45	0.79	12.1	3.0	7.3
50	62.5	0.405	55.3	4.9	6.61	3.696	7.255	6.215	15.2	9.0	10.4	4.2	2.49	0.78	12.1	3.1	7.3
51	63.4	0.409	55.3	4.9	6.62	3.774	7.401	6.350	15.4	9.0	10.5	4.2	2.52	0.76	12.2	3.2	7.4
52	63.2	0.413	55.4	4.9	6.62	3.845	7.365	6.309	15.3	9.0	10.5	4.1	2.52	0.77	12.2	3.2	7.3
53	63.4	0.418	55.4	4.9	6.63	3.923	7.401	6.338	15.4	9.0	10.5	4.1	2.53	0.77	12.2	3.2	7.3
54	63.4	0.422	55.4	4.9	6.64	3.994	7.401	6.333	15.4	9.0	10.5	4.1	2.54	0.78	12.2	3.2	7.3
55	63.4	0.427	55.4	4.9	6.64	4.073	7.401	6.327	15.4	9.0	10.4	4.1	2.54	0.78	12.2	3.2	7.3
56	63.4	0.431	55.4	4.9	6.65	4.143	7.401	6.322	15.4	9.0	10.4	4.1	2.55	0.78	12.2	3.2	7.3
57	64.1	0.435	55.4	4.9	6.65	4.222	7.511	6.421	15.5	9.0	10.5	4.1	2.57	0.77	12.2	3.2	7.3
58	64.5	0.440	55.4	5.0	6.66	4.292	7.566	6.469	15.5	9.0	10.5	4.1	2.59	0.77	12.3	3.2	7.3
59	64.5	0.444	55.4	5.0	6.66	4.363	7.566	6.463	15.5	9.0	10.5	4.1	2.59	0.77	12.3	3.2	7.3

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	65.1	0.448	55.5	5.0	6.67	4.441	7.657	6.545	15.6	9.0	10.6	4.0	2.62	0.76	12.3	3.3	7.3
61	65.1	0.452	55.5	5.0	6.67	4.512	7.657	6.539	15.6	9.0	10.6	4.0	2.62	0.76	12.3	3.3	7.3
62	65.1	0.457	55.5	5.0	6.68	4.590	7.657	6.533	15.6	9.0	10.5	4.0	2.63	0.77	12.3	3.3	7.3
63	65.1	0.461	55.5	5.0	6.68	4.661	7.657	6.528	15.6	9.0	10.5	4.0	2.63	0.77	12.3	3.3	7.3
64	65.2	0.466	55.5	5.0	6.69	4.740	7.676	6.539	15.6	9.0	10.5	4.0	2.63	0.77	12.3	3.3	7.3
65	65.7	0.470	55.5	5.1	6.69	4.810	7.749	6.603	15.6	9.0	10.6	4.0	2.66	0.77	12.3	3.3	7.3
66	65.2	0.474	55.5	5.1	6.70	4.889	7.676	6.528	15.6	9.0	10.5	4.0	2.64	0.78	12.3	3.3	7.2
67	65.3	0.479	55.5	5.1	6.70	4.959	7.694	6.540	15.6	9.0	10.5	4.0	2.65	0.77	12.3	3.3	7.2
68	65.3	0.483	55.5	5.1	6.71	5.038	7.694	6.534	15.6	9.0	10.5	4.0	2.64	0.77	12.3	3.3	7.2
69	64.6	0.487	55.6	5.1	6.71	5.108	7.584	6.424	15.5	9.0	10.4	3.9	2.63	0.79	12.2	3.2	7.2
70	65.9	0.492	55.6	5.1	6.72	5.187	7.785	6.609	15.6	9.0	10.6	3.9	2.68	0.77	12.3	3.3	7.2
71	66.2	0.497	55.6	5.1	6.72	5.265	7.840	6.655	15.7	9.0	10.6	3.9	2.69	0.76	12.4	3.3	7.3
72	65.9	0.502	55.6	5.1	6.73	5.352	7.785	6.596	15.6	9.0	10.5	3.9	2.67	0.77	12.3	3.3	7.2
73	66.2	0.506	55.6	5.1	6.74	5.430	7.840	6.642	15.7	9.0	10.6	3.9	2.70	0.77	12.4	3.3	7.2
74	66.6	0.511	55.6	5.1	6.74	5.509	7.895	6.687	15.7	9.0	10.6	3.9	2.71	0.77	12.4	3.3	7.3
75	67.3	0.515	55.6	5.1	6.75	5.587	8.004	6.785	15.8	9.0	10.7	3.9	2.73	0.75	12.4	3.4	7.3
76	66.9	0.520	55.6	5.1	6.75	5.666	7.950	6.727	15.8	9.0	10.6	3.9	2.72	0.76	12.4	3.4	7.3
77	67.3	0.525	55.6	5.1	6.76	5.744	8.004	6.772	15.8	9.0	10.7	3.9	2.73	0.76	12.4	3.4	7.3
78	67.6	0.529	55.6	5.1	6.76	5.815	8.059	6.818	15.9	9.0	10.7	3.9	2.76	0.76	12.4	3.4	7.3
79	67.6	0.533	55.6	5.1	6.77	5.893	8.059	6.812	15.8	9.0	10.7	3.9	2.75	0.76	12.4	3.4	7.3
80	68.0	0.538	55.6	5.1	6.77	5.972	8.114	6.857	15.9	9.0	10.7	3.9	2.77	0.75	12.5	3.4	7.3
81	68.0	0.542	55.6	5.1	6.78	6.042	8.114	6.851	15.9	9.0	10.7	3.9	2.76	0.75	12.5	3.4	7.3
82	68.8	0.547	55.6	5.1	6.79	6.121	8.242	6.965	16.0	9.0	10.8	3.9	2.79	0.74	12.5	3.5	7.4
83	68.8	0.551	55.6	5.1	6.79	6.199	8.242	6.959	16.0	9.0	10.8	3.9	2.79	0.74	12.5	3.5	7.4
84	69.3	0.555	55.6	5.1	6.80	6.270	8.315	7.021	16.1	9.0	10.9	3.9	2.81	0.73	12.5	3.5	7.4
85	69.7	0.560	55.6	5.1	6.80	6.348	8.388	7.083	16.1	9.0	11.0	3.9	2.82	0.73	12.6	3.5	7.4
86	69.5	0.565	55.6	5.1	6.81	6.427	8.352	7.042	16.1	9.0	10.9	3.9	2.81	0.73	12.6	3.5	7.4
87	70.1	0.569	55.6	5.1	6.81	6.505	8.443	7.121	16.2	9.0	11.0	3.9	2.83	0.72	12.6	3.6	7.4
88	69.5	0.574	55.6	5.1	6.82	6.584	8.352	7.029	16.1	9.0	10.9	3.9	2.81	0.73	12.5	3.5	7.4
89	70.7	0.578	55.6	5.1	6.82	6.662	8.534	7.193	16.2	9.0	11.1	3.9	2.85	0.72	12.6	3.6	7.5
90	70.7	0.583	55.6	5.1	6.83	6.733	8.534	7.187	16.2	9.0	11.1	3.9	2.85	0.72	12.6	3.6	7.5
91	71.1	0.587	55.6	5.2	6.84	6.811	8.608	7.249	16.3	9.0	11.1	3.9	2.88	0.71	12.7	3.6	7.5
92	71.8	0.591	55.6	5.2	6.84	6.882	8.717	7.345	16.4	9.0	11.2	3.9	2.91	0.71	12.7	3.7	7.5
93	71.4	0.596	55.6	5.2	6.85	6.960	8.644	7.270	16.3	9.0	11.1	3.9	2.89	0.71	12.7	3.6	7.5
94	71.4	0.600	55.6	5.1	6.85	7.039	8.644	7.263	16.3	9.0	11.1	3.9	2.87	0.71	12.7	3.6	7.5
95	71.5	0.605	55.6	5.1	6.86	7.109	8.662	7.274	16.3	9.0	11.2	3.9	2.87	0.71	12.7	3.6	7.5
96	71.6	0.609	55.6	5.1	6.86	7.188	8.681	7.284	16.3	9.0	11.2	3.9	2.88	0.71	12.7	3.6	7.5
97	72.2	0.613	55.6	5.2	6.87	7.258	8.772	7.363	16.4	9.0	11.2	3.9	2.91	0.70	12.7	3.7	7.5
98	72.2	0.618	55.6	5.2	6.87	7.337	8.772	7.356	16.4	9.0	11.2	3.9	2.91	0.70	12.7	3.7	7.5
99	71.7	0.622	55.6	5.2	6.88	7.408	8.699	7.282	16.3	9.0	11.1	3.9	2.89	0.71	12.7	3.6	7.5
100	71.8	0.627	55.6	5.1	6.89	7.486	8.717	7.292	16.3	9.0	11.2	3.9	2.88	0.71	12.7	3.6	7.5

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	71.7	0.631	55.6	5.1	6.89	7.557	8.699	7.269	16.3	9.0	11.2	3.9	2.87	0.71	12.7	3.6	7.5
102	72.2	0.635	55.6	5.1	6.90	7.627	8.772	7.330	16.4	9.0	11.2	3.9	2.89	0.70	12.7	3.7	7.5
103	72.6	0.639	55.6	5.1	6.90	7.698	8.845	7.392	16.4	9.0	11.3	3.9	2.90	0.70	12.7	3.7	7.6
104	73.1	0.644	55.6	5.1	6.91	7.776	8.918	7.452	16.5	9.0	11.3	3.9	2.92	0.69	12.8	3.7	7.6
105	72.9	0.648	55.6	5.1	6.91	7.847	8.882	7.412	16.4	9.0	11.3	3.9	2.91	0.69	12.7	3.7	7.6
106	72.6	0.652	55.6	5.1	6.92	7.918	8.845	7.372	16.4	9.0	11.3	3.9	2.90	0.70	12.7	3.7	7.6
107	73.1	0.657	55.6	5.1	6.92	7.996	8.918	7.433	16.5	9.0	11.3	3.9	2.91	0.69	12.8	3.7	7.6
108	73.1	0.661	55.6	5.1	6.93	8.067	8.918	7.426	16.5	9.0	11.3	3.9	2.91	0.69	12.7	3.7	7.6
109	73.8	0.665	55.6	5.1	6.94	8.145	9.028	7.520	16.6	9.0	11.4	3.9	2.94	0.68	12.8	3.8	7.6
110	73.2	0.669	55.6	5.1	6.94	8.216	8.936	7.430	16.5	9.0	11.3	3.9	2.91	0.69	12.7	3.7	7.6
111	74.2	0.674	55.6	5.1	6.95	8.294	9.083	7.557	16.6	9.0	11.4	3.9	2.95	0.68	12.8	3.8	7.7
112	74.4	0.678	55.6	5.1	6.95	8.365	9.119	7.584	16.6	9.0	11.5	3.9	2.95	0.68	12.8	3.8	7.7
113	74.7	0.683	55.6	5.1	6.96	8.443	9.174	7.627	16.7	9.0	11.5	3.9	2.95	0.67	12.8	3.8	7.7
114	74.3	0.687	55.6	5.1	6.96	8.522	9.101	7.553	16.6	9.0	11.5	3.9	2.93	0.68	12.8	3.8	7.7
115	74.6	0.691	55.6	5.1	6.97	8.592	9.156	7.597	16.6	9.0	11.5	3.9	2.94	0.67	12.8	3.8	7.7
116	75.4	0.696	55.6	5.1	6.97	8.671	9.284	7.706	16.7	9.0	11.6	3.9	2.97	0.66	12.9	3.9	7.8
117	74.3	0.701	55.6	5.1	6.98	8.749	9.101	7.532	16.6	9.0	11.4	3.9	2.92	0.68	12.8	3.8	7.7
118	75.2	0.705	55.6	5.1	6.99	8.828	9.247	7.658	16.7	9.0	11.6	3.9	2.96	0.67	12.9	3.8	7.7
119	75.2	0.710	55.6	5.1	6.99	8.906	9.247	7.651	16.7	9.0	11.6	3.9	2.95	0.67	12.9	3.8	7.7
120	75.4	0.714	55.6	5.1	7.00	8.977	9.284	7.678	16.7	9.0	11.6	3.9	2.95	0.66	12.9	3.8	7.8
121	75.7	0.719	55.6	5.1	7.00	9.055	9.320	7.704	16.7	9.0	11.6	3.9	2.95	0.66	12.9	3.9	7.8
122	75.8	0.723	55.6	5.1	7.01	9.134	9.339	7.713	16.7	9.0	11.7	3.9	2.96	0.66	12.9	3.9	7.8
123	75.2	0.727	55.6	5.1	7.02	9.205	9.247	7.624	16.7	9.0	11.6	3.9	2.93	0.67	12.8	3.8	7.8
124	75.8	0.732	55.6	5.1	7.02	9.291	9.339	7.698	16.7	9.0	11.6	3.9	2.95	0.66	12.9	3.8	7.8
125	76.5	0.737	55.6	5.1	7.03	9.361	9.448	7.791	16.8	9.0	11.7	3.9	2.98	0.65	12.9	3.9	7.8
126	76.7	0.741	55.6	5.1	7.03	9.440	9.485	7.817	16.9	9.0	11.8	3.9	2.98	0.65	12.9	3.9	7.9
127	76.8	0.746	55.6	5.1	7.04	9.518	9.503	7.826	16.9	9.0	11.8	3.9	2.98	0.65	12.9	3.9	7.9
128	76.4	0.750	55.5	5.1	7.05	9.597	9.430	7.752	16.8	9.0	11.7	4.0	2.95	0.65	12.9	3.9	7.8
129	76.4	0.754	55.5	5.1	7.05	9.667	9.430	7.746	16.8	9.0	11.7	4.0	2.95	0.65	12.9	3.9	7.8
130	77.1	0.759	55.5	5.1	7.06	9.746	9.540	7.837	16.9	9.0	11.8	4.0	2.97	0.65	13.0	3.9	7.9
131	77.5	0.764	55.5	5.1	7.06	9.824	9.613	7.896	16.9	9.0	11.9	4.0	2.99	0.64	13.0	3.9	7.9
132	76.9	0.768	55.5	5.1	7.07	9.895	9.521	7.807	16.8	9.0	11.8	4.0	2.97	0.65	12.9	3.9	7.9
133	77.6	0.772	55.5	5.1	7.08	9.974	9.631	7.898	16.9	9.0	11.9	4.0	2.99	0.64	13.0	3.9	7.9
134	78.1	0.777	55.5	5.0	7.08	10.052	9.704	7.956	17.0	9.0	12.0	4.0	2.99	0.63	13.0	4.0	8.0
135	76.8	0.782	55.5	5.0	7.09	10.130	9.503	7.768	16.8	9.0	11.8	4.0	2.94	0.65	12.9	3.9	7.9
136	78.3	0.786	55.5	5.0	7.09	10.209	9.741	7.974	17.0	9.0	12.0	4.0	2.99	0.63	13.0	4.0	8.0
137	78.5	0.790	55.5	5.0	7.10	10.280	9.759	7.983	17.0	9.0	12.0	4.0	2.99	0.63	13.0	4.0	8.0
138	79.2	0.795	55.5	5.0	7.11	10.358	9.869	8.074	17.1	9.0	12.1	4.0	3.00	0.62	13.1	4.0	8.1
139	78.8	0.800	55.5	5.0	7.11	10.436	9.814	8.017	17.1	9.0	12.0	4.0	2.99	0.62	13.0	4.0	8.0
140	79.4	0.804	55.5	5.0	7.12	10.515	9.905	8.091	17.1	9.0	12.1	4.0	3.01	0.62	13.1	4.0	8.1
141	80.2	0.808	55.5	5.0	7.12	10.586	10.033	8.198	17.2	9.0	12.2	4.0	3.03	0.61	13.1	4.1	8.1

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	79.0	0.813	55.5	5.0	7.13	10.664	9.850	8.027	17.1	9.0	12.1	4.0	2.99	0.62	13.0	4.0	8.0
143	79.9	0.817	55.4	5.0	7.14	10.743	9.978	8.134	17.2	9.0	12.2	4.1	3.00	0.61	13.1	4.1	8.1
144	80.3	0.822	55.4	5.0	7.14	10.813	10.051	8.192	17.2	9.0	12.3	4.1	3.02	0.61	13.1	4.1	8.2
145	80.1	0.826	55.4	5.0	7.15	10.884	10.015	8.152	17.2	9.0	12.2	4.1	3.01	0.61	13.1	4.1	8.1
146	79.9	0.830	55.4	5.0	7.15	10.962	9.978	8.112	17.1	9.0	12.2	4.1	3.00	0.61	13.1	4.1	8.1
147	80.0	0.834	55.4	5.0	7.16	11.033	9.996	8.121	17.2	9.0	12.2	4.1	3.00	0.61	13.1	4.1	8.1
148	80.4	0.839	55.4	4.9	7.17	11.103	10.070	8.179	17.2	9.0	12.3	4.1	3.00	0.60	13.1	4.1	8.2
149	80.2	0.843	55.4	4.9	7.17	11.182	10.033	8.139	17.2	9.0	12.2	4.1	2.99	0.61	13.1	4.1	8.2
150	80.7	0.847	55.4	4.9	7.18	11.253	10.106	8.196	17.2	9.0	12.3	4.1	3.00	0.60	13.1	4.1	8.2
151	80.8	0.851	55.4	4.9	7.18	11.323	10.124	8.205	17.2	9.0	12.3	4.1	3.01	0.60	13.1	4.1	8.2
152	80.4	0.856	55.4	4.9	7.19	11.402	10.070	8.149	17.2	9.0	12.3	4.1	2.98	0.60	13.1	4.1	8.2
153	80.2	0.860	55.4	4.9	7.20	11.472	10.033	8.109	17.1	9.0	12.2	4.1	2.97	0.61	13.1	4.1	8.2
154	80.4	0.865	55.4	4.9	7.20	11.551	10.070	8.134	17.2	9.0	12.3	4.1	2.97	0.60	13.1	4.1	8.2
155	80.3	0.869	55.4	4.9	7.21	11.621	10.051	8.111	17.1	9.0	12.2	4.1	2.97	0.61	13.1	4.1	8.2
156	81.0	0.874	55.4	4.9	7.21	11.700	10.161	8.200	17.2	9.0	12.3	4.1	2.99	0.60	13.1	4.1	8.2
157	80.8	0.878	55.4	4.9	7.22	11.778	10.124	8.159	17.2	9.0	12.3	4.1	2.97	0.60	13.1	4.1	8.2
158	81.5	0.883	55.4	4.9	7.23	11.857	10.234	8.248	17.3	9.0	12.4	4.1	2.99	0.59	13.2	4.1	8.3
159	81.0	0.887	55.4	4.9	7.23	11.927	10.161	8.176	17.2	9.0	12.3	4.1	2.97	0.60	13.1	4.1	8.2
160	81.4	0.891	55.4	4.9	7.24	12.006	10.216	8.217	17.3	9.0	12.4	4.1	2.98	0.59	13.1	4.1	8.3
161	81.6	0.896	55.4	4.9	7.25	12.084	10.252	8.241	17.3	9.0	12.4	4.1	2.99	0.59	13.2	4.1	8.3
162	82.1	0.901	55.3	4.9	7.25	12.163	10.325	8.297	17.3	9.0	12.5	4.2	2.99	0.59	13.2	4.1	8.3
163	82.8	0.905	55.3	4.9	7.26	12.241	10.435	8.385	17.4	9.0	12.6	4.2	3.01	0.58	13.2	4.2	8.4
164	82.2	0.909	55.3	4.9	7.26	12.312	10.344	7.883	16.9	9.0	12.1	4.2	2.89	0.62	13.0	3.9	8.1
165	82.7	0.914	55.3	4.9	7.27	12.390	10.417	8.354	17.4	9.0	12.5	4.2	3.00	0.58	13.2	4.2	8.4
166	82.8	0.919	55.3	4.8	7.28	12.469	10.435	7.941	17.0	9.0	12.1	4.2	2.89	0.61	13.0	4.0	8.2
167	82.9	0.923	55.3	4.8	7.28	12.547	10.453	7.946	17.0	9.0	12.2	4.2	2.89	0.61	13.0	4.0	8.2
168	82.1	0.928	55.3	4.8	7.29	12.626	10.325	7.824	16.9	9.0	12.0	4.2	2.86	0.62	12.9	3.9	8.1
169	82.8	0.932	55.3	4.8	7.30	12.696	10.435	7.910	16.9	9.0	12.1	4.2	2.88	0.61	13.0	4.0	8.2
170	83.4	0.937	55.3	4.8	7.30	12.775	10.526	7.979	17.0	9.0	12.2	4.2	2.88	0.60	13.0	4.0	8.2
171	83.6	0.941	55.3	4.8	7.31	12.853	10.563	8.000	17.0	9.0	12.2	4.2	2.89	0.60	13.0	4.0	8.2
172	83.4	0.946	55.3	4.8	7.32	12.932	10.526	7.957	17.0	9.0	12.2	4.2	2.88	0.60	13.0	4.0	8.2
173	83.8	0.950	55.2	4.8	7.32	13.002	10.600	8.011	17.0	9.0	12.3	4.3	2.88	0.60	13.0	4.0	8.3
174	83.5	0.954	55.2	4.8	7.33	13.081	10.545	7.952	17.0	9.0	12.2	4.3	2.86	0.60	13.0	4.0	8.2
175	83.4	0.959	55.2	4.8	7.34	13.159	10.526	7.925	17.0	9.0	12.2	4.3	2.86	0.60	13.0	4.0	8.2
176	83.1	0.964	55.2	4.8	7.34	13.238	10.490	7.883	16.9	9.0	12.1	4.3	2.85	0.60	13.0	3.9	8.2
177	83.9	0.968	55.2	4.8	7.35	13.308	10.618	7.984	17.0	9.0	12.3	4.3	2.87	0.60	13.0	4.0	8.3
178	83.9	0.972	55.2	4.7	7.35	13.387	10.618	7.973	17.0	9.0	12.3	4.3	2.86	0.59	13.0	4.0	8.3
179	84.3	0.977	55.2	4.7	7.36	13.465	10.673	8.009	17.0	9.0	12.3	4.3	2.86	0.59	13.0	4.0	8.3
180	83.9	0.981	55.2	4.7	7.37	13.536	10.618	7.952	17.0	9.0	12.2	4.3	2.85	0.60	13.0	4.0	8.3
181	84.4	0.986	55.2	4.7	7.37	13.615	10.691	8.004	17.0	9.0	12.3	4.3	2.86	0.59	13.0	4.0	8.3
182	84.7	0.990	55.2	4.7	7.38	13.693	10.746	8.040	17.1	9.0	12.4	4.3	2.86	0.59	13.1	4.0	8.3

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	84.4	0.994	55.2	4.7	7.39	13.764	10.691	7.983	17.0	9.0	12.3	4.3	2.85	0.59	13.0	4.0	8.3
184	84.7	0.999	55.2	4.7	7.39	13.842	10.746	8.019	17.1	9.0	12.3	4.3	2.85	0.59	13.0	4.0	8.3
185	84.4	1.004	55.2	4.7	7.40	13.921	10.691	7.961	17.0	9.0	12.3	4.3	2.84	0.59	13.0	4.0	8.3
186	84.4	1.008	55.1	4.7	7.41	13.991	10.691	7.951	17.0	9.0	12.3	4.4	2.83	0.59	13.0	4.0	8.3
187	84.3	1.012	55.1	4.7	7.41	14.062	10.673	7.925	17.0	9.0	12.3	4.4	2.82	0.59	13.0	4.0	8.3
188	85.4	1.017	55.1	4.7	7.42	14.140	10.855	8.071	17.1	9.0	12.4	4.4	2.85	0.58	13.1	4.0	8.4
189	86.0	1.021	55.1	4.7	7.43	14.211	10.947	8.140	17.2	9.0	12.5	4.4	2.87	0.57	13.1	4.1	8.4
190	85.4	1.025	55.1	4.6	7.43	14.289	10.855	8.050	17.1	9.0	12.4	4.4	2.84	0.58	13.1	4.0	8.4
191	85.6	1.029	55.1	4.6	7.44	14.360	10.874	8.056	17.1	9.0	12.4	4.4	2.84	0.58	13.1	4.0	8.4
192	85.3	1.034	55.1	4.6	7.45	14.438	10.837	8.013	17.0	9.0	12.4	4.4	2.83	0.58	13.0	4.0	8.4
193	85.1	1.038	55.1	4.6	7.45	14.509	10.801	7.972	17.0	9.0	12.4	4.4	2.82	0.58	13.0	4.0	8.4
194	85.8	1.042	55.1	4.6	7.46	14.580	10.910	8.056	17.1	9.0	12.5	4.4	2.82	0.57	13.1	4.0	8.4
195	86.1	1.047	55.1	4.6	7.46	14.658	10.965	8.091	17.1	9.0	12.5	4.4	2.83	0.57	13.1	4.0	8.5
196	85.7	1.051	55.1	4.6	7.47	14.737	10.892	8.018	17.1	9.0	12.4	4.4	2.82	0.58	13.0	4.0	8.4
197	85.8	1.056	55.1	4.6	7.48	14.807	10.910	8.023	17.1	9.0	12.4	4.4	2.82	0.58	13.0	4.0	8.4
198	85.8	1.060	55.1	4.6	7.48	14.886	10.910	8.012	17.0	9.0	12.4	4.4	2.82	0.58	13.0	4.0	8.4
199	87.1	1.064	55.1	4.6	7.49	14.956	11.111	8.173	17.2	9.0	12.6	4.4	2.84	0.56	13.1	4.1	8.5
200	85.8	1.069	55.1	4.6	7.50	15.027	10.910	7.992	17.0	9.0	12.4	4.4	2.80	0.57	13.0	4.0	8.4
201	86.4	1.073	55.1	4.6	7.50	15.105	11.002	8.058	17.1	9.0	12.5	4.4	2.81	0.57	13.1	4.0	8.5
202	86.6	1.077	55.1	4.6	7.51	15.176	11.038	8.079	17.1	9.0	12.5	4.4	2.82	0.57	13.1	4.0	8.5
203	85.9	1.082	55.1	4.6	7.52	15.255	10.928	7.975	17.0	9.0	12.4	4.4	2.79	0.58	13.0	4.0	8.4
204	86.8	1.086	55.0	4.6	7.52	15.325	11.075	8.088	17.1	9.0	12.6	4.5	2.81	0.56	13.1	4.0	8.5
205	86.7	1.091	55.0	4.6	7.53	15.404	11.056	8.062	17.1	9.0	12.5	4.5	2.80	0.57	13.1	4.0	8.5
206	87.2	1.095	55.0	4.6	7.54	15.482	11.129	8.112	17.1	9.0	12.6	4.5	2.81	0.56	13.1	4.1	8.5
207	87.2	1.100	55.0	4.5	7.54	15.561	11.129	8.101	17.1	9.0	12.6	4.5	2.80	0.56	13.1	4.1	8.6
208	86.7	1.104	55.0	4.5	7.55	15.631	11.056	8.029	17.1	9.0	12.5	4.5	2.78	0.56	13.0	4.0	8.5
209	85.6	1.109	55.0	4.5	7.56	15.710	10.874	7.863	16.9	9.0	12.4	4.5	2.75	0.58	13.0	3.9	8.4
210	87.3	1.113	55.0	4.5	7.56	15.788	11.148	8.083	17.1	9.0	12.6	4.5	2.80	0.56	13.1	4.0	8.5
211	87.0	1.118	55.0	4.5	7.57	15.867	11.093	8.026	17.1	9.0	12.5	4.5	2.78	0.56	13.0	4.0	8.5
212	87.3	1.122	55.0	4.5	7.58	15.945	11.148	8.060	17.1	9.0	12.6	4.5	2.79	0.56	13.1	4.0	8.5
213	86.8	1.126	55.0	4.5	7.58	16.016	11.075	7.989	17.0	9.0	12.5	4.5	2.76	0.56	13.0	4.0	8.5
214	87.0	1.131	55.0	4.5	7.59	16.094	11.093	7.993	17.0	9.0	12.5	4.5	2.76	0.56	13.0	4.0	8.5
215	85.6	1.135	55.0	4.5	7.60	16.165	10.874	7.799	16.8	9.0	12.3	4.5	2.72	0.58	12.9	3.9	8.4
216	87.7	1.140	55.0	4.5	7.61	16.243	11.203	8.063	17.1	9.0	12.6	4.5	2.78	0.56	13.1	4.0	8.6
217	87.5	1.144	55.0	4.5	7.61	16.322	11.184	8.036	17.1	9.0	12.6	4.5	2.77	0.56	13.1	4.0	8.5
218	87.2	1.149	55.0	4.5	7.62	16.392	11.129	7.980	17.0	9.0	12.5	4.5	2.76	0.56	13.0	4.0	8.5
219	87.8	1.153	55.0	4.5	7.63	16.471	11.221	8.045	17.1	9.0	12.6	4.5	2.78	0.56	13.1	4.0	8.6
220	87.1	1.158	54.9	4.5	7.63	16.549	11.111	7.942	17.0	9.0	12.5	4.6	2.74	0.56	13.0	4.0	8.5
221	87.9	1.162	54.9	4.5	7.64	16.620	11.239	8.038	17.1	9.0	12.6	4.6	2.76	0.56	13.1	4.0	8.6
222	88.2	1.166	54.9	4.5	7.65	16.698	11.294	8.073	17.1	9.0	12.6	4.6	2.77	0.55	13.1	4.0	8.6
223	88.7	1.171	54.9	4.5	7.65	16.777	11.367	8.122	17.2	9.0	12.7	4.6	2.78	0.55	13.1	4.1	8.6

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	88.5	1.175	54.9	4.5	7.66	16.847	11.331	8.081	17.1	9.0	12.6	4.6	2.77	0.55	13.1	4.0	8.6
225	88.0	1.180	54.9	4.5	7.67	16.934	11.257	8.008	17.0	9.0	12.6	4.6	2.76	0.56	13.0	4.0	8.6
226	88.5	1.184	54.9	4.5	7.68	17.004	11.331	8.058	17.1	9.0	12.6	4.6	2.77	0.56	13.1	4.0	8.6
227	88.4	1.189	54.9	4.4	7.68	17.083	11.312	8.031	17.1	9.0	12.6	4.6	2.75	0.55	13.0	4.0	8.6
228	88.6	1.194	54.9	4.4	7.69	17.161	11.349	8.050	17.1	9.0	12.6	4.6	2.75	0.55	13.1	4.0	8.6
229	88.2	1.198	54.9	4.4	7.70	17.240	11.294	7.993	17.0	9.0	12.6	4.6	2.74	0.56	13.0	4.0	8.6
230	87.7	1.203	54.9	4.4	7.70	17.318	11.203	7.906	16.9	9.0	12.5	4.6	2.72	0.56	13.0	4.0	8.5
231	88.1	1.207	54.9	4.4	7.71	17.389	11.276	7.956	17.0	9.0	12.5	4.6	2.73	0.56	13.0	4.0	8.6
232	88.4	1.211	54.9	4.4	7.72	17.467	11.312	7.975	17.0	9.0	12.6	4.6	2.74	0.56	13.0	4.0	8.6
233	89.1	1.216	54.9	4.4	7.72	17.538	11.422	8.055	17.1	9.0	12.7	4.6	2.74	0.55	13.1	4.0	8.6
234	88.6	1.220	54.9	4.4	7.73	17.616	11.349	7.983	17.0	9.0	12.6	4.6	2.73	0.55	13.0	4.0	8.6
235	87.2	1.224	54.9	4.4	7.74	17.687	11.129	7.792	16.8	9.0	12.4	4.6	2.69	0.57	12.9	3.9	8.5
236	87.8	1.229	54.9	4.4	7.75	17.758	11.221	7.857	16.9	9.0	12.5	4.6	2.70	0.56	13.0	3.9	8.5
237	88.1	1.233	54.9	4.4	7.75	17.836	11.276	7.891	16.9	9.0	12.5	4.6	2.71	0.56	13.0	3.9	8.6
238	88.0	1.238	54.9	4.4	7.76	17.915	11.257	7.864	16.9	9.0	12.5	4.6	2.70	0.56	13.0	3.9	8.6
239	87.9	1.242	54.9	4.4	7.77	17.985	11.239	7.839	16.9	9.0	12.5	4.6	2.70	0.56	13.0	3.9	8.5
240	88.4	1.246	54.9	4.4	7.77	18.056	11.312	7.889	16.9	9.0	12.5	4.6	2.71	0.56	13.0	3.9	8.6
241	87.8	1.251	54.9	4.4	7.78	18.134	11.221	7.802	16.8	9.0	12.5	4.6	2.68	0.56	12.9	3.9	8.6
242	89.2	1.255	54.9	4.4	7.79	18.205	11.440	7.971	17.0	9.0	12.6	4.6	2.71	0.55	13.0	4.0	8.6
243	88.9	1.259	54.9	4.4	7.80	18.283	11.404	7.930	17.0	9.0	12.6	4.6	2.71	0.55	13.0	4.0	8.6
244	88.7	1.263	54.9	4.4	7.80	18.354	11.367	7.890	16.9	9.0	12.5	4.6	2.70	0.56	13.0	3.9	8.6
245	88.7	1.268	54.9	4.4	7.81	18.433	11.367	7.878	16.9	9.0	12.5	4.6	2.69	0.56	13.0	3.9	8.6
246	89.5	1.273	54.9	4.4	7.82	18.511	11.495	7.971	17.0	9.0	12.6	4.6	2.71	0.55	13.0	4.0	8.6
247	89.3	1.277	54.9	4.4	7.82	18.582	11.458	7.930	17.0	9.0	12.6	4.6	2.71	0.55	13.0	4.0	8.6
248	87.5	1.281	54.9	4.4	7.83	18.652	11.184	7.697	16.7	9.0	12.3	4.6	2.66	0.57	12.9	3.8	8.5
249	89.5	1.286	54.8	4.4	7.84	18.731	11.495	7.938	17.0	9.0	12.6	4.7	2.70	0.55	13.0	4.0	8.6
250	88.8	1.290	54.8	4.4	7.85	18.809	11.385	7.837	16.9	9.0	12.5	4.7	2.67	0.56	13.0	3.9	8.6
251	88.4	1.295	54.8	4.4	7.85	18.888	11.312	7.766	16.8	9.0	12.4	4.7	2.66	0.56	12.9	3.9	8.6
252	88.7	1.299	54.8	4.4	7.86	18.966	11.367	7.799	16.8	9.0	12.5	4.7	2.67	0.56	12.9	3.9	8.6
253	89.3	1.303	54.8	4.4	7.87	19.037	11.458	7.863	16.9	9.0	12.5	4.7	2.68	0.55	13.0	3.9	8.6
254	89.4	1.308	54.8	4.4	7.88	19.115	11.477	7.866	16.9	9.0	12.5	4.7	2.68	0.55	13.0	3.9	8.6
255	89.1	1.313	54.8	4.4	7.88	19.194	11.422	7.810	16.8	9.0	12.5	4.7	2.67	0.56	12.9	3.9	8.6
256	89.1	1.317	54.8	4.4	7.89	19.264	11.422	7.800	16.8	9.0	12.5	4.7	2.67	0.56	12.9	3.9	8.6
257	89.5	1.321	54.8	4.4	7.90	19.343	11.495	7.847	16.9	9.0	12.5	4.7	2.68	0.55	13.0	3.9	8.6
258	89.8	1.326	54.8	4.4	7.91	19.421	11.532	7.865	16.9	9.0	12.5	4.7	2.68	0.55	13.0	3.9	8.6
259	89.2	1.330	54.8	4.4	7.91	19.492	11.440	7.781	16.8	9.0	12.5	4.7	2.66	0.56	12.9	3.9	8.6
260	89.8	1.335	54.8	4.3	7.92	19.570	11.532	7.843	16.9	9.0	12.6	4.7	2.67	0.55	13.0	3.9	8.6
261	89.1	1.339	54.8	4.3	7.93	19.641	11.422	7.744	16.8	9.0	12.5	4.7	2.64	0.56	12.9	3.9	8.6
262	89.8	1.343	54.8	4.3	7.93	19.719	11.532	7.820	16.9	9.0	12.5	4.7	2.66	0.55	12.9	3.9	8.6
263	89.5	1.348	54.8	4.3	7.94	19.798	11.495	7.779	16.8	9.0	12.5	4.7	2.65	0.56	12.9	3.9	8.6
264	89.5	1.352	54.8	4.3	7.95	19.869	11.495	7.769	16.8	9.0	12.5	4.7	2.65	0.56	12.9	3.9	8.6

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
265	89.8	1.357	54.8	4.3	7.96	19.947	11.532	7.786	16.8	9.0	12.5	4.7	2.65	0.56	12.9	3.9	8.6

Specimen B Shear Data

CU Triaxial Test

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File Location
T-5674.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5674
Sample Location: Guilford County (Sta. 405+70)
Sample Description: Light tannish colored clayey silt
Remarks: 25° shear plane with slicken side. Carbon colored spots on top of sample. Sample was soft and some pebbles within sample.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.882
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.865	2.843	
Height (in)	5.900	5.873	
Weight (grams)	1265.00		1296.00
Moisture (%)	24.75		27.81
Dry Density (pcf)	101.57	103.62	
Saturation (%)	92.47	100.00	
Void Ratio	0.767	0.736	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 68.200
Effective Confining Stress (psi): 18.0
Corrected Peak Deviator Stress (psi): 49.031 at reading number: 118

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	16.1	0.133	50.2	0.0	6.35	0.000	0.000	0.000	18.0	18.0	18.0	18.0	1.00	0.00	18.0	0.0	18.0
1	53.8	0.138	51.6	1.4	6.35	0.088	5.943	5.904	23.9	18.0	22.5	16.6	1.36	0.24	21.0	3.0	19.5
2	68.4	0.143	52.6	2.5	6.36	0.166	8.245	8.167	26.2	18.0	23.7	15.6	1.53	0.30	22.1	4.1	19.6
3	79.4	0.148	53.4	3.3	6.36	0.254	9.966	9.842	27.9	18.0	24.6	14.8	1.67	0.33	23.0	4.9	19.7
4	88.3	0.153	54.1	3.9	6.37	0.332	11.379	11.213	29.2	18.0	25.3	14.1	1.79	0.35	23.6	5.6	19.7
5	72.9	0.158	53.8	3.6	6.37	0.420	8.951	8.751	26.8	18.0	23.1	14.4	1.61	0.42	22.4	4.4	18.8
6	90.6	0.162	54.5	4.3	6.38	0.489	11.742	11.495	29.5	18.0	25.2	13.7	1.84	0.37	23.8	5.7	19.5
7	98.5	0.166	54.9	4.7	6.38	0.557	12.974	12.686	30.7	18.0	26.0	13.3	1.95	0.37	24.4	6.3	19.7
8	104.6	0.169	55.2	5.0	6.39	0.606	13.934	13.615	31.7	18.0	26.6	13.0	2.05	0.37	24.8	6.8	19.8
9	112.3	0.173	55.5	5.4	6.39	0.684	15.148	14.780	32.8	18.0	27.4	12.7	2.17	0.36	25.4	7.4	20.1
10	118.1	0.177	55.8	5.6	6.40	0.743	16.072	15.666	33.7	18.0	28.1	12.4	2.26	0.36	25.9	7.8	20.2
11	125.4	0.181	56.1	5.9	6.40	0.811	17.214	16.761	34.8	18.0	28.9	12.1	2.38	0.35	26.4	8.4	20.5
12	131.4	0.185	56.3	6.1	6.40	0.879	18.156	17.656	35.7	18.0	29.6	11.9	2.48	0.35	26.9	8.8	20.7
13	138.4	0.189	56.5	6.4	6.41	0.948	19.262	18.712	36.7	18.0	30.4	11.7	2.60	0.34	27.4	9.4	21.0
14	145.0	0.193	56.7	6.5	6.41	1.026	20.313	19.707	37.7	18.0	31.3	11.5	2.71	0.33	27.9	9.9	21.4
15	151.8	0.197	56.8	6.7	6.42	1.094	21.382	20.724	38.8	18.0	32.1	11.4	2.82	0.32	28.4	10.4	21.7
16	157.7	0.202	56.9	6.8	6.42	1.173	22.306	21.591	39.6	18.0	32.9	11.3	2.92	0.31	28.8	10.8	22.1
17	163.4	0.207	57.1	6.9	6.43	1.251	23.212	22.437	40.5	18.0	33.6	11.1	3.01	0.31	29.3	11.2	22.4
18	168.5	0.212	57.1	7.0	6.43	1.339	24.009	23.170	41.2	18.0	34.2	11.1	3.09	0.30	29.6	11.6	22.6

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	173.7	0.216	57.2	7.1	6.44	1.417	24.824	23.924	42.0	18.0	34.9	11.0	3.18	0.29	30.0	12.0	22.9
20	177.9	0.221	57.3	7.1	6.44	1.495	25.495	24.535	42.6	18.0	35.5	10.9	3.24	0.29	30.3	12.3	23.2
21	182.8	0.226	57.3	7.1	6.45	1.573	26.256	25.234	43.3	18.0	36.2	10.9	3.31	0.28	30.7	12.6	23.6
22	187.6	0.230	57.3	7.1	6.45	1.651	27.017	25.932	44.0	18.0	36.9	10.9	3.37	0.27	31.0	13.0	23.9
23	193.1	0.234	57.3	7.1	6.46	1.720	27.887	26.742	44.8	18.0	37.6	10.9	3.45	0.27	31.4	13.4	24.3
24	197.7	0.238	57.3	7.1	6.46	1.788	28.612	27.408	45.4	18.0	38.3	10.9	3.51	0.26	31.7	13.7	24.6
25	202.3	0.242	57.3	7.1	6.47	1.857	29.336	28.073	46.1	18.0	39.0	10.9	3.57	0.25	32.1	14.0	24.9
26	206.9	0.246	57.3	7.1	6.47	1.925	30.061	28.738	46.8	18.0	39.7	10.9	3.63	0.25	32.4	14.4	25.3
27	209.2	0.249	57.3	7.1	6.48	1.974	30.424	29.059	47.1	18.0	40.0	10.9	3.66	0.24	32.6	14.5	25.5
28	209.9	0.251	57.3	7.1	6.48	2.003	30.532	29.147	47.2	18.0	40.1	10.9	3.66	0.24	32.6	14.6	25.5
29	210.4	0.252	57.2	7.1	6.48	2.023	30.605	29.212	47.2	18.0	40.2	11.0	3.66	0.24	32.6	14.6	25.6
30	212.2	0.253	57.3	7.1	6.48	2.042	30.895	29.490	47.5	18.0	40.4	10.9	3.69	0.24	32.8	14.7	25.7
31	213.5	0.254	57.3	7.1	6.48	2.062	31.094	29.679	47.7	18.0	40.6	10.9	3.71	0.24	32.9	14.8	25.8
32	216.1	0.255	57.3	7.1	6.48	2.081	31.511	30.081	48.1	18.0	41.0	10.9	3.75	0.24	33.1	15.0	26.0
33	219.0	0.258	57.2	7.1	6.49	2.121	31.964	30.512	48.5	18.0	41.5	11.0	3.78	0.23	33.3	15.3	26.2
34	221.5	0.261	57.2	7.0	6.49	2.169	32.362	30.887	48.9	18.0	41.9	11.0	3.80	0.23	33.5	15.4	26.5
35	224.1	0.263	57.1	6.9	6.49	2.218	32.761	31.260	49.3	18.0	42.4	11.1	3.82	0.22	33.7	15.6	26.7
36	226.5	0.266	57.1	6.9	6.50	2.267	33.142	31.616	49.7	18.0	42.8	11.1	3.84	0.22	33.8	15.8	27.0
37	230.0	0.269	57.0	6.9	6.50	2.316	33.703	32.149	50.2	18.0	43.3	11.2	3.87	0.21	34.1	16.1	27.3
38	234.1	0.274	56.9	6.8	6.50	2.394	34.338	32.742	50.8	18.0	44.0	11.3	3.91	0.21	34.4	16.4	27.6
39	237.2	0.278	56.9	6.7	6.51	2.472	34.827	33.192	51.2	18.0	44.5	11.3	3.94	0.20	34.6	16.6	27.9
40	240.6	0.282	56.8	6.7	6.51	2.541	35.370	33.698	51.7	18.0	45.1	11.4	3.96	0.20	34.9	16.8	28.2
41	244.0	0.287	56.7	6.6	6.52	2.619	35.896	34.182	52.2	18.0	45.6	11.5	3.98	0.19	35.1	17.1	28.6
42	246.8	0.292	56.7	6.5	6.52	2.697	36.349	34.595	52.6	18.0	46.1	11.5	4.00	0.19	35.3	17.3	28.8
43	249.4	0.297	56.6	6.4	6.53	2.785	36.747	34.950	53.0	18.0	46.6	11.6	4.01	0.18	35.5	17.5	29.1
44	252.4	0.301	56.5	6.3	6.53	2.863	37.219	35.379	53.4	18.0	47.1	11.7	4.02	0.18	35.7	17.7	29.4
45	255.2	0.306	56.4	6.3	6.54	2.941	37.672	35.790	53.8	18.0	47.6	11.8	4.04	0.17	35.9	17.9	29.7
46	257.8	0.311	56.4	6.2	6.55	3.029	38.070	36.143	54.2	18.0	48.0	11.8	4.06	0.17	36.1	18.1	29.9
47	260.1	0.316	56.3	6.1	6.55	3.107	38.433	36.465	54.5	18.0	48.4	11.9	4.06	0.17	36.3	18.2	30.1
48	262.7	0.320	56.2	6.0	6.56	3.186	38.849	36.838	54.9	18.0	48.9	12.0	4.06	0.16	36.5	18.4	30.4
49	259.5	0.325	56.2	6.0	6.56	3.264	38.342	36.317	54.4	18.0	48.3	12.0	4.02	0.17	36.2	18.2	30.2
50	264.3	0.329	56.1	5.9	6.57	3.332	39.103	37.026	55.1	18.0	49.1	12.1	4.06	0.16	36.5	18.5	30.6
51	267.4	0.333	56.0	5.8	6.57	3.410	39.592	37.468	55.5	18.0	49.7	12.2	4.07	0.16	36.8	18.7	30.9
52	270.4	0.338	55.9	5.8	6.58	3.489	40.063	37.892	55.9	18.0	50.2	12.3	4.09	0.15	37.0	18.9	31.2
53	273.2	0.343	55.9	5.7	6.58	3.567	40.498	38.280	56.3	18.0	50.6	12.3	4.10	0.15	37.2	19.1	31.5
54	275.5	0.347	55.8	5.6	6.59	3.635	40.861	38.602	56.6	18.0	51.0	12.4	4.11	0.15	37.3	19.3	31.7
55	277.7	0.351	55.7	5.5	6.59	3.704	41.205	38.905	56.9	18.0	51.5	12.5	4.10	0.14	37.5	19.5	32.0
56	280.5	0.355	55.6	5.4	6.60	3.782	41.658	39.309	57.3	18.0	51.9	12.6	4.11	0.14	37.7	19.7	32.3
57	283.2	0.360	55.5	5.3	6.60	3.860	42.075	39.677	57.7	18.0	52.4	12.7	4.12	0.13	37.9	19.8	32.5
58	285.6	0.364	55.4	5.2	6.61	3.938	42.455	40.010	58.0	18.0	52.8	12.8	4.13	0.13	38.0	20.0	32.8
59	288.0	0.368	55.3	5.2	6.61	4.007	42.836	40.346	58.4	18.0	53.2	12.9	4.14	0.13	38.2	20.2	33.0

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	291.0	0.373	55.3	5.1	6.62	4.085	43.307	40.764	58.8	18.0	53.7	12.9	4.15	0.12	38.4	20.4	33.3
61	293.5	0.378	55.2	5.0	6.62	4.163	43.706	41.112	59.1	18.0	54.1	13.0	4.16	0.12	38.6	20.6	33.6
62	295.6	0.382	55.1	4.9	6.63	4.231	44.032	41.395	59.4	18.0	54.5	13.1	4.15	0.12	38.7	20.7	33.8
63	297.7	0.386	55.0	4.8	6.63	4.309	44.358	41.672	59.7	18.0	54.9	13.2	4.15	0.12	38.9	20.8	34.1
64	299.5	0.391	54.9	4.7	6.64	4.388	44.648	41.915	60.0	18.0	55.2	13.3	4.15	0.11	39.0	21.0	34.3
65	301.7	0.395	54.8	4.6	6.64	4.466	44.992	42.209	60.2	18.0	55.6	13.4	4.15	0.11	39.1	21.1	34.5
66	303.7	0.400	54.7	4.5	6.65	4.544	45.300	42.468	60.5	18.0	56.0	13.5	4.14	0.11	39.3	21.2	34.7
67	305.7	0.405	54.6	4.4	6.66	4.622	45.626	42.744	60.8	18.0	56.3	13.6	4.15	0.10	39.4	21.4	35.0
68	308.3	0.409	54.5	4.4	6.66	4.691	46.025	43.092	61.1	18.0	56.8	13.7	4.15	0.10	39.6	21.5	35.2
69	310.8	0.413	54.4	4.2	6.67	4.769	46.424	43.436	61.5	18.0	57.2	13.8	4.15	0.10	39.8	21.7	35.5
70	312.4	0.417	54.3	4.2	6.67	4.837	46.677	43.646	61.7	18.0	57.5	13.9	4.15	0.10	39.9	21.8	35.7
71	314.2	0.422	54.2	4.0	6.68	4.915	46.967	43.885	61.9	18.0	57.9	14.0	4.14	0.09	40.0	21.9	35.9
72	316.7	0.426	54.1	4.0	6.68	4.984	47.348	44.214	62.3	18.0	58.3	14.1	4.14	0.09	40.1	22.1	36.2
73	318.5	0.430	54.1	3.9	6.69	5.052	47.638	44.457	62.5	18.0	58.6	14.1	4.14	0.09	40.3	22.2	36.4
74	319.9	0.434	54.0	3.8	6.69	5.130	47.855	44.626	62.7	18.0	58.9	14.2	4.14	0.09	40.3	22.3	36.5
75	321.7	0.438	53.9	3.7	6.70	5.199	48.145	44.868	62.9	18.0	59.2	14.3	4.14	0.08	40.5	22.4	36.7
76	323.9	0.443	53.8	3.6	6.70	5.277	48.489	45.157	63.2	18.0	59.6	14.4	4.13	0.08	40.6	22.6	37.0
77	325.1	0.447	53.7	3.5	6.71	5.345	48.670	45.295	63.3	18.0	59.8	14.5	4.12	0.08	40.7	22.6	37.2
78	325.9	0.451	53.6	3.4	6.71	5.414	48.797	45.382	63.4	18.0	60.0	14.6	4.11	0.08	40.7	22.7	37.3
79	327.6	0.456	53.5	3.4	6.72	5.492	49.069	45.600	63.6	18.0	60.3	14.7	4.11	0.07	40.8	22.8	37.5
80	328.7	0.460	53.4	3.3	6.72	5.570	49.250	45.733	63.8	18.0	60.5	14.8	4.10	0.07	40.9	22.9	37.6
81	330.0	0.464	53.4	3.2	6.73	5.638	49.450	45.888	63.9	18.0	60.7	14.8	4.10	0.07	41.0	22.9	37.7
82	330.6	0.469	53.3	3.1	6.73	5.717	49.540	45.934	64.0	18.0	60.8	14.9	4.08	0.07	41.0	23.0	37.9
83	332.2	0.473	53.2	3.0	6.74	5.795	49.794	46.135	64.2	18.0	61.1	15.0	4.08	0.07	41.1	23.1	38.1
84	333.9	0.478	53.1	3.0	6.74	5.873	50.066	46.352	64.4	18.0	61.4	15.1	4.08	0.06	41.2	23.2	38.2
85	334.8	0.483	53.1	2.9	6.75	5.951	50.211	46.449	64.5	18.0	61.6	15.1	4.07	0.06	41.3	23.2	38.3
86	336.4	0.487	53.0	2.8	6.76	6.029	50.464	46.648	64.7	18.0	61.8	15.2	4.07	0.06	41.4	23.3	38.5
87	337.8	0.492	52.9	2.8	6.76	6.117	50.682	46.808	64.8	18.0	62.1	15.3	4.06	0.06	41.4	23.4	38.7
88	338.9	0.497	52.9	2.7	6.77	6.195	50.845	46.921	65.0	18.0	62.2	15.3	4.06	0.06	41.5	23.5	38.8
89	339.2	0.502	52.8	2.6	6.77	6.274	50.899	46.932	65.0	18.0	62.3	15.4	4.05	0.06	41.5	23.5	38.9
90	340.0	0.507	52.7	2.6	6.78	6.362	51.026	47.006	65.0	18.0	62.5	15.5	4.04	0.05	41.5	23.5	39.0
91	340.5	0.511	52.7	2.5	6.78	6.440	51.099	47.034	65.1	18.0	62.5	15.5	4.03	0.05	41.6	23.5	39.0
92	340.9	0.516	52.6	2.5	6.79	6.518	51.171	47.062	65.1	18.0	62.6	15.6	4.03	0.05	41.6	23.5	39.1
93	341.3	0.521	52.6	2.4	6.80	6.596	51.225	47.073	65.1	18.0	62.7	15.6	4.01	0.05	41.6	23.5	39.2
94	342.2	0.525	52.5	2.4	6.80	6.674	51.370	47.168	65.2	18.0	62.8	15.7	4.01	0.05	41.6	23.6	39.3
95	343.2	0.530	52.5	2.3	6.81	6.752	51.533	47.280	65.3	18.0	63.0	15.7	4.01	0.05	41.7	23.6	39.4
96	343.7	0.534	52.4	2.2	6.81	6.831	51.606	47.307	65.3	18.0	63.1	15.8	4.00	0.05	41.7	23.7	39.4
97	344.4	0.539	52.4	2.2	6.82	6.909	51.715	47.368	65.4	18.0	63.2	15.8	3.99	0.05	41.7	23.7	39.5
98	345.3	0.543	52.3	2.1	6.82	6.987	51.860	47.462	65.5	18.0	63.4	15.9	3.98	0.04	41.8	23.7	39.6
99	346.7	0.548	52.2	2.1	6.83	7.065	52.077	47.624	65.7	18.0	63.6	16.0	3.99	0.04	41.8	23.8	39.8
100	347.5	0.553	52.2	2.0	6.84	7.143	52.204	47.701	65.7	18.0	63.7	16.0	3.98	0.04	41.9	23.9	39.8

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	347.8	0.557	52.2	2.0	6.84	7.221	52.258	47.711	65.7	18.0	63.7	16.0	3.98	0.04	41.9	23.9	39.9
102	349.4	0.562	52.1	1.9	6.85	7.300	52.512	47.905	65.9	18.0	64.0	16.1	3.97	0.04	42.0	24.0	40.1
103	350.5	0.566	52.0	1.9	6.85	7.378	52.675	48.015	66.1	18.0	64.2	16.2	3.97	0.04	42.0	24.0	40.2
104	351.0	0.571	52.0	1.8	6.86	7.456	52.766	48.058	66.1	18.0	64.3	16.2	3.96	0.04	42.1	24.0	40.3
105	352.0	0.576	51.9	1.8	6.86	7.534	52.911	48.150	66.2	18.0	64.4	16.3	3.96	0.04	42.1	24.1	40.3
106	352.8	0.580	51.9	1.7	6.87	7.612	53.037	48.226	66.3	18.0	64.5	16.3	3.96	0.04	42.1	24.1	40.4
107	353.9	0.584	51.8	1.6	6.88	7.681	53.219	48.357	66.4	18.0	64.8	16.4	3.95	0.03	42.2	24.2	40.6
108	354.5	0.589	51.8	1.6	6.88	7.759	53.309	48.399	66.4	18.0	64.8	16.4	3.95	0.03	42.2	24.2	40.6
109	354.8	0.593	51.7	1.6	6.89	7.837	53.364	48.408	66.4	18.0	64.9	16.5	3.94	0.03	42.2	24.2	40.7
110	356.5	0.598	51.6	1.5	6.89	7.915	53.617	48.599	66.6	18.0	65.2	16.6	3.94	0.03	42.3	24.3	40.9
111	357.8	0.603	51.6	1.4	6.90	7.993	53.835	48.758	66.8	18.0	65.4	16.6	3.94	0.03	42.4	24.4	41.0
112	357.6	0.607	51.5	1.4	6.90	8.062	53.798	48.687	66.7	18.0	65.4	16.7	3.92	0.03	42.4	24.3	41.0
113	358.4	0.611	51.5	1.3	6.91	8.140	53.925	48.762	66.8	18.0	65.5	16.7	3.92	0.03	42.4	24.4	41.1
114	359.8	0.615	51.4	1.3	6.92	8.208	54.143	48.925	67.0	18.0	65.7	16.8	3.92	0.03	42.5	24.5	41.2
115	360.4	0.620	51.4	1.2	6.92	8.287	54.233	48.965	67.0	18.0	65.8	16.8	3.92	0.03	42.5	24.5	41.3
116	360.6	0.624	51.4	1.2	6.93	8.355	54.270	48.961	67.0	18.0	65.8	16.8	3.91	0.02	42.5	24.5	41.3
117	361.2	0.628	51.3	1.2	6.93	8.423	54.360	49.007	67.0	18.0	65.9	16.9	3.90	0.02	42.5	24.5	41.4
118	361.6	0.632	51.3	1.1	6.94	8.502	54.433	49.031	67.1	18.0	65.9	16.9	3.90	0.02	42.6	24.5	41.4
119	361.7	0.636	51.2	1.0	6.94	8.570	54.451	49.010	67.0	18.0	66.0	17.0	3.88	0.02	42.5	24.5	41.5
120	361.1	0.640	51.2	1.0	6.95	8.638	54.342	48.874	66.9	18.0	65.9	17.0	3.88	0.02	42.5	24.4	41.4
121	361.5	0.644	51.2	1.0	6.95	8.707	54.415	48.903	66.9	18.0	65.9	17.0	3.87	0.02	42.5	24.5	41.5
122	361.9	0.649	51.1	1.0	6.96	8.785	54.469	48.910	66.9	18.0	66.0	17.1	3.86	0.02	42.5	24.5	41.5
123	361.7	0.654	51.1	1.0	6.97	8.863	54.451	48.851	66.9	18.0	65.9	17.1	3.86	0.02	42.5	24.4	41.5
124	361.2	0.658	51.0	0.9	6.97	8.932	54.360	48.731	66.8	18.0	65.9	17.2	3.84	0.02	42.4	24.4	41.5
125	360.8	0.662	51.0	0.8	6.98	9.010	54.306	48.639	66.7	18.0	65.8	17.2	3.83	0.02	42.4	24.3	41.5
126	361.1	0.667	51.0	0.8	6.98	9.088	54.342	48.630	66.7	18.0	65.9	17.2	3.82	0.02	42.4	24.3	41.5
127	360.4	0.671	51.0	0.8	6.99	9.166	54.233	48.488	66.5	18.0	65.7	17.2	3.81	0.02	42.3	24.2	41.5
128	359.7	0.676	50.9	0.8	6.99	9.244	54.125	48.347	66.4	18.0	65.6	17.3	3.80	0.02	42.2	24.2	41.4
129	359.7	0.681	50.9	0.7	7.00	9.322	54.125	48.305	66.3	18.0	65.6	17.3	3.79	0.01	42.2	24.2	41.5
130	359.2	0.686	50.9	0.7	7.01	9.410	54.052	48.192	66.2	18.0	65.5	17.3	3.78	0.01	42.1	24.1	41.4
131	358.3	0.690	50.8	0.7	7.01	9.489	53.907	48.018	66.1	18.0	65.4	17.4	3.77	0.01	42.0	24.0	41.4
132	356.8	0.696	50.8	0.7	7.02	9.577	53.672	47.758	65.8	18.0	65.1	17.4	3.75	0.01	41.9	23.9	41.2
133	356.7	0.701	50.8	0.6	7.03	9.664	53.653	47.694	65.7	18.0	65.1	17.4	3.74	0.01	41.9	23.8	41.2
134	356.7	0.705	50.8	0.6	7.03	9.743	53.653	47.652	65.7	18.0	65.1	17.4	3.73	0.01	41.9	23.8	41.3
135	355.5	0.710	50.8	0.6	7.04	9.821	53.472	47.447	65.5	18.0	64.9	17.4	3.72	0.01	41.8	23.7	41.2
136	354.5	0.714	50.7	0.6	7.05	9.899	53.309	47.258	65.3	18.0	64.7	17.5	3.70	0.01	41.7	23.6	41.1
137	354.2	0.719	50.7	0.6	7.05	9.977	53.255	47.168	65.2	18.0	64.6	17.5	3.70	0.01	41.6	23.6	41.1
138	354.4	0.724	50.7	0.6	7.06	10.055	53.291	47.159	65.2	18.0	64.6	17.5	3.70	0.01	41.6	23.6	41.1
139	353.2	0.728	50.7	0.5	7.06	10.134	53.110	46.954	65.0	18.0	64.5	17.5	3.68	0.01	41.5	23.5	41.0
140	353.1	0.733	50.6	0.5	7.07	10.212	53.092	46.896	64.9	18.0	64.5	17.6	3.67	0.01	41.5	23.4	41.0
141	353.6	0.737	50.6	0.5	7.08	10.290	53.164	46.920	65.0	18.0	64.5	17.6	3.67	0.01	41.5	23.5	41.0

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	353.2	0.742	50.6	0.4	7.08	10.368	53.110	46.830	64.9	18.0	64.4	17.6	3.66	0.01	41.5	23.4	41.0
143	351.7	0.747	50.6	0.4	7.09	10.446	52.874	46.577	64.6	18.0	64.2	17.6	3.65	0.01	41.3	23.3	40.9
144	351.3	0.751	50.6	0.4	7.09	10.524	52.802	46.471	64.5	18.0	64.1	17.6	3.64	0.01	41.3	23.2	40.9
145	351.4	0.756	50.6	0.4	7.10	10.603	52.820	46.446	64.5	18.0	64.1	17.6	3.63	0.01	41.3	23.2	40.9
146	350.9	0.760	50.5	0.4	7.11	10.671	52.747	46.345	64.4	18.0	64.0	17.7	3.62	0.01	41.2	23.2	40.8
147	349.9	0.764	50.5	0.3	7.11	10.749	52.584	46.158	64.2	18.0	63.9	17.7	3.61	0.01	41.1	23.1	40.8
148	349.1	0.769	50.5	0.3	7.12	10.827	52.458	46.004	64.0	18.0	63.7	17.7	3.60	0.01	41.0	23.0	40.7
149	349.2	0.774	50.4	0.3	7.12	10.906	52.476	45.979	64.0	18.0	63.7	17.8	3.59	0.01	41.0	23.0	40.7
150	348.1	0.778	50.4	0.3	7.13	10.984	52.294	45.777	63.8	18.0	63.5	17.8	3.58	0.01	40.9	22.9	40.6
151	347.6	0.783	50.4	0.3	7.14	11.062	52.222	45.671	63.7	18.0	63.4	17.8	3.57	0.01	40.9	22.8	40.6
152	347.6	0.787	50.4	0.2	7.14	11.130	52.222	45.636	63.7	18.0	63.4	17.8	3.56	0.01	40.9	22.8	40.6
153	346.4	0.791	50.4	0.2	7.15	11.208	52.041	45.434	63.5	18.0	63.3	17.8	3.55	0.00	40.8	22.7	40.6
154	345.1	0.796	50.4	0.2	7.16	11.287	51.823	45.200	63.2	18.0	63.0	17.8	3.53	0.00	40.6	22.6	40.4
155	343.9	0.800	50.3	0.2	7.16	11.355	51.642	45.004	63.0	18.0	62.9	17.9	3.52	0.00	40.5	22.5	40.4
156	343.5	0.804	50.3	0.2	7.17	11.423	51.570	44.905	62.9	18.0	62.8	17.9	3.51	0.00	40.5	22.5	40.3
157	344.1	0.809	50.3	0.2	7.17	11.502	51.678	44.961	63.0	18.0	62.8	17.9	3.52	0.00	40.5	22.5	40.4
158	344.4	0.813	50.3	0.1	7.18	11.580	51.715	44.952	63.0	18.0	62.9	17.9	3.51	0.00	40.5	22.5	40.4
159	343.7	0.817	50.2	0.1	7.18	11.648	51.606	44.821	62.9	18.0	62.8	18.0	3.50	0.00	40.4	22.4	40.4
160	344.0	0.821	50.2	0.1	7.19	11.717	51.660	44.834	62.9	18.0	62.8	18.0	3.50	0.00	40.5	22.4	40.4
161	343.3	0.826	50.2	0.0	7.20	11.795	51.552	44.697	62.7	18.0	62.7	18.0	3.48	0.00	40.4	22.3	40.3
162	341.6	0.830	50.2	0.0	7.20	11.863	51.280	44.423	62.5	18.0	62.5	18.0	3.46	0.00	40.2	22.2	40.2
163	340.8	0.834	50.2	0.0	7.21	11.941	51.153	44.271	62.3	18.0	62.3	18.0	3.45	0.00	40.2	22.1	40.2
164	341.3	0.838	50.2	0.0	7.21	12.010	51.225	44.300	62.3	18.0	62.3	18.0	3.46	0.00	40.2	22.1	40.2
165	341.0	0.843	50.2	0.0	7.22	12.088	51.189	44.228	62.3	18.0	62.3	18.0	3.45	0.00	40.2	22.1	40.2
166	339.0	0.847	50.1	0.0	7.23	12.156	50.863	43.906	61.9	18.0	62.0	18.1	3.43	0.00	40.0	22.0	40.0
167	337.6	0.852	50.1	-0.1	7.23	12.235	50.646	43.675	61.7	18.0	61.8	18.1	3.41	0.00	39.9	21.8	40.0
168	335.4	0.856	50.0	-0.1	7.24	12.313	50.301	43.334	61.4	18.0	61.5	18.2	3.39	0.00	39.7	21.7	39.8
169	334.9	0.861	50.0	-0.1	7.25	12.391	50.229	43.231	61.3	18.0	61.4	18.2	3.38	0.00	39.7	21.6	39.8
170	333.6	0.865	50.0	-0.1	7.25	12.469	50.011	43.002	61.0	18.0	61.2	18.2	3.37	0.00	39.5	21.5	39.7
171	329.4	0.870	50.0	-0.2	7.26	12.547	49.359	42.392	60.4	18.0	60.6	18.2	3.33	0.00	39.2	21.2	39.4
172	328.8	0.875	50.0	-0.2	7.27	12.635	49.268	42.269	60.3	18.0	60.5	18.2	3.32	0.00	39.2	21.1	39.3
173	327.0	0.879	50.0	-0.2	7.27	12.704	48.979	41.983	60.0	18.0	60.2	18.2	3.31	0.00	39.0	21.0	39.2
174	326.3	0.884	49.9	-0.2	7.28	12.782	48.870	41.850	59.9	18.0	60.1	18.3	3.29	-0.01	39.0	20.9	39.2
175	325.2	0.889	49.9	-0.2	7.29	12.870	48.689	41.649	59.7	18.0	59.9	18.3	3.28	-0.01	38.9	20.8	39.1
176	325.9	0.894	49.9	-0.2	7.29	12.958	48.797	41.700	59.7	18.0	60.0	18.3	3.28	-0.01	38.9	20.9	39.1
177	323.0	0.899	49.9	-0.3	7.30	13.036	48.344	41.268	59.3	18.0	59.6	18.3	3.25	-0.01	38.7	20.6	39.0
178	321.9	0.903	49.9	-0.3	7.31	13.114	48.181	41.089	59.1	18.0	59.4	18.3	3.24	-0.01	38.6	20.5	38.9
179	320.7	0.908	49.8	-0.3	7.31	13.192	47.982	40.878	58.9	18.0	59.2	18.4	3.23	-0.01	38.5	20.4	38.8
180	320.2	0.912	49.8	-0.3	7.32	13.270	47.909	40.778	58.8	18.0	59.1	18.4	3.22	-0.01	38.4	20.4	38.7
181	318.6	0.916	49.8	-0.4	7.32	13.339	47.656	40.525	58.6	18.0	58.9	18.4	3.20	-0.01	38.3	20.3	38.7
182	317.5	0.921	49.8	-0.4	7.33	13.417	47.475	40.331	58.4	18.0	58.8	18.4	3.19	-0.01	38.2	20.2	38.6

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	316.3	0.926	49.8	-0.4	7.34	13.495	47.293	40.137	58.2	18.0	58.6	18.4	3.18	-0.01	38.1	20.1	38.5
184	313.2	0.930	49.7	-0.4	7.34	13.573	46.804	39.677	57.7	18.0	58.2	18.5	3.15	-0.01	37.9	19.8	38.3
185	311.7	0.935	49.7	-0.4	7.35	13.651	46.569	39.437	57.5	18.0	57.9	18.5	3.13	-0.01	37.8	19.7	38.2
186	310.7	0.939	49.7	-0.4	7.36	13.730	46.405	39.260	57.3	18.0	57.7	18.5	3.12	-0.01	37.7	19.6	38.1
187	308.1	0.944	49.7	-0.4	7.36	13.808	46.007	38.880	56.9	18.0	57.4	18.5	3.10	-0.01	37.5	19.4	37.9
188	306.9	0.948	49.7	-0.4	7.37	13.876	45.808	38.677	56.7	18.0	57.2	18.5	3.09	-0.01	37.4	19.3	37.8
189	304.7	0.953	49.7	-0.4	7.38	13.954	45.463	38.345	56.4	18.0	56.8	18.5	3.08	-0.01	37.2	19.2	37.6
190	303.1	0.958	49.7	-0.4	7.38	14.042	45.210	38.087	56.1	18.0	56.6	18.5	3.06	-0.01	37.1	19.0	37.5
191	303.1	0.962	49.7	-0.4	7.39	14.111	45.210	38.056	56.1	18.0	56.5	18.5	3.06	-0.01	37.1	19.0	37.5
192	301.8	0.966	49.7	-0.4	7.40	14.189	45.010	37.850	55.9	18.0	56.3	18.5	3.05	-0.01	37.0	18.9	37.4
193	299.6	0.972	49.7	-0.4	7.40	14.277	44.666	37.515	55.6	18.0	56.0	18.5	3.03	-0.01	36.8	18.8	37.2
194	297.9	0.976	49.7	-0.4	7.41	14.355	44.394	37.248	55.3	18.0	55.7	18.5	3.02	-0.01	36.7	18.6	37.1
195	297.9	0.981	49.7	-0.4	7.42	14.433	44.394	37.213	55.2	18.0	55.7	18.5	3.01	-0.01	36.6	18.6	37.1
196	296.8	0.985	49.7	-0.5	7.43	14.511	44.213	37.023	55.1	18.0	55.5	18.5	3.00	-0.01	36.5	18.5	37.0
197	294.0	0.989	49.7	-0.5	7.43	14.580	43.778	36.621	54.7	18.0	55.1	18.5	2.98	-0.01	36.3	18.3	36.8
198	292.6	0.994	49.7	-0.5	7.44	14.658	43.561	36.402	54.4	18.0	54.9	18.5	2.97	-0.01	36.2	18.2	36.7
199	291.6	0.998	49.7	-0.5	7.44	14.726	43.398	36.233	54.3	18.0	54.8	18.5	2.96	-0.01	36.2	18.1	36.6
200	291.1	1.003	49.6	-0.5	7.45	14.805	43.325	36.137	54.2	18.0	54.7	18.6	2.95	-0.01	36.1	18.1	36.6
201	291.0	1.007	49.6	-0.5	7.46	14.873	43.307	36.092	54.1	18.0	54.6	18.6	2.94	-0.01	36.1	18.0	36.6
202	291.0	1.011	49.6	-0.5	7.46	14.951	43.307	36.058	54.1	18.0	54.6	18.6	2.94	-0.01	36.1	18.0	36.6
203	290.5	1.016	49.6	-0.5	7.47	15.029	43.234	35.963	54.0	18.0	54.5	18.6	2.94	-0.01	36.0	18.0	36.5
204	288.9	1.020	49.6	-0.5	7.48	15.098	42.981	35.718	53.8	18.0	54.3	18.6	2.92	-0.01	35.9	17.9	36.4
205	287.8	1.024	49.6	-0.5	7.48	15.176	42.800	35.531	53.6	18.0	54.1	18.6	2.91	-0.01	35.8	17.8	36.3
206	286.2	1.028	49.6	-0.5	7.49	15.244	42.546	35.286	53.3	18.0	53.8	18.6	2.90	-0.01	35.7	17.6	36.2
207	284.0	1.033	49.6	-0.5	7.50	15.322	42.202	34.961	53.0	18.0	53.5	18.6	2.88	-0.01	35.5	17.5	36.0
208	283.2	1.037	49.6	-0.5	7.50	15.391	42.075	34.825	52.9	18.0	53.4	18.6	2.88	-0.01	35.4	17.4	36.0
209	281.2	1.042	49.6	-0.6	7.51	15.469	41.767	34.532	52.6	18.0	53.1	18.6	2.86	-0.02	35.3	17.3	35.9
210	279.8	1.046	49.6	-0.6	7.52	15.547	41.549	34.316	52.4	18.0	52.9	18.6	2.85	-0.02	35.2	17.2	35.8
211	279.2	1.051	49.6	-0.5	7.52	15.625	41.441	34.191	52.2	18.0	52.7	18.6	2.84	-0.02	35.1	17.1	35.7
212	276.5	1.055	49.6	-0.5	7.53	15.704	41.024	33.808	51.8	18.0	52.4	18.6	2.82	-0.02	34.9	16.9	35.5
213	276.2	1.059	49.6	-0.5	7.54	15.772	40.969	33.734	51.8	18.0	52.3	18.6	2.82	-0.02	34.9	16.9	35.4
214	277.1	1.064	49.6	-0.5	7.54	15.850	41.114	33.824	51.9	18.0	52.4	18.6	2.82	-0.02	34.9	16.9	35.5
215	277.5	1.069	49.6	-0.5	7.55	15.928	41.187	33.853	51.9	18.0	52.4	18.6	2.82	-0.02	35.0	16.9	35.5
216	276.7	1.073	49.6	-0.5	7.56	16.006	41.060	33.714	51.8	18.0	52.3	18.6	2.82	-0.02	34.9	16.9	35.4
217	275.1	1.077	49.6	-0.6	7.56	16.075	40.806	33.473	51.5	18.0	52.1	18.6	2.80	-0.02	34.8	16.7	35.3
218	275.6	1.082	49.6	-0.5	7.57	16.163	40.879	33.498	51.5	18.0	52.1	18.6	2.81	-0.02	34.8	16.7	35.3
219	274.6	1.087	49.6	-0.5	7.58	16.241	40.716	33.329	51.4	18.0	51.9	18.6	2.80	-0.02	34.7	16.7	35.2
220	273.4	1.092	49.6	-0.5	7.59	16.319	40.535	33.146	51.2	18.0	51.7	18.6	2.79	-0.02	34.6	16.6	35.1
221	272.5	1.096	49.6	-0.5	7.59	16.397	40.390	32.993	51.0	18.0	51.6	18.6	2.78	-0.02	34.5	16.5	35.1
222	272.7	1.101	49.6	-0.5	7.60	16.485	40.426	32.988	51.0	18.0	51.5	18.6	2.78	-0.02	34.5	16.5	35.1
223	272.5	1.106	49.6	-0.5	7.61	16.563	40.390	32.926	51.0	18.0	51.5	18.6	2.77	-0.02	34.5	16.5	35.0

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	272.1	1.110	49.6	-0.5	7.62	16.642	40.335	32.849	50.9	18.0	51.4	18.6	2.77	-0.02	34.5	16.4	35.0
225	272.5	1.115	49.6	-0.5	7.62	16.720	40.390	32.863	50.9	18.0	51.4	18.6	2.77	-0.02	34.5	16.4	35.0
226	273.2	1.120	49.6	-0.5	7.63	16.798	40.498	32.922	51.0	18.0	51.5	18.6	2.77	-0.02	34.5	16.5	35.0
227	271.8	1.124	49.6	-0.5	7.64	16.876	40.281	32.709	50.7	18.0	51.3	18.6	2.76	-0.02	34.4	16.4	34.9
228	271.6	1.129	49.6	-0.5	7.64	16.954	40.245	32.648	50.7	18.0	51.2	18.6	2.76	-0.02	34.4	16.3	34.9
229	272.4	1.133	49.6	-0.5	7.65	17.033	40.371	32.721	50.8	18.0	51.3	18.6	2.76	-0.02	34.4	16.4	34.9
230	272.9	1.138	49.6	-0.6	7.66	17.111	40.462	32.765	50.8	18.0	51.4	18.6	2.76	-0.02	34.4	16.4	35.0
231	272.5	1.143	49.6	-0.6	7.67	17.189	40.390	32.673	50.7	18.0	51.3	18.6	2.76	-0.02	34.4	16.3	34.9
232	271.6	1.147	49.6	-0.6	7.67	17.267	40.245	32.522	50.6	18.0	51.1	18.6	2.75	-0.02	34.3	16.3	34.9
233	271.6	1.152	49.6	-0.6	7.68	17.345	40.245	32.490	50.5	18.0	51.1	18.6	2.75	-0.02	34.3	16.2	34.8
234	270.8	1.156	49.6	-0.6	7.69	17.423	40.118	32.354	50.4	18.0	51.0	18.6	2.74	-0.02	34.2	16.2	34.8
235	270.8	1.161	49.6	-0.6	7.69	17.502	40.118	32.323	50.4	18.0	50.9	18.6	2.74	-0.02	34.2	16.2	34.8
236	270.4	1.166	49.6	-0.6	7.70	17.580	40.063	32.247	50.3	18.0	50.8	18.6	2.73	-0.02	34.2	16.1	34.7
237	269.5	1.170	49.6	-0.6	7.71	17.658	39.918	32.096	50.1	18.0	50.7	18.6	2.72	-0.02	34.1	16.0	34.7
238	270.0	1.175	49.6	-0.6	7.72	17.736	39.991	32.124	50.2	18.0	50.8	18.6	2.72	-0.02	34.1	16.1	34.7
239	268.9	1.179	49.6	-0.6	7.72	17.814	39.828	31.959	50.0	18.0	50.6	18.6	2.72	-0.02	34.0	16.0	34.6
240	267.4	1.183	49.6	-0.6	7.73	17.883	39.592	31.738	49.8	18.0	50.4	18.6	2.70	-0.02	33.9	15.9	34.5
241	266.5	1.188	49.6	-0.6	7.74	17.961	39.447	31.588	49.6	18.0	50.2	18.6	2.69	-0.02	33.8	15.8	34.4
242	266.4	1.192	49.6	-0.6	7.74	18.029	39.429	31.547	49.6	18.0	50.1	18.6	2.70	-0.02	33.8	15.8	34.4
243	266.3	1.197	49.6	-0.6	7.75	18.107	39.411	31.501	49.5	18.0	50.1	18.6	2.69	-0.02	33.8	15.8	34.3
244	266.6	1.201	49.6	-0.6	7.76	18.176	39.465	31.518	49.6	18.0	50.1	18.6	2.69	-0.02	33.8	15.8	34.4
245	266.9	1.205	49.6	-0.6	7.76	18.244	39.502	31.521	49.6	18.0	50.2	18.6	2.69	-0.02	33.8	15.8	34.4
246	266.6	1.209	49.6	-0.6	7.77	18.313	39.465	31.464	49.5	18.0	50.1	18.6	2.69	-0.02	33.8	15.7	34.3
247	265.6	1.213	49.6	-0.6	7.78	18.391	39.302	31.301	49.3	18.0	49.9	18.6	2.68	-0.02	33.7	15.7	34.2
248	265.5	1.217	49.6	-0.5	7.78	18.459	39.284	31.259	49.3	18.0	49.8	18.6	2.68	-0.02	33.7	15.6	34.2
249	264.9	1.221	49.6	-0.5	7.79	18.528	39.194	31.158	49.2	18.0	49.7	18.6	2.68	-0.02	33.6	15.6	34.1
250	265.0	1.226	49.6	-0.6	7.80	18.606	39.212	31.142	49.2	18.0	49.7	18.6	2.67	-0.02	33.6	15.6	34.2
251	264.9	1.230	49.6	-0.6	7.81	18.684	39.194	31.097	49.1	18.0	49.7	18.6	2.67	-0.02	33.6	15.5	34.1
252	263.9	1.235	49.6	-0.6	7.81	18.762	39.031	30.934	49.0	18.0	49.6	18.6	2.66	-0.02	33.5	15.5	34.1
253	265.1	1.239	49.6	-0.6	7.82	18.831	39.230	31.069	49.1	18.0	49.7	18.6	2.67	-0.02	33.6	15.5	34.2
254	264.7	1.244	49.6	-0.6	7.83	18.909	39.157	30.979	49.0	18.0	49.6	18.6	2.67	-0.02	33.5	15.5	34.1
255	263.4	1.248	49.6	-0.6	7.84	18.987	38.958	30.787	48.8	18.0	49.4	18.6	2.65	-0.02	33.4	15.4	34.0
256	264.1	1.253	49.6	-0.6	7.84	19.075	39.067	30.841	48.9	18.0	49.5	18.6	2.65	-0.02	33.5	15.4	34.1
257	263.6	1.257	49.6	-0.6	7.85	19.143	38.994	30.756	48.8	18.0	49.4	18.6	2.65	-0.02	33.4	15.4	34.0
258	262.4	1.261	49.6	-0.6	7.86	19.212	38.795	30.568	48.6	18.0	49.2	18.6	2.64	-0.02	33.3	15.3	33.9
259	261.3	1.266	49.6	-0.5	7.86	19.290	38.632	30.406	48.4	18.0	49.0	18.6	2.64	-0.02	33.2	15.2	33.8
260	260.3	1.271	49.6	-0.5	7.87	19.368	38.469	30.244	48.3	18.0	48.8	18.6	2.63	-0.02	33.2	15.1	33.7
261	259.6	1.275	49.6	-0.5	7.88	19.446	38.360	30.127	48.2	18.0	48.7	18.6	2.62	-0.02	33.1	15.1	33.6
262	259.1	1.280	49.7	-0.5	7.89	19.534	38.288	30.035	48.1	18.0	48.6	18.5	2.62	-0.02	33.1	15.0	33.5
263	257.3	1.285	49.7	-0.5	7.90	19.612	37.998	29.772	47.8	18.0	48.3	18.5	2.61	-0.02	32.9	14.9	33.4
264	256.8	1.290	49.7	-0.5	7.90	19.691	37.925	29.684	47.7	18.0	48.2	18.5	2.60	-0.02	32.9	14.8	33.4

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
265	256.4	1.294	49.7	-0.4	7.91	19.769	37.853	29.596	47.6	18.0	48.1	18.5	2.60	-0.01	32.8	14.8	33.3
266	256.0	1.299	49.8	-0.4	7.92	19.857	37.798	29.519	47.6	18.0	48.0	18.4	2.60	-0.01	32.8	14.8	33.2
267	255.3	1.304	49.8	-0.4	7.93	19.935	37.690	29.402	47.4	18.0	47.8	18.4	2.59	-0.01	32.7	14.7	33.1
268	255.5	1.308	49.8	-0.4	7.94	20.003	37.708	29.391	47.4	18.0	47.8	18.4	2.60	-0.01	32.7	14.7	33.1

Specimen C Shear Data

CU Triaxial Test

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File Location
T-5674.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5674
Sample Location: Guilford County (Sta. 405+70)
Sample Description: Tannish colored silt
Remarks: Speckles of carbon on sample, and saome pebbles within the sample. Partial shear observed.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.8800001
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.863	2.831	
Height (in)	6.138	6.074	
Weight (grams)	1330.00		1350.00
Moisture (%)	22.92		24.77
Dry Density (pcf)	104.31	107.81	
Saturation (%)	91.21	100.00	
Void Ratio	0.719	0.668	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 86.500
Effective Confining Stress (psi): 36.0
Corrected Peak Deviator Stress (psi): 74.150 at reading number: 101

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	25.1	0.171	50.5	0.0	6.29	0.000	0.000	0.000	36.0	36.0	36.0	36.0	1.00	0.00	36.0	0.0	36.0
1	31.0	0.176	50.5	0.0	6.30	0.085	0.934	0.900	36.9	36.0	36.9	36.0	1.03	0.04	36.5	0.5	36.4
2	33.6	0.180	50.8	0.3	6.30	0.160	1.337	1.273	37.3	36.0	37.0	35.7	1.04	0.22	36.7	0.6	36.4
3	38.4	0.186	51.2	0.7	6.31	0.244	2.106	2.006	38.0	36.0	37.3	35.3	1.06	0.36	37.0	1.0	36.3
4	46.5	0.191	51.8	1.3	6.32	0.329	3.388	3.249	39.3	36.0	37.9	34.7	1.09	0.41	37.6	1.6	36.3
5	54.3	0.196	52.5	2.0	6.32	0.414	4.634	4.454	40.5	36.0	38.5	34.0	1.13	0.44	38.2	2.2	36.3
6	60.8	0.201	53.0	2.5	6.33	0.498	5.659	5.438	41.5	36.0	38.9	33.5	1.16	0.47	38.7	2.7	36.2
7	70.8	0.206	53.8	3.3	6.33	0.583	7.253	6.984	43.0	36.0	39.7	32.7	1.21	0.47	39.5	3.5	36.2
8	88.9	0.212	55.0	4.5	6.34	0.686	10.128	9.792	45.8	36.0	41.3	31.5	1.31	0.46	40.9	4.9	36.4
9	102.6	0.218	55.9	5.4	6.34	0.771	12.308	11.914	47.9	36.0	42.5	30.6	1.39	0.46	42.0	6.0	36.5
10	119.2	0.223	57.2	6.7	6.35	0.855	14.945	14.485	50.5	36.0	43.8	29.3	1.49	0.46	43.3	7.2	36.5
11	133.0	0.228	58.3	7.8	6.35	0.940	17.143	16.617	52.6	36.0	44.8	28.2	1.59	0.47	44.3	8.3	36.5
12	145.7	0.232	59.3	8.8	6.36	1.015	19.158	18.569	54.6	36.0	45.8	27.2	1.68	0.47	45.3	9.3	36.5
13	156.7	0.238	60.1	9.6	6.36	1.100	20.898	20.241	56.3	36.0	46.6	26.4	1.77	0.48	46.1	10.1	36.5
14	167.3	0.242	60.8	10.3	6.37	1.175	22.583	21.861	57.9	36.0	47.5	25.7	1.85	0.47	46.9	10.9	36.6
15	177.8	0.247	61.5	11.0	6.37	1.250	24.250	23.461	59.5	36.0	48.5	25.0	1.94	0.47	47.7	11.7	36.8
16	187.6	0.252	62.0	11.5	6.38	1.335	25.807	24.943	61.0	36.0	49.4	24.5	2.02	0.46	48.5	12.5	36.9
17	197.0	0.256	62.5	12.0	6.38	1.410	27.308	26.375	62.4	36.0	50.4	24.0	2.10	0.45	49.2	13.2	37.2
18	206.7	0.261	62.9	12.4	6.39	1.495	28.847	27.835	63.8	36.0	51.4	23.6	2.18	0.45	49.9	13.9	37.5

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	216.2	0.266	63.3	12.8	6.40	1.570	30.349	29.262	65.3	36.0	52.5	23.2	2.26	0.44	50.6	14.6	37.9
20	225.6	0.271	63.6	13.1	6.40	1.645	31.851	30.688	66.7	36.0	53.6	22.9	2.34	0.43	51.4	15.3	38.2
21	234.4	0.275	63.9	13.4	6.41	1.720	33.243	32.002	68.0	36.0	54.6	22.6	2.42	0.42	52.0	16.0	38.6
22	243.4	0.280	64.2	13.7	6.41	1.795	34.671	33.351	69.4	36.0	55.7	22.3	2.49	0.41	52.7	16.7	39.0
23	251.9	0.284	64.4	13.9	6.41	1.871	36.027	34.626	70.6	36.0	56.7	22.1	2.57	0.40	53.3	17.3	39.4
24	260.3	0.289	64.6	14.1	6.42	1.946	37.364	35.881	71.9	36.0	57.8	21.9	2.64	0.39	54.0	17.9	39.8
25	269.0	0.293	64.8	14.3	6.42	2.021	38.737	37.177	73.2	36.0	58.9	21.7	2.71	0.38	54.6	18.6	40.3
26	276.9	0.298	64.9	14.4	6.43	2.096	40.001	38.385	74.4	36.0	60.0	21.6	2.78	0.38	55.2	19.2	40.8
27	285.5	0.303	65.0	14.6	6.43	2.171	41.356	39.681	75.7	36.0	61.1	21.5	2.85	0.37	55.9	19.8	41.3
28	293.8	0.308	65.2	14.7	6.44	2.256	42.675	40.935	76.9	36.0	62.3	21.3	2.92	0.36	56.5	20.5	41.8
29	301.7	0.312	65.2	14.8	6.45	2.331	43.939	42.137	78.2	36.0	63.4	21.3	2.98	0.35	57.1	21.1	42.3
30	309.4	0.317	65.3	14.8	6.45	2.406	45.166	43.302	79.3	36.0	64.5	21.2	3.05	0.34	57.7	21.7	42.8
31	317.2	0.321	65.4	14.9	6.46	2.482	46.393	44.465	80.5	36.0	65.6	21.1	3.10	0.33	58.2	22.2	43.4
32	324.6	0.326	65.4	14.9	6.46	2.557	47.565	45.572	81.6	36.0	66.7	21.1	3.16	0.33	58.8	22.8	43.9
33	331.8	0.331	65.4	14.9	6.47	2.632	48.719	46.660	82.7	36.0	67.7	21.1	3.21	0.32	59.3	23.3	44.4
34	338.8	0.335	65.5	15.0	6.47	2.707	49.836	47.710	83.7	36.0	68.8	21.0	3.27	0.31	59.9	23.9	44.9
35	345.8	0.340	65.5	15.0	6.48	2.782	50.935	48.741	84.8	36.0	69.8	21.0	3.32	0.31	60.4	24.4	45.4
36	352.6	0.345	65.5	15.0	6.48	2.867	52.016	49.748	85.8	36.0	70.8	21.0	3.36	0.30	60.9	24.9	45.9
37	359.4	0.349	65.4	14.9	6.49	2.942	53.097	50.757	86.8	36.0	71.8	21.1	3.41	0.29	61.4	25.4	46.5
38	366.1	0.354	65.4	14.9	6.49	3.017	54.159	51.748	87.8	36.0	72.9	21.1	3.45	0.29	61.9	25.9	47.0
39	371.7	0.359	65.3	14.8	6.50	3.093	55.056	52.577	88.6	36.0	73.7	21.2	3.48	0.28	62.3	26.3	47.5
40	377.4	0.363	65.3	14.8	6.50	3.168	55.954	53.404	89.4	36.0	74.6	21.2	3.52	0.28	62.7	26.7	47.9
41	383.5	0.368	65.2	14.7	6.51	3.252	56.925	54.296	90.3	36.0	75.6	21.3	3.55	0.27	63.2	27.1	48.4
42	388.8	0.373	65.2	14.7	6.51	3.328	57.767	55.068	91.1	36.0	76.4	21.3	3.58	0.27	63.5	27.5	48.9
43	394.1	0.377	65.1	14.6	6.52	3.403	58.610	55.838	91.9	36.0	77.2	21.4	3.61	0.26	63.9	27.9	49.3
44	399.0	0.382	65.0	14.5	6.52	3.478	59.397	56.554	92.6	36.0	78.0	21.5	3.63	0.26	64.3	28.3	49.8
45	404.5	0.387	64.9	14.4	6.53	3.563	60.258	57.334	93.3	36.0	78.9	21.6	3.66	0.25	64.7	28.7	50.2
46	409.4	0.392	64.8	14.4	6.53	3.638	61.046	58.048	94.1	36.0	79.7	21.7	3.68	0.25	65.0	29.0	50.7
47	414.3	0.396	64.7	14.2	6.54	3.713	61.815	58.743	94.8	36.0	80.5	21.8	3.70	0.24	65.4	29.4	51.1
48	419.1	0.401	64.6	14.2	6.54	3.788	62.584	59.436	95.5	36.0	81.3	21.9	3.72	0.24	65.7	29.7	51.6
49	423.7	0.405	64.6	14.1	6.55	3.863	63.317	60.093	96.1	36.0	82.0	21.9	3.74	0.23	66.1	30.0	52.0
50	428.5	0.410	64.4	14.0	6.55	3.939	64.086	60.785	96.8	36.0	82.8	22.1	3.76	0.23	66.4	30.4	52.4
51	433.2	0.415	64.4	13.9	6.56	4.023	64.819	61.434	97.4	36.0	83.6	22.1	3.78	0.23	66.7	30.7	52.9
52	437.4	0.420	64.2	13.8	6.56	4.098	65.496	62.035	98.0	36.0	84.3	22.3	3.79	0.22	67.0	31.0	53.3
53	441.6	0.424	64.1	13.6	6.57	4.174	66.156	62.617	98.6	36.0	85.0	22.4	3.80	0.22	67.3	31.3	53.7
54	445.7	0.429	64.0	13.5	6.57	4.249	66.815	63.199	99.2	36.0	85.7	22.5	3.80	0.21	67.6	31.6	54.1
55	449.8	0.433	63.9	13.4	6.58	4.324	67.456	63.762	99.8	36.0	86.4	22.6	3.82	0.21	67.9	31.9	54.5
56	453.9	0.438	63.8	13.3	6.58	4.399	68.115	64.342	100.4	36.0	87.1	22.7	3.83	0.21	68.2	32.2	54.9
57	457.9	0.442	63.6	13.2	6.59	4.474	68.756	64.903	100.9	36.0	87.8	22.9	3.84	0.20	68.5	32.5	55.3
58	461.6	0.447	63.5	13.0	6.59	4.550	69.342	65.411	101.4	36.0	88.4	23.0	3.85	0.20	68.7	32.7	55.7
59	465.4	0.452	63.4	12.9	6.60	4.625	69.947	65.935	101.9	36.0	89.1	23.1	3.85	0.20	69.0	33.0	56.1

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	469.5	0.456	63.2	12.8	6.61	4.700	70.588	66.493	102.5	36.0	89.8	23.3	3.86	0.19	69.3	33.2	56.5
61	472.9	0.461	63.1	12.6	6.61	4.775	71.137	66.963	103.0	36.0	90.4	23.4	3.86	0.19	69.5	33.5	56.9
62	476.2	0.465	63.0	12.5	6.62	4.850	71.650	67.398	103.4	36.0	90.9	23.5	3.86	0.19	69.7	33.7	57.2
63	479.9	0.470	62.8	12.3	6.62	4.926	72.236	67.901	103.9	36.0	91.6	23.7	3.87	0.18	70.0	34.0	57.6
64	483.1	0.475	62.7	12.2	6.63	5.010	72.749	68.327	104.3	36.0	92.1	23.8	3.87	0.18	70.2	34.2	57.9
65	486.5	0.479	62.6	12.1	6.63	5.076	73.299	68.801	104.8	36.0	92.7	23.9	3.87	0.18	70.4	34.4	58.3
66	489.5	0.484	62.4	11.9	6.64	5.161	73.775	69.190	105.2	36.0	93.3	24.1	3.88	0.17	70.6	34.6	58.7
67	492.7	0.489	62.3	11.8	6.64	5.236	74.269	69.604	105.6	36.0	93.8	24.2	3.87	0.17	70.8	34.8	59.0
68	495.6	0.493	62.2	11.7	6.65	5.311	74.746	69.999	106.0	36.0	94.3	24.3	3.87	0.17	71.0	35.0	59.3
69	498.5	0.498	62.0	11.5	6.65	5.386	75.203	70.376	106.4	36.0	94.8	24.5	3.88	0.16	71.2	35.2	59.7
70	501.2	0.502	61.9	11.4	6.66	5.462	75.625	70.717	106.7	36.0	95.3	24.6	3.87	0.16	71.4	35.4	60.0
71	503.7	0.507	61.7	11.3	6.66	5.537	76.028	71.041	107.1	36.0	95.8	24.8	3.87	0.16	71.5	35.5	60.3
72	506.0	0.512	61.6	11.1	6.67	5.612	76.394	71.330	107.3	36.0	96.2	24.9	3.87	0.16	71.7	35.7	60.5
73	508.6	0.517	61.5	11.0	6.68	5.697	76.797	71.645	107.7	36.0	96.7	25.0	3.86	0.15	71.8	35.8	60.9
74	511.2	0.521	61.3	10.9	6.68	5.772	77.218	71.984	108.0	36.0	97.1	25.2	3.86	0.15	72.0	36.0	61.1
75	513.5	0.526	61.2	10.7	6.69	5.847	77.584	72.271	108.3	36.0	97.5	25.3	3.86	0.15	72.1	36.1	61.4
76	515.2	0.530	61.1	10.6	6.69	5.922	77.859	72.471	108.5	36.0	97.9	25.4	3.85	0.15	72.2	36.2	61.6
77	516.9	0.535	60.9	10.5	6.70	5.997	78.116	72.654	108.7	36.0	98.2	25.6	3.84	0.14	72.3	36.3	61.9
78	518.1	0.540	60.8	10.3	6.70	6.073	78.317	72.784	108.8	36.0	98.5	25.7	3.83	0.14	72.4	36.4	62.1
79	519.6	0.545	60.7	10.2	6.71	6.157	78.555	72.941	109.0	36.0	98.7	25.8	3.83	0.14	72.5	36.5	62.3
80	520.8	0.549	60.6	10.1	6.71	6.232	78.738	73.054	109.1	36.0	99.0	25.9	3.82	0.14	72.5	36.5	62.4
81	521.7	0.554	60.5	10.0	6.72	6.308	78.885	73.132	109.1	36.0	99.2	26.0	3.81	0.14	72.6	36.6	62.6
82	522.3	0.558	60.3	9.9	6.72	6.383	78.976	73.159	109.2	36.0	99.3	26.2	3.80	0.13	72.6	36.6	62.7
83	521.6	0.563	60.2	9.7	6.73	6.458	78.867	72.996	109.0	36.0	99.3	26.3	3.77	0.13	72.5	36.5	62.8
84	524.2	0.568	60.1	9.6	6.73	6.533	79.288	73.331	109.3	36.0	99.7	26.4	3.78	0.13	72.7	36.7	63.1
85	524.9	0.572	60.0	9.5	6.74	6.608	79.398	73.374	109.4	36.0	99.9	26.5	3.77	0.13	72.7	36.7	63.2
86	526.1	0.577	59.9	9.4	6.75	6.684	79.581	73.485	109.5	36.0	100.1	26.6	3.76	0.13	72.8	36.7	63.3
87	527.2	0.581	59.8	9.3	6.75	6.759	79.764	73.596	109.6	36.0	100.3	26.7	3.75	0.13	72.8	36.8	63.5
88	528.2	0.586	59.7	9.2	6.76	6.834	79.911	73.672	109.7	36.0	100.5	26.8	3.74	0.12	72.9	36.8	63.7
89	529.0	0.590	59.5	9.1	6.76	6.909	80.039	73.732	109.7	36.0	100.7	27.0	3.73	0.12	72.9	36.9	63.8
90	529.8	0.595	59.5	9.0	6.77	6.984	80.167	73.791	109.8	36.0	100.8	27.0	3.73	0.12	72.9	36.9	63.9
91	530.5	0.599	59.3	8.9	6.77	7.060	80.277	73.833	109.8	36.0	101.0	27.2	3.72	0.12	72.9	36.9	64.1
92	531.0	0.604	59.3	8.8	6.78	7.135	80.368	73.857	109.9	36.0	101.1	27.2	3.71	0.12	72.9	36.9	64.2
93	532.0	0.609	59.1	8.6	6.78	7.210	80.515	73.933	109.9	36.0	101.3	27.4	3.70	0.12	73.0	37.0	64.3
94	532.8	0.613	59.0	8.5	6.79	7.285	80.643	73.991	110.0	36.0	101.5	27.5	3.69	0.12	73.0	37.0	64.5
95	533.2	0.618	58.9	8.4	6.80	7.360	80.716	73.998	110.0	36.0	101.6	27.6	3.68	0.11	73.0	37.0	64.6
96	533.9	0.622	58.8	8.3	6.80	7.436	80.826	74.039	110.1	36.0	101.7	27.7	3.67	0.11	73.0	37.0	64.7
97	534.4	0.627	58.7	8.2	6.81	7.520	80.900	74.039	110.1	36.0	101.8	27.8	3.67	0.11	73.0	37.0	64.8
98	534.7	0.632	58.6	8.1	6.81	7.595	80.955	74.029	110.0	36.0	101.9	27.9	3.65	0.11	73.0	37.0	64.9
99	535.3	0.637	58.5	8.0	6.82	7.671	81.046	74.052	110.1	36.0	102.0	28.0	3.65	0.11	73.0	37.0	65.0
100	536.2	0.641	58.4	7.9	6.82	7.746	81.193	74.127	110.1	36.0	102.2	28.1	3.64	0.11	73.1	37.1	65.2

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	536.8	0.646	58.3	7.8	6.83	7.821	81.284	74.150	110.2	36.0	102.3	28.2	3.63	0.11	73.1	37.1	65.2
102	536.8	0.650	58.2	7.7	6.83	7.896	81.284	74.089	110.1	36.0	102.4	28.3	3.62	0.10	73.1	37.0	65.3
103	536.9	0.655	58.1	7.6	6.84	7.971	81.303	74.045	110.1	36.0	102.4	28.4	3.61	0.10	73.0	37.0	65.4
104	537.2	0.660	58.0	7.6	6.85	8.056	81.339	74.009	110.0	36.0	102.5	28.5	3.60	0.10	73.0	37.0	65.5
105	537.7	0.665	57.9	7.4	6.85	8.131	81.431	74.032	110.0	36.0	102.6	28.6	3.59	0.10	73.0	37.0	65.6
106	537.7	0.669	57.8	7.4	6.86	8.206	81.431	73.971	110.0	36.0	102.6	28.7	3.58	0.10	73.0	37.0	65.6
107	538.0	0.674	57.8	7.3	6.86	8.282	81.467	73.943	110.0	36.0	102.7	28.7	3.57	0.10	73.0	37.0	65.7
108	537.8	0.679	57.6	7.2	6.87	8.366	81.449	73.858	109.9	36.0	102.7	28.9	3.56	0.10	72.9	36.9	65.8
109	537.8	0.683	57.6	7.1	6.88	8.441	81.449	73.797	109.8	36.0	102.7	28.9	3.55	0.10	72.9	36.9	65.8
110	538.0	0.688	57.5	7.0	6.88	8.517	81.467	73.752	109.8	36.0	102.8	29.0	3.54	0.09	72.9	36.9	65.9
111	537.8	0.693	57.4	6.9	6.89	8.592	81.449	73.674	109.7	36.0	102.8	29.1	3.53	0.09	72.9	36.8	65.9
112	537.7	0.698	57.3	6.8	6.89	8.676	81.431	73.588	109.6	36.0	102.8	29.2	3.52	0.09	72.8	36.8	66.0
113	537.4	0.702	57.2	6.7	6.90	8.752	81.376	73.477	109.5	36.0	102.8	29.3	3.51	0.09	72.8	36.7	66.0
114	537.2	0.707	57.1	6.6	6.90	8.827	81.339	73.382	109.4	36.0	102.8	29.4	3.50	0.09	72.7	36.7	66.1
115	537.2	0.711	57.0	6.6	6.91	8.902	81.339	73.321	109.3	36.0	102.8	29.5	3.49	0.09	72.7	36.7	66.1
116	537.3	0.716	57.0	6.5	6.92	8.977	81.357	73.277	109.3	36.0	102.8	29.5	3.48	0.09	72.7	36.6	66.2
117	536.9	0.721	56.9	6.4	6.92	9.052	81.303	73.166	109.2	36.0	102.8	29.6	3.47	0.09	72.6	36.6	66.2
118	536.7	0.725	56.8	6.3	6.93	9.128	81.266	73.071	109.1	36.0	102.8	29.7	3.46	0.09	72.5	36.5	66.2
119	536.0	0.730	56.7	6.2	6.93	9.203	81.156	72.910	108.9	36.0	102.7	29.8	3.45	0.09	72.5	36.5	66.2
120	535.7	0.734	56.6	6.1	6.94	9.278	81.101	72.799	108.8	36.0	102.7	29.9	3.43	0.08	72.4	36.4	66.3
121	535.8	0.739	56.5	6.0	6.95	9.363	81.119	72.747	108.8	36.0	102.7	30.0	3.43	0.08	72.4	36.4	66.4
122	535.3	0.743	56.4	6.0	6.95	9.428	81.046	72.628	108.6	36.0	102.7	30.1	3.42	0.08	72.3	36.3	66.4
123	534.7	0.749	56.4	5.9	6.96	9.513	80.955	72.476	108.5	36.0	102.6	30.1	3.40	0.08	72.3	36.2	66.4
124	534.0	0.752	56.3	5.8	6.96	9.579	80.845	72.324	108.3	36.0	102.5	30.2	3.39	0.08	72.2	36.2	66.4
125	533.8	0.757	56.2	5.7	6.97	9.654	80.808	72.230	108.2	36.0	102.5	30.3	3.38	0.08	72.1	36.1	66.4
126	533.5	0.762	56.1	5.6	6.97	9.729	80.753	72.119	108.1	36.0	102.5	30.4	3.37	0.08	72.1	36.1	66.4
127	533.2	0.766	56.0	5.6	6.98	9.804	80.716	72.026	108.0	36.0	102.5	30.5	3.36	0.08	72.0	36.0	66.5
128	532.8	0.771	56.0	5.5	6.98	9.880	80.643	71.899	107.9	36.0	102.4	30.5	3.35	0.08	72.0	35.9	66.5
129	532.8	0.775	55.9	5.4	6.99	9.955	80.643	71.838	107.9	36.0	102.5	30.6	3.35	0.08	71.9	35.9	66.5
130	532.1	0.780	55.8	5.3	7.00	10.030	80.533	71.679	107.7	36.0	102.4	30.7	3.33	0.07	71.9	35.8	66.6
131	531.5	0.785	55.7	5.2	7.00	10.115	80.442	71.528	107.5	36.0	102.4	30.8	3.32	0.07	71.8	35.8	66.6
132	530.9	0.790	55.6	5.1	7.01	10.190	80.350	71.386	107.4	36.0	102.3	30.9	3.31	0.07	71.7	35.7	66.6
133	530.4	0.794	55.5	5.0	7.01	10.265	80.259	71.243	107.3	36.0	102.2	31.0	3.30	0.07	71.6	35.6	66.6
134	529.8	0.799	55.4	4.9	7.02	10.340	80.167	71.100	107.1	36.0	102.2	31.1	3.29	0.07	71.6	35.6	66.6
135	529.0	0.803	55.4	4.9	7.03	10.415	80.039	70.925	106.9	36.0	102.1	31.1	3.28	0.07	71.5	35.5	66.6
136	528.5	0.808	55.3	4.8	7.03	10.491	79.965	70.800	106.8	36.0	102.0	31.2	3.27	0.07	71.4	35.4	66.6
137	528.2	0.813	55.2	4.7	7.04	10.575	79.911	70.683	106.7	36.0	102.0	31.3	3.25	0.07	71.4	35.3	66.7
138	527.5	0.818	55.1	4.6	7.05	10.650	79.801	70.524	106.5	36.0	102.0	31.4	3.24	0.07	71.3	35.3	66.7
139	526.9	0.822	55.0	4.5	7.05	10.726	79.709	70.383	106.4	36.0	101.9	31.5	3.23	0.06	71.2	35.2	66.7
140	526.2	0.827	54.9	4.4	7.06	10.801	79.599	70.225	106.2	36.0	101.8	31.6	3.22	0.06	71.1	35.1	66.7
141	525.9	0.832	54.8	4.3	7.06	10.885	79.544	70.108	106.1	36.0	101.8	31.7	3.21	0.06	71.1	35.1	66.7

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	525.0	0.836	54.8	4.3	7.07	10.961	79.416	69.934	105.9	36.0	101.7	31.7	3.20	0.06	71.0	35.0	66.7
143	524.7	0.841	54.7	4.2	7.08	11.036	79.361	69.826	105.8	36.0	101.7	31.8	3.19	0.06	70.9	34.9	66.7
144	524.5	0.846	54.6	4.1	7.08	11.111	79.324	69.734	105.7	36.0	101.6	31.9	3.19	0.06	70.9	34.9	66.8
145	523.5	0.850	54.5	4.0	7.09	11.186	79.178	69.544	105.6	36.0	101.5	32.0	3.17	0.06	70.8	34.8	66.8
146	523.1	0.855	54.4	3.9	7.09	11.261	79.105	69.419	105.4	36.0	101.5	32.1	3.16	0.06	70.7	34.7	66.8
147	522.6	0.859	54.3	3.9	7.10	11.337	79.031	69.295	105.3	36.0	101.4	32.2	3.16	0.06	70.7	34.6	66.8
148	521.8	0.864	54.2	3.7	7.11	11.412	78.903	69.122	105.1	36.0	101.4	32.3	3.14	0.05	70.6	34.6	66.8
149	521.6	0.869	54.1	3.7	7.11	11.496	78.867	69.023	105.0	36.0	101.4	32.4	3.13	0.05	70.5	34.5	66.9
150	520.9	0.874	54.1	3.6	7.12	11.572	78.757	68.866	104.9	36.0	101.3	32.4	3.12	0.05	70.4	34.4	66.9
151	520.2	0.878	53.9	3.5	7.12	11.647	78.647	68.710	104.7	36.0	101.3	32.6	3.11	0.05	70.4	34.4	66.9
152	520.0	0.883	53.9	3.4	7.13	11.722	78.610	68.618	104.6	36.0	101.3	32.6	3.10	0.05	70.3	34.3	66.9
153	519.4	0.887	53.8	3.3	7.14	11.797	78.519	68.478	104.5	36.0	101.2	32.7	3.09	0.05	70.3	34.2	67.0
154	518.8	0.892	53.7	3.2	7.14	11.872	78.427	68.339	104.4	36.0	101.1	32.8	3.08	0.05	70.2	34.2	67.0
155	518.0	0.896	53.6	3.1	7.15	11.948	78.299	68.167	104.2	36.0	101.0	32.9	3.07	0.05	70.1	34.1	67.0
156	517.4	0.901	53.5	3.1	7.16	12.023	78.207	68.027	104.0	36.0	101.0	33.0	3.06	0.04	70.0	34.0	67.0
157	516.5	0.906	53.4	2.9	7.16	12.098	78.061	67.840	103.9	36.0	100.9	33.1	3.05	0.04	69.9	33.9	67.0
158	515.6	0.910	53.3	2.9	7.17	12.173	77.914	67.652	103.7	36.0	100.8	33.2	3.04	0.04	69.8	33.8	67.0
159	515.1	0.915	53.3	2.8	7.17	12.248	77.841	67.530	103.5	36.0	100.8	33.2	3.03	0.04	69.8	33.8	67.0
160	514.4	0.919	53.2	2.7	7.18	12.324	77.731	67.375	103.4	36.0	100.7	33.3	3.02	0.04	69.7	33.7	67.0
161	513.7	0.924	53.1	2.6	7.19	12.399	77.621	67.220	103.2	36.0	100.6	33.4	3.01	0.04	69.6	33.6	67.0
162	513.1	0.928	53.0	2.5	7.19	12.474	77.511	67.065	103.1	36.0	100.5	33.5	3.00	0.04	69.5	33.5	67.0
163	512.1	0.933	52.9	2.5	7.20	12.549	77.365	66.879	102.9	36.0	100.4	33.6	2.99	0.04	69.5	33.4	67.0
164	511.6	0.938	52.8	2.3	7.21	12.634	77.273	66.733	102.7	36.0	100.4	33.7	2.98	0.03	69.4	33.4	67.0
165	511.0	0.943	52.7	2.3	7.21	12.709	77.182	66.595	102.6	36.0	100.4	33.8	2.97	0.03	69.3	33.3	67.1
166	510.8	0.947	52.7	2.2	7.22	12.784	77.145	66.505	102.5	36.0	100.3	33.8	2.97	0.03	69.3	33.3	67.1
167	509.9	0.952	52.6	2.1	7.22	12.859	77.017	66.336	102.3	36.0	100.3	33.9	2.96	0.03	69.2	33.2	67.1
168	509.6	0.957	52.5	2.0	7.23	12.944	76.962	66.223	102.2	36.0	100.2	34.0	2.95	0.03	69.1	33.1	67.1
169	509.4	0.961	52.5	2.0	7.24	13.019	76.925	66.133	102.1	36.0	100.2	34.0	2.94	0.03	69.1	33.1	67.1
170	508.2	0.966	52.3	1.9	7.24	13.094	76.742	65.916	101.9	36.0	100.1	34.2	2.93	0.03	69.0	33.0	67.1
171	507.9	0.971	52.3	1.8	7.25	13.170	76.687	65.811	101.8	36.0	100.1	34.2	2.92	0.03	68.9	32.9	67.1
172	507.3	0.975	52.2	1.7	7.26	13.245	76.595	65.673	101.7	36.0	100.0	34.3	2.91	0.03	68.9	32.8	67.2
173	506.8	0.980	52.1	1.6	7.26	13.320	76.522	65.552	101.6	36.0	99.9	34.4	2.91	0.03	68.8	32.8	67.1
174	506.4	0.984	52.1	1.6	7.27	13.395	76.449	65.431	101.4	36.0	99.9	34.4	2.90	0.02	68.7	32.7	67.2
175	505.8	0.989	52.0	1.5	7.28	13.480	76.357	65.287	101.3	36.0	99.8	34.5	2.89	0.02	68.7	32.6	67.1
176	505.6	0.994	51.9	1.4	7.28	13.555	76.321	65.198	101.2	36.0	99.8	34.6	2.89	0.02	68.6	32.6	67.2
177	505.0	0.999	51.9	1.4	7.29	13.630	76.229	65.062	101.1	36.0	99.7	34.6	2.88	0.02	68.5	32.5	67.2
178	504.4	1.003	51.8	1.3	7.29	13.705	76.138	64.925	100.9	36.0	99.7	34.7	2.87	0.02	68.5	32.5	67.2
179	504.1	1.008	51.7	1.2	7.30	13.781	76.083	64.821	100.8	36.0	99.6	34.8	2.86	0.02	68.4	32.4	67.2
180	503.6	1.012	51.7	1.2	7.31	13.856	76.009	64.700	100.7	36.0	99.5	34.8	2.86	0.02	68.4	32.4	67.2
181	503.5	1.017	51.6	1.1	7.31	13.931	75.991	64.628	100.6	36.0	99.6	34.9	2.85	0.02	68.3	32.3	67.2
182	503.0	1.021	51.5	1.0	7.32	14.006	75.918	64.507	100.5	36.0	99.5	35.0	2.84	0.02	68.3	32.3	67.2

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	502.6	1.026	51.5	1.0	7.33	14.081	75.844	64.387	100.4	36.0	99.4	35.0	2.84	0.01	68.2	32.2	67.2
184	502.2	1.031	51.4	0.9	7.33	14.157	75.790	64.283	100.3	36.0	99.4	35.1	2.83	0.01	68.2	32.1	67.2
185	501.4	1.035	51.3	0.8	7.34	14.232	75.661	64.116	100.1	36.0	99.3	35.2	2.82	0.01	68.1	32.1	67.2
186	500.7	1.040	51.3	0.8	7.35	14.307	75.551	63.965	100.0	36.0	99.2	35.2	2.81	0.01	68.0	32.0	67.2
187	500.3	1.044	51.2	0.7	7.35	14.382	75.478	63.846	99.9	36.0	99.1	35.3	2.81	0.01	67.9	31.9	67.2
188	500.0	1.049	51.1	0.6	7.36	14.457	75.442	63.758	99.8	36.0	99.1	35.4	2.80	0.01	67.9	31.9	67.2
189	499.6	1.053	51.1	0.6	7.37	14.533	75.368	63.638	99.7	36.0	99.0	35.4	2.80	0.01	67.8	31.8	67.2
190	499.2	1.058	51.0	0.6	7.37	14.608	75.313	63.535	99.5	36.0	99.0	35.5	2.79	0.01	67.8	31.8	67.2
191	498.9	1.063	51.0	0.5	7.38	14.683	75.258	63.431	99.4	36.0	99.0	35.5	2.79	0.01	67.7	31.7	67.2
192	498.6	1.067	50.9	0.4	7.38	14.758	75.222	63.343	99.4	36.0	98.9	35.6	2.78	0.01	67.7	31.7	67.2
193	498.2	1.072	50.8	0.4	7.39	14.833	75.149	63.224	99.2	36.0	98.9	35.7	2.77	0.01	67.6	31.6	67.3
194	498.1	1.076	50.8	0.3	7.40	14.909	75.130	63.152	99.2	36.0	98.8	35.7	2.77	0.01	67.6	31.6	67.3
195	498.0	1.081	50.8	0.3	7.40	14.984	75.112	63.080	99.1	36.0	98.8	35.7	2.77	0.00	67.6	31.5	67.3
196	497.5	1.085	50.7	0.2	7.41	15.059	75.039	62.961	99.0	36.0	98.8	35.8	2.76	0.00	67.5	31.5	67.3
197	497.1	1.090	50.6	0.2	7.42	15.144	74.984	62.851	98.9	36.0	98.7	35.9	2.75	0.00	67.4	31.4	67.3
198	496.9	1.095	50.6	0.1	7.42	15.219	74.947	62.764	98.8	36.0	98.7	35.9	2.75	0.00	67.4	31.4	67.3
199	496.6	1.100	50.6	0.1	7.43	15.294	74.892	62.661	98.7	36.0	98.6	35.9	2.74	0.00	67.3	31.3	67.3
200	496.7	1.104	50.5	0.0	7.44	15.369	74.910	62.620	98.6	36.0	98.6	36.0	2.74	0.00	67.3	31.3	67.3
201	497.0	1.109	50.4	0.0	7.44	15.445	74.965	62.610	98.6	36.0	98.7	36.1	2.74	0.00	67.3	31.3	67.4
202	497.0	1.113	50.4	-0.1	7.45	15.520	74.965	62.554	98.6	36.0	98.6	36.1	2.73	0.00	67.3	31.3	67.4
203	496.7	1.118	50.4	-0.1	7.46	15.604	74.910	62.444	98.5	36.0	98.6	36.1	2.73	0.00	67.2	31.2	67.4
204	496.7	1.123	50.3	-0.2	7.47	15.680	74.910	62.388	98.4	36.0	98.6	36.2	2.72	0.00	67.2	31.2	67.4
205	496.2	1.128	50.2	-0.2	7.47	15.755	74.837	62.270	98.3	36.0	98.5	36.3	2.72	0.00	67.1	31.1	67.4
206	496.0	1.132	50.2	-0.3	7.48	15.830	74.801	62.183	98.2	36.0	98.5	36.3	2.71	0.00	67.1	31.1	67.4
207	496.0	1.137	50.2	-0.3	7.49	15.905	74.801	62.126	98.1	36.0	98.5	36.3	2.71	-0.01	67.1	31.1	67.4
208	495.8	1.142	50.1	-0.4	7.49	15.990	74.764	62.032	98.0	36.0	98.4	36.4	2.71	-0.01	67.0	31.0	67.4
209	495.8	1.146	50.0	-0.4	7.50	16.065	74.764	61.976	98.0	36.0	98.4	36.5	2.70	-0.01	67.0	31.0	67.4
210	495.8	1.151	50.0	-0.5	7.51	16.140	74.764	61.920	97.9	36.0	98.4	36.5	2.70	-0.01	67.0	31.0	67.5
211	495.4	1.156	50.0	-0.5	7.51	16.215	74.709	61.818	97.8	36.0	98.4	36.5	2.69	-0.01	66.9	30.9	67.4
212	495.2	1.160	49.9	-0.6	7.52	16.291	74.672	61.731	97.7	36.0	98.3	36.6	2.69	-0.01	66.9	30.9	67.4
213	495.5	1.165	49.9	-0.6	7.53	16.366	74.727	61.720	97.7	36.0	98.3	36.6	2.69	-0.01	66.9	30.9	67.5
214	495.2	1.169	49.8	-0.6	7.53	16.441	74.672	61.618	97.6	36.0	98.3	36.7	2.68	-0.01	66.8	30.8	67.5
215	495.4	1.174	49.8	-0.7	7.54	16.516	74.709	61.593	97.6	36.0	98.3	36.7	2.68	-0.01	66.8	30.8	67.5
216	494.8	1.178	49.8	-0.7	7.55	16.591	74.617	61.460	97.5	36.0	98.2	36.7	2.67	-0.01	66.7	30.7	67.5
217	495.0	1.183	49.7	-0.8	7.55	16.667	74.636	61.419	97.4	36.0	98.2	36.8	2.67	-0.01	66.7	30.7	67.5
218	494.8	1.188	49.7	-0.8	7.56	16.742	74.617	61.348	97.4	36.0	98.2	36.8	2.67	-0.01	66.7	30.7	67.5
219	494.8	1.192	49.6	-0.8	7.57	16.817	74.617	61.292	97.3	36.0	98.2	36.9	2.66	-0.01	66.7	30.6	67.5
220	495.0	1.197	49.6	-0.9	7.57	16.892	74.636	61.251	97.3	36.0	98.1	36.9	2.66	-0.01	66.6	30.6	67.5
221	494.8	1.201	49.6	-0.9	7.58	16.967	74.617	61.180	97.2	36.0	98.1	36.9	2.66	-0.02	66.6	30.6	67.5
222	494.6	1.206	49.5	-1.0	7.59	17.043	74.581	61.093	97.1	36.0	98.1	37.0	2.65	-0.02	66.6	30.5	67.5
223	494.5	1.210	49.5	-1.0	7.59	17.118	74.562	61.022	97.0	36.0	98.0	37.0	2.65	-0.02	66.5	30.5	67.5

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	494.4	1.215	49.4	-1.0	7.60	17.193	74.544	60.951	97.0	36.0	98.0	37.1	2.64	-0.02	66.5	30.5	67.5
225	494.0	1.220	49.4	-1.0	7.61	17.268	74.489	60.849	96.9	36.0	97.9	37.1	2.64	-0.02	66.4	30.4	67.5
226	494.0	1.224	49.4	-1.1	7.62	17.343	74.489	60.793	96.8	36.0	97.9	37.1	2.64	-0.02	66.4	30.4	67.5
227	494.0	1.229	49.4	-1.1	7.62	17.419	74.489	60.737	96.8	36.0	97.9	37.1	2.64	-0.02	66.4	30.4	67.5
228	493.8	1.233	49.3	-1.2	7.63	17.494	74.453	60.651	96.7	36.0	97.8	37.2	2.63	-0.02	66.3	30.3	67.5
229	493.3	1.238	49.3	-1.2	7.64	17.569	74.379	60.535	96.5	36.0	97.8	37.2	2.63	-0.02	66.3	30.3	67.5
230	492.7	1.242	49.2	-1.2	7.64	17.644	74.269	60.388	96.4	36.0	97.6	37.3	2.62	-0.02	66.2	30.2	67.5
231	492.9	1.248	49.2	-1.3	7.65	17.729	74.306	60.355	96.4	36.0	97.7	37.3	2.62	-0.02	66.2	30.2	67.5
232	492.5	1.252	49.2	-1.3	7.66	17.804	74.251	60.254	96.3	36.0	97.6	37.3	2.62	-0.02	66.1	30.1	67.4
233	492.7	1.257	49.2	-1.3	7.67	17.879	74.269	60.214	96.2	36.0	97.6	37.3	2.61	-0.02	66.1	30.1	67.4
234	492.4	1.261	49.1	-1.4	7.67	17.954	74.233	60.128	96.1	36.0	97.5	37.4	2.61	-0.02	66.1	30.1	67.4
235	492.9	1.266	49.1	-1.4	7.68	18.030	74.306	60.132	96.1	36.0	97.6	37.4	2.61	-0.02	66.1	30.1	67.5
236	493.2	1.270	49.1	-1.4	7.69	18.105	74.361	60.121	96.1	36.0	97.5	37.4	2.61	-0.02	66.1	30.1	67.5
237	493.1	1.275	49.0	-1.4	7.69	18.189	74.343	60.043	96.1	36.0	97.5	37.5	2.60	-0.02	66.0	30.0	67.5
238	493.0	1.280	49.0	-1.4	7.70	18.265	74.324	59.972	96.0	36.0	97.4	37.5	2.60	-0.02	66.0	30.0	67.4
239	492.8	1.285	49.0	-1.5	7.71	18.340	74.288	59.886	95.9	36.0	97.4	37.5	2.60	-0.02	66.0	29.9	67.4
240	492.5	1.289	49.0	-1.5	7.72	18.415	74.251	59.801	95.8	36.0	97.3	37.5	2.59	-0.03	65.9	29.9	67.4
241	492.3	1.294	49.0	-1.5	7.72	18.500	74.214	59.708	95.7	36.0	97.3	37.5	2.59	-0.03	65.9	29.9	67.4
242	492.4	1.298	48.9	-1.6	7.73	18.565	74.233	59.674	95.7	36.0	97.3	37.6	2.59	-0.03	65.9	29.8	67.4
243	492.7	1.303	48.9	-1.6	7.74	18.650	74.269	59.641	95.7	36.0	97.2	37.6	2.59	-0.03	65.8	29.8	67.4
244	492.8	1.308	48.9	-1.6	7.75	18.725	74.288	59.600	95.6	36.0	97.2	37.6	2.58	-0.03	65.8	29.8	67.4
245	492.9	1.313	48.9	-1.6	7.75	18.800	74.306	59.559	95.6	36.0	97.2	37.6	2.58	-0.03	65.8	29.8	67.4
246	493.2	1.317	48.9	-1.6	7.76	18.876	74.361	59.548	95.6	36.0	97.2	37.6	2.58	-0.03	65.8	29.8	67.4
247	493.6	1.322	48.8	-1.6	7.77	18.951	74.416	59.536	95.6	36.0	97.2	37.7	2.58	-0.03	65.8	29.8	67.4
248	493.8	1.326	48.8	-1.6	7.77	19.017	74.453	59.517	95.5	36.0	97.2	37.7	2.58	-0.03	65.8	29.8	67.4
249	494.1	1.331	48.8	-1.6	7.78	19.101	74.507	59.499	95.5	36.0	97.2	37.7	2.58	-0.03	65.8	29.7	67.4
250	494.5	1.335	48.8	-1.7	7.79	19.176	74.562	59.487	95.5	36.0	97.2	37.7	2.58	-0.03	65.8	29.7	67.4
251	495.2	1.339	48.8	-1.7	7.79	19.242	74.672	59.527	95.5	36.0	97.2	37.7	2.58	-0.03	65.8	29.8	67.5
252	495.1	1.344	48.8	-1.7	7.80	19.317	74.654	59.456	95.5	36.0	97.2	37.7	2.58	-0.03	65.7	29.7	67.4
253	495.5	1.349	48.8	-1.7	7.81	19.393	74.727	59.459	95.5	36.0	97.2	37.7	2.58	-0.03	65.7	29.7	67.4
254	496.1	1.353	48.8	-1.7	7.82	19.468	74.819	59.476	95.5	36.0	97.2	37.7	2.58	-0.03	65.8	29.7	67.5
255	497.0	1.358	48.8	-1.7	7.82	19.543	74.965	59.538	95.6	36.0	97.3	37.7	2.58	-0.03	65.8	29.8	67.5
256	497.4	1.362	48.8	-1.7	7.83	19.618	75.020	59.526	95.5	36.0	97.3	37.7	2.58	-0.03	65.8	29.8	67.5
257	497.7	1.367	48.7	-1.8	7.84	19.693	75.075	59.513	95.5	36.0	97.3	37.8	2.58	-0.03	65.8	29.8	67.5
258	498.0	1.371	48.7	-1.8	7.85	19.769	75.112	59.486	95.5	36.0	97.3	37.8	2.57	-0.03	65.8	29.7	67.5
259	498.0	1.376	48.7	-1.8	7.85	19.844	75.112	59.430	95.4	36.0	97.2	37.8	2.57	-0.03	65.7	29.7	67.5
260	498.1	1.381	48.7	-1.8	7.86	19.919	75.130	59.388	95.4	36.0	97.2	37.8	2.57	-0.03	65.7	29.7	67.5
261	498.1	1.385	48.7	-1.8	7.87	19.994	75.130	59.331	95.3	36.0	97.1	37.8	2.57	-0.03	65.7	29.7	67.4
262	498.1	1.386	48.7	-1.8	7.87	20.004	75.130	59.324	95.3	36.0	97.1	37.8	2.57	-0.03	65.7	29.7	67.4

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)

T-5674 #1

T-5674 #1

T-5674 #2

T-5674 #2

T-5674 #3

T-5674 #3

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. U-2412B

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project 39406.1.1 **County** Guilford **Owner**

Date: Sampled 3/22/13 **Received** 5/30/13 **Reported** 6/3/13

Sampled from **By** Neil Robertson

Submitted by Suriyati' BS 1995 **Standard Specifications**

785957 TO 785959
6/26/13

TEST RESULTS

Proj. Sample No.		ST-5 #1	ST-5 #2	ST-5 #3			
Lab. Sample No.		785957	785958	785959			
Retained #4 Sieve	%	-	-	-			
Passing #10 Sieve	%	96	100	100			
Passing #40 Sieve	%	90	97	98			
Passing #200 Sieve	%	75	79	81			

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	10.6	7.8	5.0			
Fine Sand Ret - #270	%	16.1	19.1	20.1			
Silt 0.05 - 0.005 mm	%	43.2	53.0	56.8			
Clay < 0.005 mm	%	30.1	20.1	18.1			
T-#		T-5676	T-5676	T-5676			
Specific Gravity		2.835	2.829	2.829			

L. L.		45	46	47			
P. I.		17	14	16			
AASHTO Classification		A-7-6(13)	A-7-5(13)	A-7-5(15)			
Station		405+70	405+70	405+70			
Offset		3' RT	3' RT	3' RT			
Alignment		-L-	-L-	-L-			
Location							
Depth (Ft)		40.00	40.00	40.00			
	to	42.00	42.00	42.00			
Final Moisture	%	31.76	28.23	28.19			

cc: NEIL ROBERSON
SURIYATI, B S
GREG BODENHEIMER

Soils Engineer

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	23.63	26.97	**Plastic Limits:**	0	
Dry Density (pcf):	94.34	101.64	**Plasticity Index (%):**	0	
Saturation (%):	77.35	104.56			
Void Ratio:	0.8576	0.7240	**Specific Gravity:**	2.807	Measured

Soil Description: Greyish-tan colored clay; a little brittle and dry.

Project Number: 39406.1.1 **Depth:** 40.0 - 42.0 ft

Sample Number: ST-5 **Boring Number:**

Project: U-2412B

Client: T-5676

Location: Guilford County (Sta. 405+70)

Remarks:
Solid Height 0.54002 inches ; Est. Blows/Ft= NA.

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	23.63	26.97	**Plastic Limits:**	0	
Dry Density (pcf):	94.34	101.64	**Plasticity Index (%):**	0	
Saturation (%):	77.35	104.56			
Void Ratio:	0.8576	0.7240	**Specific Gravity:**	2.807	Measured

Soil Description: Greyish-tan colored clay; a little brittle and dry.

Project Number: 39406.1.1 **Depth:** 40.0 - 42.0 ft

Sample Number: ST-5 **Boring Number:**

Project: U-2412B

Client: T-5676

Location: Guilford County (Sta. 405+70)

Remarks:
Solid Height 0.54002 inches ; Est. Blows/Ft= NA.

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	23.63	26.97	**Plastic Limits:**	0	
Dry Density (pcf):	94.34	101.64	**Plasticity Index (%):**	0	
Saturation (%):	77.35	104.56			
Void Ratio:	0.8576	0.7240	**Specific Gravity:**	2.807	Measured

Soil Description: Greyish-tan colored clay; a little brittle and dry.

Project Number: 39406.1.1 **Depth:** 40.0 - 42.0 ft

Sample Number: ST-5 **Boring Number:**

Project: U-2412B

Client: T-5676

Location: Guilford County (Sta. 405+70)

Remarks:
Solid Height 0.54002 inches ; Est. Blows/Ft= NA.

Consolidation Test Results
Summary

Project: U-2412B
Location: Guilford County (Sta. 405+70)
Job Number: T-5676

Project Number: 39406.1.1

Sample Number: ST-5
Boring Number:
Depth: 40.0 - 42.0 ft
Sample Type: Undisturbed

Soil Description:
Greyish-tan colored clay; a little brittle and dry.
Remarks:
Solid Height 0.54002 inches ; Est. Blows/Ft= NA.

Test Number:
Test Date:

Index	Load Sequence (tsf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	1.0005	0.4619	0.00	0.8576	0.000		0.000	
1	0.063	0.0011	0.9994	0.4608	0.11	0.8556	0.360		2146.866	
2	0.125	0.0029	0.9976	0.4590	0.29	0.8523	0.369		2086.965	
3	0.250	0.0066	0.9939	0.4553	0.66	0.8454	0.510		1498.801	
4	0.500	0.0136	0.9869	0.4483	1.36	0.8324	1.563		482.188	
5	1.000	0.0227	0.9778	0.4392	2.27	0.8155	1.459		507.076	
6	2.000	0.0351	0.9654	0.4268	3.51	0.7925	0.735		981.731	
7	4.000	0.0533	0.9472	0.4086	5.33	0.7587	2.042		339.982	
8	2.000	0.0503	0.9502	0.4116	5.03	0.7643	0.000		0.000	
9	1.000	0.0464	0.9541	0.4155	4.64	0.7715	0.000		0.000	
10	0.500	0.0423	0.9582	0.4196	4.23	0.7791	0.000		0.000	
11	1.000	0.0445	0.9560	0.4174	4.45	0.7750	0.000		0.000	
12	2.000	0.0481	0.9524	0.4138	4.81	0.7683	0.000		0.000	
13	4.000	0.0549	0.9456	0.4070	5.49	0.7557	0.000		0.000	
14	8.000	0.0791	0.9214	0.3828	7.91	0.7108	1.563		420.307	
15	16.000	0.1158	0.8847	0.3461	11.57	0.6426	0.250		2422.595	
16	4.000	0.1082	0.8923	0.3537	10.81	0.6568	0.000		0.000	
17	0.016	0.0720	0.9285	0.3899	7.20	0.7240	0.000		0.000	

Tested By:

Checked By:

Consolidation Test
Consolidation Specimen Information

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County (Sta. 405+70)
Job Number: T-5676 **Test Date:**

Sample Number: ST-5 **Soil Description:**
Boring Number: Greyish-tan colored clay; a little brittle and dry.
Depth: 40.0 - 42.0 ft **Remarks:**
Sample Type: Undisturbed Solid Height 0.54002 inches ; Est. Blows/Ft= NA.

Test Number:
Liquid Limit: 0.0000 **Initial Void Ratio:** 0.8576 **Initial Height (in):** 1.0005
Plastic Limit: 0.0000 **Plasticity Index (%):** 0.0000 **Initial Diameter (in):** 2.4999
Specific Gravity: 2.8070 Measured **Weight of Ring (g):** 109.8100

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	150.34	154.39
Dry Soil + Container (g)	121.60	121.60
Weight of Container (g)	0.00	0.00
Moisture Content (%)	23.63	26.97
Void Ratio	0.8576	0.7240
Saturation (%)	77.35	104.56
Dry Density (pcf)	94.34	101.64

Tested By: **Checked By:**

ncdot

Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date

Tested By:

Effective Stress at Maximum Deviator Stress Criterion

Deviator Stress Vs. Axial Strain

Initial	Specimen A	B	C	D
Water Content (%)	26.9	25.4	25.6	
Dry Density (pcf)	89.2	95.4	90.9	
Saturation (%)	77.57	84.43	76.85	
Void Ratio	0.979	0.847	0.938	
Diameter (in)	2.858	2.868	2.858	
Height (in)	5.365	6.177	6.605	
Specific Gravity	2.84	2.83	2.83	
Liquid Limit	0	0	0	
Plastic Limit	0	0	0	
After Consolidation	**A**	**B**	**C**	**D**
B-Value	0.00	0.00	0.00	
Water Content (%)	29.4	31.1	29.7	
Dry Density (pcf)	95.72	104.64	103.96	
Saturation (%)	100.00	100.00	100.00	
Void Ratio	0.849	0.688	0.699	
Effective Stress (psi)	9.0	18.0	36.0	
Back Press. (psi)	50.4	50.5	51.0	
Rate of Strain	0.009	0.009	0.009	

Maximium Deviator Stress Criterion	
C (psi)	0.0
C' (psi)	0.0
Ø (deg)	0.0
Ø' (deg)	0.0

After Shear	A	B	C	D
σ'1 at Failure (psi)	16.45	54.51	86.34	
σ'3 at Failure (psi)	6.50	13.76	21.30	

Project:	U-2412B	N/A	N/A	N/A	N/A
Location:	Guilford County (Sta. 405+70)				
Project Number:	39406.1.1				
Boring Number:					
Sample Number:	ST-5				
Depth:	40.0 - 42.0 ft				
Sample Type:	Undisturbed	Failure Photographs			
Description:					
Test Type	Consolidated Undrained				
Remarks	Research				

ncdot

Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date:

Tested By:

Deviator Stress vs. Axial Strain

Principal Stress Ratio vs. Axial Strain

Change in Pore Pressure vs. Axial Strain
Change in Pore Pressure (psi)
19.0
17.0
15.0
13.0
11.0
9.0
7.0
5.0
3.0
1.0
0.000
5.000
10.000
15.000
20.000
25.000
Axial Strain (%)
Specimen A
Specimen B
Specimen C
Specimen D

Mohr Stress Circles at Maximum Deviator Stress Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at Maximum Principal Stress Ratio Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at 15% Axial Strain Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)
Q (psi)
60.0
45.0
30.0
15.0
0.0
0.0
15.0
30.0
45.0
60.0
P' (psi)
Specimen A
Specimen B
Specimen C
Specimen D
Tangent Line

Stress Paths (Total)
(C' = 0.0 Ø' = 0.0)
Q (psi)
80.0
60.0
40.0
20.0
0.0
0.0
20.0
40.0
60.0
80.0
P (psi)

Specimen A Shear Data

CU Triaxial Test

ncdot

File Location
T-5676.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5676
Sample Location: Guilford County (Sta. 405+70)
Sample Description: Tan colored soft clay
Remarks: 20° shear plane.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.835
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.858	2.788	
Height (in)	5.365	5.255	
Weight (grams)	1023.00		1062.00
Moisture (%)	26.92		31.76
Dry Density (pcf)	89.21	95.72	
Saturation (%)	77.57	100.00	
Void Ratio	0.979	0.849	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 59.400
Effective Confining Stress (psi): 9.0
Corrected Peak Deviator Stress (psi): 9.950 at reading number: 239

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	15.3	0.230	50.4	0.0	6.10	0.000	0.000	0.000	9.0	9.0	9.0	9.0	1.00	0.00	9.0	0.0	9.0
1	23.9	0.235	50.8	0.4	6.11	0.087	1.411	1.376	10.4	9.0	10.0	8.6	1.16	0.28	9.7	0.7	9.3
2	25.1	0.240	51.0	0.6	6.11	0.175	1.621	1.549	10.5	9.0	10.0	8.4	1.18	0.36	9.8	0.8	9.2
3	32.5	0.244	51.6	1.1	6.12	0.262	2.823	2.712	11.7	9.0	10.6	7.8	1.35	0.42	10.3	1.4	9.2
4	24.8	0.249	51.0	0.6	6.13	0.350	1.564	1.420	10.4	9.0	9.9	8.4	1.17	0.39	9.7	0.7	9.1
5	26.3	0.253	51.2	0.8	6.13	0.437	1.812	1.631	10.6	9.0	9.8	8.2	1.20	0.49	9.8	0.8	9.0
6	31.7	0.258	51.7	1.3	6.14	0.525	2.689	2.468	11.5	9.0	10.1	7.7	1.32	0.54	10.2	1.2	8.9
7	35.9	0.262	52.0	1.6	6.14	0.604	3.376	3.117	12.1	9.0	10.5	7.4	1.42	0.51	10.6	1.6	9.0
8	37.8	0.267	52.1	1.7	6.15	0.691	3.700	3.402	12.4	9.0	10.7	7.3	1.47	0.51	10.7	1.7	9.0
9	38.8	0.270	52.2	1.8	6.15	0.761	3.852	3.523	12.5	9.0	10.7	7.2	1.49	0.52	10.8	1.8	8.9
10	39.5	0.274	52.3	1.9	6.15	0.822	3.967	3.610	12.6	9.0	10.7	7.1	1.51	0.53	10.8	1.8	8.9
11	41.1	0.277	52.4	2.0	6.16	0.892	4.234	3.844	12.8	9.0	10.8	7.0	1.55	0.53	10.9	1.9	8.9
12	42.8	0.281	52.5	2.1	6.16	0.971	4.520	4.093	13.1	9.0	10.9	6.9	1.60	0.52	11.0	2.0	8.9
13	43.9	0.286	52.7	2.3	6.17	1.050	4.692	4.228	13.2	9.0	11.0	6.7	1.63	0.53	11.1	2.1	8.8
14	44.8	0.290	52.8	2.3	6.17	1.137	4.844	4.340	13.3	9.0	11.0	6.6	1.65	0.54	11.2	2.2	8.8
15	45.6	0.294	52.8	2.4	6.18	1.207	4.978	4.441	13.4	9.0	11.0	6.6	1.68	0.55	11.2	2.2	8.8
16	47.0	0.298	52.9	2.5	6.18	1.286	5.206	4.632	13.6	9.0	11.1	6.5	1.72	0.54	11.3	2.3	8.8
17	47.3	0.302	53.0	2.6	6.19	1.356	5.245	4.638	13.6	9.0	11.0	6.4	1.73	0.56	11.3	2.3	8.7
18	47.4	0.306	53.1	2.7	6.19	1.435	5.264	4.622	13.6	9.0	10.9	6.3	1.73	0.58	11.3	2.3	8.6

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	48.5	0.309	53.1	2.7	6.20	1.487	5.454	4.786	13.8	9.0	11.1	6.3	1.76	0.57	11.4	2.4	8.7
20	48.5	0.313	53.2	2.8	6.20	1.575	5.454	4.747	13.7	9.0	10.9	6.2	1.77	0.59	11.4	2.4	8.6
21	49.1	0.317	53.3	2.9	6.21	1.645	5.550	4.810	13.8	9.0	10.9	6.1	1.79	0.60	11.4	2.4	8.5
22	49.9	0.321	53.3	2.9	6.21	1.724	5.683	4.905	13.9	9.0	11.0	6.1	1.81	0.60	11.4	2.5	8.5
23	51.0	0.325	53.4	3.0	6.22	1.802	5.855	5.038	14.0	9.0	11.0	6.0	1.84	0.59	11.5	2.5	8.5
24	51.3	0.329	53.4	3.0	6.22	1.881	5.912	5.059	14.1	9.0	11.0	6.0	1.85	0.60	11.5	2.5	8.5
25	51.8	0.333	53.5	3.1	6.23	1.951	5.988	5.102	14.1	9.0	11.0	5.9	1.87	0.61	11.5	2.6	8.4
26	52.4	0.337	53.5	3.1	6.23	2.038	6.084	5.171	14.2	9.0	11.0	5.9	1.88	0.61	11.6	2.6	8.4
27	52.6	0.342	53.6	3.2	6.24	2.117	6.122	5.203	14.2	9.0	11.0	5.8	1.90	0.61	11.6	2.6	8.4
28	53.0	0.346	53.7	3.3	6.24	2.196	6.179	5.254	14.2	9.0	11.0	5.7	1.92	0.62	11.6	2.6	8.4
29	53.7	0.350	53.7	3.3	6.25	2.283	6.294	5.361	14.4	9.0	11.1	5.7	1.94	0.61	11.7	2.7	8.4
30	53.4	0.355	53.8	3.3	6.25	2.371	6.255	5.318	14.3	9.0	11.0	5.6	1.94	0.63	11.7	2.7	8.3
31	54.6	0.360	53.8	3.4	6.26	2.458	6.446	5.499	14.5	9.0	11.1	5.6	1.98	0.61	11.7	2.7	8.4
32	55.6	0.364	53.8	3.4	6.26	2.546	6.618	5.660	14.7	9.0	11.3	5.6	2.01	0.60	11.8	2.8	8.4
33	55.9	0.368	53.8	3.4	6.27	2.625	6.656	5.692	14.7	9.0	11.3	5.6	2.02	0.60	11.8	2.8	8.4
34	56.2	0.373	53.9	3.5	6.27	2.721	6.713	5.741	14.7	9.0	11.2	5.5	2.04	0.61	11.9	2.9	8.4
35	57.0	0.378	53.9	3.5	6.28	2.808	6.847	5.865	14.9	9.0	11.3	5.5	2.07	0.60	11.9	2.9	8.4
36	57.5	0.383	54.0	3.6	6.29	2.896	6.923	5.933	14.9	9.0	11.4	5.4	2.09	0.60	12.0	3.0	8.4
37	57.4	0.387	54.0	3.6	6.29	2.983	6.904	5.909	14.9	9.0	11.3	5.4	2.09	0.61	11.9	3.0	8.4
38	57.2	0.391	54.0	3.6	6.30	3.062	6.866	5.866	14.9	9.0	11.3	5.4	2.08	0.61	11.9	2.9	8.3
39	57.9	0.396	54.0	3.6	6.30	3.150	6.980	5.971	15.0	9.0	11.3	5.4	2.11	0.61	12.0	3.0	8.3
40	58.3	0.400	54.0	3.6	6.31	3.228	7.056	6.039	15.0	9.0	11.4	5.4	2.13	0.60	12.0	3.0	8.4
41	58.7	0.405	54.1	3.7	6.31	3.316	7.114	6.089	15.1	9.0	11.4	5.3	2.14	0.60	12.0	3.0	8.4
42	58.9	0.409	54.1	3.7	6.32	3.403	7.152	6.119	15.1	9.0	11.4	5.3	2.16	0.60	12.1	3.1	8.4
43	59.8	0.414	54.1	3.7	6.32	3.491	7.304	6.260	15.3	9.0	11.5	5.3	2.19	0.60	12.1	3.1	8.4
44	59.8	0.418	54.1	3.7	6.33	3.570	7.304	6.254	15.2	9.0	11.5	5.3	2.19	0.60	12.1	3.1	8.4
45	60.1	0.423	54.2	3.8	6.34	3.657	7.342	6.285	15.3	9.0	11.5	5.2	2.20	0.60	12.1	3.1	8.4
46	61.2	0.427	54.2	3.8	6.34	3.745	7.533	6.462	15.5	9.0	11.7	5.2	2.23	0.58	12.2	3.2	8.5
47	61.0	0.432	54.2	3.8	6.35	3.841	7.495	6.418	15.4	9.0	11.6	5.2	2.23	0.59	12.2	3.2	8.4
48	60.9	0.436	54.2	3.8	6.35	3.919	7.476	6.394	15.4	9.0	11.6	5.2	2.23	0.60	12.2	3.2	8.4
49	61.4	0.441	54.2	3.8	6.36	4.007	7.552	6.461	15.5	9.0	11.6	5.2	2.25	0.59	12.2	3.2	8.4
50	61.9	0.446	54.2	3.8	6.36	4.094	7.648	6.545	15.5	9.0	11.7	5.2	2.27	0.59	12.3	3.3	8.4
51	62.6	0.450	54.2	3.8	6.37	4.182	7.762	6.648	15.6	9.0	11.8	5.2	2.29	0.58	12.3	3.3	8.5
52	62.7	0.455	54.2	3.8	6.38	4.269	7.781	6.660	15.7	9.0	11.8	5.2	2.29	0.58	12.3	3.3	8.5
53	62.5	0.459	54.3	3.9	6.38	4.357	7.743	6.616	15.6	9.0	11.7	5.1	2.29	0.59	12.3	3.3	8.4
54	63.0	0.463	54.3	3.9	6.39	4.436	7.819	6.683	15.7	9.0	11.8	5.1	2.31	0.58	12.3	3.3	8.5
55	64.0	0.468	54.3	3.9	6.39	4.523	7.991	6.840	15.8	9.0	11.9	5.1	2.34	0.57	12.4	3.4	8.5
56	64.1	0.473	54.3	3.9	6.40	4.611	8.010	6.852	15.8	9.0	11.9	5.1	2.35	0.57	12.4	3.4	8.5
57	64.1	0.477	54.3	3.9	6.41	4.698	8.010	6.845	15.8	9.0	11.9	5.1	2.35	0.57	12.4	3.4	8.5
58	64.6	0.481	54.3	3.9	6.41	4.777	8.086	6.911	15.9	9.0	12.0	5.1	2.37	0.57	12.4	3.5	8.5
59	65.1	0.486	54.3	3.9	6.42	4.856	8.163	6.977	16.0	9.0	12.0	5.1	2.38	0.56	12.5	3.5	8.6

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	65.0	0.490	54.3	3.9	6.42	4.934	8.143	6.953	15.9	9.0	12.0	5.1	2.37	0.57	12.5	3.5	8.5
61	65.2	0.494	54.3	3.9	6.43	5.022	8.182	6.982	16.0	9.0	12.0	5.1	2.38	0.56	12.5	3.5	8.6
62	65.8	0.498	54.3	3.9	6.43	5.101	8.277	7.066	16.1	9.0	12.1	5.1	2.40	0.56	12.5	3.5	8.6
63	65.8	0.503	54.4	4.0	6.44	5.179	8.277	7.059	16.1	9.0	12.1	5.0	2.40	0.56	12.5	3.5	8.6
64	66.1	0.507	54.4	4.0	6.44	5.258	8.334	7.107	16.1	9.0	12.1	5.0	2.41	0.56	12.5	3.6	8.6
65	66.8	0.511	54.4	4.0	6.45	5.346	8.449	7.208	16.2	9.0	12.2	5.0	2.43	0.55	12.6	3.6	8.6
66	66.8	0.515	54.4	4.0	6.45	5.424	8.449	7.201	16.2	9.0	12.2	5.0	2.43	0.55	12.6	3.6	8.6
67	66.9	0.520	54.4	4.0	6.46	5.503	8.468	7.213	16.2	9.0	12.2	5.0	2.43	0.55	12.6	3.6	8.6
68	67.3	0.524	54.4	4.0	6.47	5.591	8.525	7.259	16.3	9.0	12.3	5.0	2.44	0.55	12.6	3.6	8.7
69	67.8	0.528	54.4	4.0	6.47	5.669	8.601	7.324	16.3	9.0	12.4	5.0	2.46	0.54	12.7	3.7	8.7
70	68.3	0.533	54.4	4.0	6.48	5.757	8.697	7.407	16.4	9.0	12.4	5.0	2.47	0.53	12.7	3.7	8.7
71	68.0	0.537	54.4	4.0	6.48	5.835	8.639	7.346	16.3	9.0	12.4	5.0	2.46	0.54	12.7	3.7	8.7
72	67.6	0.542	54.4	4.0	6.49	5.923	8.582	7.285	16.3	9.0	12.3	5.0	2.45	0.54	12.6	3.6	8.7
73	69.0	0.546	54.4	4.0	6.49	6.010	8.811	7.492	16.5	9.0	12.5	5.0	2.49	0.53	12.7	3.7	8.8
74	69.0	0.551	54.4	4.0	6.50	6.098	8.811	7.485	16.5	9.0	12.5	5.0	2.49	0.53	12.7	3.7	8.8
75	69.0	0.555	54.4	4.0	6.51	6.177	8.811	7.478	16.5	9.0	12.5	5.0	2.49	0.53	12.7	3.7	8.8
76	69.8	0.560	54.4	4.0	6.51	6.264	8.944	7.595	16.6	9.0	12.6	5.0	2.51	0.52	12.8	3.8	8.8
77	70.0	0.564	54.4	4.0	6.52	6.352	8.964	7.605	16.6	9.0	12.6	5.0	2.51	0.52	12.8	3.8	8.8
78	70.2	0.569	54.4	4.0	6.52	6.439	9.002	7.633	16.6	9.0	12.7	5.0	2.52	0.52	12.8	3.8	8.8
79	71.1	0.573	54.3	3.9	6.53	6.527	9.154	7.768	16.8	9.0	12.8	5.1	2.53	0.51	12.9	3.9	8.9
80	71.5	0.578	54.3	3.9	6.54	6.614	9.211	7.813	16.8	9.0	12.9	5.1	2.54	0.50	12.9	3.9	9.0
81	71.4	0.583	54.4	4.0	6.54	6.702	9.192	7.787	16.8	9.0	12.8	5.0	2.55	0.51	12.9	3.9	8.9
82	71.6	0.587	54.3	3.9	6.55	6.789	9.231	7.815	16.8	9.0	12.9	5.1	2.54	0.50	12.9	3.9	9.0
83	71.5	0.592	54.3	3.9	6.55	6.877	9.211	7.789	16.8	9.0	12.9	5.1	2.54	0.50	12.9	3.9	9.0
84	71.2	0.596	54.3	3.9	6.56	6.955	9.173	7.746	16.7	9.0	12.8	5.1	2.53	0.51	12.9	3.9	8.9
85	72.5	0.600	54.3	3.9	6.57	7.043	9.383	7.933	16.9	9.0	13.0	5.1	2.57	0.50	13.0	4.0	9.0
86	72.4	0.605	54.3	3.9	6.57	7.130	9.364	7.907	16.9	9.0	13.0	5.1	2.55	0.49	12.9	4.0	9.0
87	73.1	0.609	54.3	3.9	6.58	7.209	9.478	8.006	17.0	9.0	13.1	5.1	2.57	0.49	13.0	4.0	9.1
88	73.0	0.614	54.3	3.9	6.58	7.297	9.459	7.980	17.0	9.0	13.1	5.1	2.57	0.49	13.0	4.0	9.1
89	73.3	0.618	54.3	3.9	6.59	7.375	9.517	8.026	17.0	9.0	13.1	5.1	2.58	0.49	13.0	4.0	9.1
90	73.6	0.623	54.3	3.9	6.60	7.463	9.555	8.053	17.0	9.0	13.1	5.1	2.58	0.48	13.0	4.0	9.1
91	73.7	0.627	54.3	3.9	6.60	7.550	9.574	8.062	17.1	9.0	13.2	5.1	2.58	0.48	13.0	4.0	9.1
92	73.9	0.631	54.3	3.9	6.61	7.629	9.612	8.090	17.1	9.0	13.2	5.1	2.58	0.48	13.0	4.0	9.2
93	74.7	0.636	54.2	3.8	6.61	7.716	9.745	8.204	17.2	9.0	13.4	5.2	2.59	0.47	13.1	4.1	9.3
94	74.7	0.640	54.2	3.8	6.62	7.804	9.745	8.196	17.2	9.0	13.3	5.2	2.59	0.47	13.1	4.1	9.2
95	75.1	0.645	54.2	3.8	6.63	7.891	9.803	8.240	17.2	9.0	13.4	5.2	2.60	0.47	13.1	4.1	9.3
96	75.8	0.649	54.2	3.8	6.63	7.970	9.917	8.338	17.3	9.0	13.5	5.2	2.62	0.46	13.2	4.2	9.3
97	75.9	0.654	54.2	3.8	6.64	8.058	9.936	8.346	17.3	9.0	13.5	5.2	2.62	0.46	13.2	4.2	9.3
98	75.8	0.658	54.2	3.8	6.65	8.145	9.917	8.320	17.3	9.0	13.5	5.2	2.61	0.46	13.2	4.2	9.3
99	76.1	0.663	54.2	3.8	6.65	8.224	9.974	8.365	17.4	9.0	13.5	5.2	2.61	0.46	13.2	4.2	9.4
100	75.9	0.667	54.2	3.8	6.66	8.311	9.936	8.321	17.3	9.0	13.5	5.2	2.60	0.45	13.2	4.2	9.4

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	76.5	0.672	54.2	3.8	6.66	8.399	10.032	8.400	17.4	9.0	13.6	5.2	2.61	0.45	13.2	4.2	9.4
102	76.7	0.676	54.2	3.8	6.67	8.478	10.070	8.427	17.4	9.0	13.6	5.2	2.62	0.45	13.2	4.2	9.4
103	77.1	0.680	54.2	3.8	6.68	8.565	10.127	8.470	17.5	9.0	13.7	5.2	2.62	0.44	13.2	4.2	9.5
104	76.8	0.685	54.2	3.8	6.68	8.653	10.089	8.427	17.4	9.0	13.7	5.2	2.61	0.45	13.2	4.2	9.5
105	77.3	0.689	54.2	3.8	6.69	8.731	10.165	8.488	17.5	9.0	13.7	5.2	2.62	0.44	13.2	4.2	9.5
106	77.4	0.693	54.1	3.7	6.69	8.810	10.184	8.498	17.5	9.0	13.8	5.3	2.61	0.44	13.2	4.2	9.5
107	77.9	0.698	54.1	3.7	6.70	8.898	10.260	8.558	17.6	9.0	13.9	5.3	2.62	0.43	13.3	4.3	9.6
108	78.3	0.702	54.1	3.7	6.71	8.976	10.337	8.620	17.6	9.0	13.9	5.3	2.63	0.43	13.3	4.3	9.6
109	79.0	0.706	54.1	3.7	6.71	9.055	10.451	8.716	17.7	9.0	14.0	5.3	2.65	0.42	13.4	4.4	9.7
110	78.6	0.711	54.1	3.7	6.72	9.143	10.375	8.637	17.6	9.0	13.9	5.3	2.63	0.43	13.3	4.3	9.6
111	78.8	0.715	54.1	3.7	6.72	9.221	10.413	8.664	17.7	9.0	14.0	5.3	2.64	0.43	13.3	4.3	9.6
112	78.9	0.719	54.1	3.7	6.73	9.300	10.432	8.673	17.7	9.0	14.0	5.3	2.63	0.42	13.3	4.3	9.7
113	79.6	0.724	54.0	3.6	6.74	9.388	10.546	8.767	17.8	9.0	14.1	5.4	2.64	0.41	13.4	4.4	9.7
114	79.2	0.728	54.0	3.6	6.74	9.466	10.470	8.690	17.7	9.0	14.0	5.4	2.62	0.42	13.3	4.3	9.7
115	79.4	0.732	54.0	3.6	6.75	9.545	10.508	8.716	17.7	9.0	14.1	5.4	2.62	0.41	13.4	4.4	9.7
116	79.5	0.737	54.0	3.6	6.75	9.632	10.527	8.724	17.7	9.0	14.1	5.4	2.62	0.41	13.4	4.4	9.7
117	80.1	0.741	54.0	3.6	6.76	9.720	10.623	8.801	17.8	9.0	14.2	5.4	2.63	0.41	13.4	4.4	9.8
118	80.1	0.745	54.0	3.6	6.77	9.799	10.623	8.793	17.8	9.0	14.2	5.4	2.63	0.41	13.4	4.4	9.8
119	80.7	0.750	54.0	3.6	6.77	9.886	10.718	8.869	17.9	9.0	14.3	5.4	2.64	0.40	13.4	4.4	9.8
120	80.8	0.754	54.0	3.6	6.78	9.965	10.737	8.878	17.9	9.0	14.3	5.4	2.64	0.40	13.4	4.4	9.9
121	81.0	0.759	54.0	3.6	6.79	10.052	10.775	8.903	17.9	9.0	14.3	5.4	2.64	0.40	13.4	4.5	9.9
122	81.7	0.763	54.0	3.6	6.79	10.140	10.890	8.996	18.0	9.0	14.4	5.4	2.65	0.39	13.5	4.5	9.9
123	81.6	0.768	53.9	3.5	6.80	10.227	10.871	8.970	18.0	9.0	14.4	5.5	2.64	0.39	13.5	4.5	10.0
124	81.5	0.772	53.9	3.5	6.81	10.315	10.852	8.943	17.9	9.0	14.4	5.5	2.63	0.39	13.5	4.5	9.9
125	81.4	0.777	53.9	3.5	6.81	10.402	10.833	8.917	17.9	9.0	14.4	5.5	2.62	0.39	13.5	4.5	10.0
126	81.7	0.782	53.9	3.5	6.82	10.490	10.890	8.958	18.0	9.0	14.5	5.5	2.63	0.39	13.5	4.5	10.0
127	81.8	0.786	53.9	3.5	6.83	10.577	10.909	8.966	18.0	9.0	14.5	5.5	2.62	0.39	13.5	4.5	10.0
128	82.0	0.790	53.8	3.4	6.83	10.656	10.928	8.974	18.0	9.0	14.5	5.6	2.61	0.38	13.5	4.5	10.0
129	81.8	0.795	53.8	3.4	6.84	10.744	10.909	8.948	17.9	9.0	14.5	5.6	2.61	0.38	13.5	4.5	10.0
130	82.9	0.800	53.8	3.4	6.85	10.831	11.080	9.091	18.1	9.0	14.7	5.6	2.63	0.38	13.5	4.5	10.1
131	82.1	0.804	53.8	3.4	6.85	10.919	10.947	8.963	18.0	9.0	14.6	5.6	2.60	0.38	13.5	4.5	10.1
132	82.4	0.809	53.8	3.4	6.86	11.006	11.004	9.004	18.0	9.0	14.6	5.6	2.61	0.38	13.5	4.5	10.1
133	83.1	0.813	53.8	3.4	6.87	11.085	11.119	9.097	18.1	9.0	14.7	5.6	2.62	0.37	13.5	4.5	10.2
134	82.7	0.817	53.8	3.3	6.87	11.172	11.042	9.020	18.0	9.0	14.7	5.6	2.60	0.37	13.5	4.5	10.2
135	83.4	0.822	53.8	3.3	6.88	11.260	11.157	9.111	18.1	9.0	14.8	5.6	2.61	0.37	13.5	4.6	10.2
136	83.2	0.827	53.7	3.3	6.89	11.347	11.138	9.085	18.1	9.0	14.8	5.7	2.60	0.36	13.5	4.5	10.2
137	83.4	0.831	53.7	3.3	6.89	11.435	11.157	9.092	18.1	9.0	14.8	5.7	2.60	0.36	13.5	4.5	10.2
138	83.0	0.835	53.7	3.3	6.90	11.514	11.100	9.032	18.0	9.0	14.7	5.7	2.59	0.37	13.5	4.5	10.2
139	83.5	0.840	53.7	3.3	6.91	11.601	11.176	9.090	18.1	9.0	14.8	5.7	2.59	0.36	13.5	4.5	10.3
140	84.7	0.845	53.7	3.3	6.91	11.688	11.386	9.266	18.3	9.0	15.0	5.7	2.61	0.35	13.6	4.6	10.4
141	83.5	0.849	53.6	3.2	6.92	11.767	11.176	9.072	18.1	9.0	14.8	5.8	2.57	0.36	13.5	4.5	10.3

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	84.1	0.854	53.6	3.2	6.93	11.863	11.271	9.145	18.1	9.0	14.9	5.8	2.59	0.35	13.6	4.6	10.3
143	84.3	0.858	53.6	3.2	6.93	11.942	11.309	9.170	18.2	9.0	15.0	5.8	2.58	0.35	13.6	4.6	10.4
144	84.7	0.863	53.6	3.2	6.94	12.030	11.386	9.227	18.2	9.0	15.0	5.8	2.59	0.35	13.6	4.6	10.4
145	84.9	0.867	53.6	3.2	6.95	12.117	11.405	9.234	18.2	9.0	15.1	5.8	2.59	0.34	13.6	4.6	10.4
146	84.6	0.872	53.6	3.2	6.95	12.205	11.367	9.190	18.2	9.0	15.0	5.8	2.58	0.34	13.6	4.6	10.4
147	84.9	0.876	53.5	3.1	6.96	12.283	11.405	9.215	18.2	9.0	15.1	5.9	2.57	0.34	13.6	4.6	10.5
148	84.9	0.880	53.5	3.1	6.97	12.371	11.405	9.205	18.2	9.0	15.1	5.9	2.56	0.34	13.6	4.6	10.5
149	85.3	0.885	53.5	3.1	6.97	12.450	11.481	9.263	18.3	9.0	15.1	5.9	2.57	0.34	13.6	4.6	10.5
150	85.0	0.889	53.5	3.1	6.98	12.537	11.424	9.202	18.2	9.0	15.1	5.9	2.56	0.33	13.6	4.6	10.5
151	85.3	0.893	53.5	3.1	6.99	12.616	11.481	9.243	18.2	9.0	15.2	5.9	2.56	0.33	13.6	4.6	10.5
152	85.2	0.898	53.5	3.1	6.99	12.703	11.462	9.217	18.2	9.0	15.2	5.9	2.55	0.33	13.6	4.6	10.6
153	85.3	0.902	53.5	3.1	7.00	12.782	11.481	9.224	18.2	9.0	15.2	5.9	2.55	0.33	13.6	4.6	10.6
154	85.0	0.907	53.4	3.0	7.01	12.870	11.424	9.164	18.2	9.0	15.1	6.0	2.53	0.33	13.6	4.6	10.6
155	85.4	0.911	53.4	3.0	7.01	12.948	11.500	9.222	18.2	9.0	15.2	6.0	2.54	0.32	13.6	4.6	10.6
156	85.2	0.915	53.4	3.0	7.02	13.036	11.462	9.179	18.2	9.0	15.2	6.0	2.53	0.33	13.6	4.6	10.6
157	85.6	0.920	53.4	3.0	7.03	13.115	11.519	9.219	18.2	9.0	15.3	6.0	2.53	0.32	13.6	4.6	10.6
158	85.6	0.924	53.4	3.0	7.03	13.193	11.519	9.210	18.2	9.0	15.2	6.0	2.53	0.32	13.6	4.6	10.6
159	85.6	0.928	53.4	3.0	7.04	13.281	11.519	9.200	18.2	9.0	15.2	6.0	2.53	0.32	13.6	4.6	10.6
160	85.3	0.932	53.3	2.9	7.05	13.360	11.481	8.698	17.7	9.0	14.8	6.1	2.44	0.34	13.3	4.3	10.4
161	85.4	0.937	53.3	2.9	7.05	13.447	11.500	8.701	17.7	9.0	14.8	6.1	2.44	0.34	13.3	4.4	10.4
162	85.7	0.941	53.3	2.9	7.06	13.526	11.538	8.723	17.7	9.0	14.8	6.1	2.43	0.33	13.4	4.4	10.5
163	85.9	0.945	53.3	2.9	7.07	13.604	11.576	8.744	17.7	9.0	14.8	6.1	2.44	0.33	13.4	4.4	10.5
164	85.9	0.950	53.3	2.9	7.07	13.692	11.576	8.731	17.7	9.0	14.8	6.1	2.43	0.33	13.4	4.4	10.5
165	86.1	0.954	53.3	2.9	7.08	13.779	11.614	8.750	17.7	9.0	14.9	6.1	2.43	0.33	13.4	4.4	10.5
166	86.3	0.959	53.3	2.9	7.09	13.858	11.634	8.755	17.7	9.0	14.9	6.1	2.43	0.33	13.4	4.4	10.5
167	86.7	0.963	53.3	2.9	7.09	13.946	11.710	8.807	17.8	9.0	14.9	6.1	2.44	0.33	13.4	4.4	10.5
168	86.6	0.968	53.3	2.8	7.10	14.033	11.691	8.778	17.8	9.0	14.9	6.1	2.43	0.32	13.4	4.4	10.5
169	86.0	0.972	53.2	2.8	7.11	14.121	11.595	8.683	17.7	9.0	14.9	6.2	2.41	0.32	13.3	4.3	10.5
170	86.0	0.977	53.2	2.8	7.12	14.208	11.595	8.670	17.7	9.0	14.8	6.2	2.40	0.32	13.3	4.3	10.5
171	86.0	0.981	53.2	2.8	7.12	14.287	11.595	8.658	17.7	9.0	14.8	6.2	2.40	0.33	13.3	4.3	10.5
172	86.0	0.986	53.2	2.8	7.13	14.374	11.595	8.645	17.6	9.0	14.8	6.2	2.40	0.33	13.3	4.3	10.5
173	86.7	0.990	53.2	2.8	7.14	14.453	11.710	8.731	17.7	9.0	14.9	6.2	2.41	0.32	13.4	4.4	10.5
174	86.1	0.994	53.2	2.8	7.14	14.541	11.614	8.636	17.6	9.0	14.8	6.2	2.40	0.33	13.3	4.3	10.5
175	86.4	0.999	53.2	2.8	7.15	14.619	11.653	8.657	17.7	9.0	14.9	6.2	2.39	0.32	13.3	4.3	10.5
176	86.7	1.003	53.2	2.8	7.16	14.707	11.710	8.692	17.7	9.0	14.9	6.2	2.40	0.32	13.3	4.3	10.6
177	86.4	1.007	53.2	2.8	7.16	14.786	11.653	8.631	17.6	9.0	14.9	6.2	2.38	0.32	13.3	4.3	10.6
178	86.8	1.012	53.2	2.8	7.17	14.873	11.729	8.683	17.7	9.0	14.9	6.2	2.39	0.32	13.3	4.3	10.6
179	86.5	1.017	53.2	2.8	7.18	14.961	11.672	8.621	17.6	9.0	14.9	6.2	2.38	0.32	13.3	4.3	10.5
180	86.3	1.021	53.2	2.8	7.18	15.039	11.634	8.577	17.6	9.0	14.8	6.2	2.38	0.32	13.3	4.3	10.5
181	87.0	1.025	53.2	2.8	7.19	15.127	11.748	8.661	17.7	9.0	14.9	6.2	2.39	0.32	13.3	4.3	10.6
182	87.1	1.030	53.1	2.7	7.20	15.214	11.767	8.664	17.7	9.0	14.9	6.3	2.38	0.31	13.3	4.3	10.6

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	87.2	1.034	53.1	2.7	7.21	15.302	11.786	8.667	17.7	9.0	14.9	6.3	2.38	0.31	13.3	4.3	10.6
184	87.1	1.039	53.1	2.7	7.21	15.389	11.767	8.637	17.6	9.0	14.9	6.3	2.38	0.32	13.3	4.3	10.6
185	87.3	1.043	53.1	2.7	7.22	15.468	11.805	8.657	17.7	9.0	14.9	6.3	2.38	0.32	13.3	4.3	10.6
186	86.4	1.048	53.1	2.7	7.23	15.564	11.653	8.514	17.5	9.0	14.8	6.3	2.36	0.32	13.3	4.3	10.5
187	87.4	1.053	53.1	2.7	7.24	15.652	11.824	8.645	17.6	9.0	14.9	6.3	2.38	0.32	13.3	4.3	10.6
188	87.1	1.057	53.1	2.7	7.24	15.730	11.767	8.585	17.6	9.0	14.9	6.3	2.36	0.31	13.3	4.3	10.6
189	87.4	1.062	53.1	2.7	7.25	15.818	11.824	8.620	17.6	9.0	14.9	6.3	2.37	0.31	13.3	4.3	10.6
190	87.2	1.066	53.1	2.7	7.26	15.905	11.786	8.575	17.6	9.0	14.9	6.3	2.36	0.31	13.3	4.3	10.6
191	87.2	1.071	53.1	2.7	7.27	15.993	11.786	8.561	17.6	9.0	14.9	6.3	2.36	0.32	13.3	4.3	10.6
192	87.0	1.075	53.1	2.7	7.27	16.072	11.748	8.517	17.5	9.0	14.8	6.3	2.35	0.32	13.3	4.3	10.6
193	87.4	1.080	53.1	2.7	7.28	16.159	11.824	8.568	17.6	9.0	14.9	6.3	2.36	0.32	13.3	4.3	10.6
194	87.4	1.084	53.1	2.7	7.29	16.238	11.824	8.556	17.6	9.0	14.9	6.3	2.36	0.32	13.3	4.3	10.6
195	86.7	1.088	53.1	2.7	7.30	16.325	11.710	8.447	17.4	9.0	14.8	6.3	2.34	0.32	13.2	4.2	10.5
196	87.2	1.092	53.1	2.7	7.30	16.404	11.786	8.499	17.5	9.0	14.8	6.3	2.34	0.31	13.2	4.2	10.6
197	87.7	1.097	53.1	2.7	7.31	16.483	11.862	8.550	17.5	9.0	14.9	6.3	2.35	0.31	13.3	4.3	10.6
198	87.5	1.101	53.1	2.7	7.32	16.570	11.843	8.521	17.5	9.0	14.8	6.3	2.35	0.31	13.3	4.3	10.6
199	87.5	1.105	53.1	2.7	7.32	16.649	11.843	8.509	17.5	9.0	14.8	6.3	2.35	0.31	13.2	4.3	10.6
200	87.1	1.109	53.1	2.7	7.33	16.728	11.767	8.434	17.4	9.0	14.8	6.3	2.33	0.32	13.2	4.2	10.5
201	87.4	1.114	53.0	2.6	7.34	16.807	11.824	8.469	17.5	9.0	14.8	6.4	2.33	0.31	13.2	4.2	10.6
202	87.7	1.118	53.1	2.7	7.35	16.894	11.862	8.487	17.5	9.0	14.8	6.3	2.34	0.31	13.2	4.2	10.6
203	87.8	1.122	53.1	2.7	7.35	16.973	11.881	8.491	17.5	9.0	14.8	6.3	2.34	0.31	13.2	4.2	10.6
204	87.2	1.126	53.0	2.6	7.36	17.052	11.786	8.400	17.4	9.0	14.8	6.4	2.32	0.31	13.2	4.2	10.6
205	87.3	1.131	53.0	2.6	7.37	17.139	11.805	8.403	17.4	9.0	14.8	6.4	2.32	0.31	13.2	4.2	10.6
206	87.8	1.135	53.0	2.6	7.37	17.218	11.881	8.454	17.4	9.0	14.8	6.4	2.33	0.31	13.2	4.2	10.6
207	88.0	1.140	53.0	2.6	7.38	17.305	11.920	8.472	17.5	9.0	14.9	6.4	2.33	0.31	13.2	4.2	10.6
208	88.4	1.144	53.0	2.6	7.39	17.384	11.977	8.507	17.5	9.0	14.9	6.4	2.33	0.31	13.2	4.3	10.6
209	88.1	1.149	53.0	2.6	7.40	17.471	11.939	8.462	17.5	9.0	14.8	6.4	2.33	0.31	13.2	4.2	10.6
210	87.9	1.153	53.0	2.6	7.40	17.559	11.901	8.417	17.4	9.0	14.8	6.4	2.32	0.31	13.2	4.2	10.6
211	88.6	1.158	53.0	2.6	7.41	17.646	12.015	8.498	17.5	9.0	14.9	6.4	2.33	0.31	13.2	4.2	10.6
212	88.1	1.162	53.0	2.6	7.42	17.734	11.939	8.422	17.4	9.0	14.8	6.4	2.32	0.31	13.2	4.2	10.6
213	87.3	1.166	53.0	2.6	7.43	17.813	11.805	8.300	17.3	9.0	14.7	6.4	2.30	0.31	13.1	4.1	10.5
214	88.5	1.171	53.0	2.6	7.44	17.900	11.996	8.443	17.4	9.0	14.8	6.4	2.32	0.31	13.2	4.2	10.6
215	88.2	1.176	53.0	2.6	7.44	17.988	11.958	8.398	17.4	9.0	14.8	6.4	2.31	0.31	13.2	4.2	10.6
216	87.5	1.180	53.0	2.6	7.45	18.075	11.843	8.291	17.3	9.0	14.7	6.4	2.29	0.31	13.1	4.1	10.6
217	87.9	1.185	53.0	2.6	7.46	18.163	11.901	8.325	17.3	9.0	14.7	6.4	2.30	0.31	13.2	4.2	10.6
218	88.2	1.189	53.0	2.6	7.47	18.250	11.958	8.358	17.4	9.0	14.8	6.4	2.30	0.31	13.2	4.2	10.6
219	88.2	1.194	53.0	2.6	7.47	18.338	11.958	8.344	17.3	9.0	14.8	6.4	2.30	0.31	13.2	4.2	10.6
220	88.1	1.198	53.0	2.6	7.48	18.416	11.939	8.317	17.3	9.0	14.8	6.4	2.29	0.31	13.2	4.2	10.6
221	88.5	1.203	53.0	2.6	7.49	18.504	11.996	8.350	17.3	9.0	14.8	6.4	2.30	0.31	13.2	4.2	10.6
222	87.7	1.207	53.0	2.6	7.50	18.583	11.862	8.229	17.2	9.0	14.7	6.4	2.28	0.31	13.1	4.1	10.6
223	88.6	1.211	53.0	2.6	7.51	18.670	12.015	8.340	17.3	9.0	14.8	6.4	2.29	0.31	13.2	4.2	10.6

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	88.7	1.216	53.0	2.6	7.51	18.749	12.034	8.343	17.3	9.0	14.8	6.4	2.30	0.31	13.2	4.2	10.6
225	88.5	1.220	53.0	2.6	7.52	18.836	11.996	8.299	17.3	9.0	14.7	6.4	2.29	0.31	13.1	4.1	10.6
226	88.4	1.225	52.9	2.5	7.53	18.924	11.977	8.270	17.3	9.0	14.7	6.5	2.28	0.31	13.1	4.1	10.6
227	88.2	1.229	52.9	2.5	7.54	19.011	11.958	8.241	17.2	9.0	14.7	6.5	2.27	0.31	13.1	4.1	10.6
228	88.9	1.234	52.9	2.5	7.54	19.090	12.072	8.321	17.3	9.0	14.8	6.5	2.29	0.30	13.2	4.2	10.6
229	88.5	1.238	52.9	2.5	7.55	19.178	11.996	8.246	17.2	9.0	14.7	6.5	2.27	0.31	13.1	4.1	10.6
230	88.5	1.243	52.9	2.5	7.56	19.265	11.996	8.232	17.2	9.0	14.7	6.5	2.27	0.31	13.1	4.1	10.6
231	88.6	1.247	52.9	2.5	7.57	19.344	12.015	8.236	17.2	9.0	14.7	6.5	2.27	0.31	13.1	4.1	10.6
232	88.2	1.251	52.9	2.5	7.58	19.431	11.958	8.176	17.2	9.0	14.6	6.5	2.26	0.31	13.1	4.1	10.6
233	88.4	1.256	52.9	2.5	7.58	19.519	11.977	8.178	17.2	9.0	14.6	6.5	2.26	0.31	13.1	4.1	10.6
234	90.6	1.260	52.9	2.5	7.59	19.597	12.339	8.457	17.5	9.0	14.9	6.5	2.31	0.30	13.2	4.2	10.7
235	92.0	1.264	52.9	2.5	7.60	19.667	12.568	8.630	17.6	9.0	15.1	6.5	2.33	0.29	13.3	4.3	10.8
236	95.2	1.268	52.9	2.5	7.61	19.737	13.102	9.047	18.0	9.0	15.5	6.5	2.40	0.28	13.5	4.5	11.0
237	97.9	1.271	52.9	2.5	7.61	19.799	13.541	9.389	18.4	9.0	15.9	6.5	2.45	0.27	13.7	4.7	11.2
238	101.6	1.274	52.9	2.5	7.62	19.851	14.151	9.869	18.9	9.0	16.4	6.5	2.52	0.25	13.9	4.9	11.4
239	102.3	1.277	52.9	2.5	7.62	19.912	14.265	9.950	18.9	9.0	16.5	6.5	2.53	0.25	14.0	5.0	11.5
240	100.0	1.281	52.9	2.5	7.63	19.991	13.884	9.631	18.6	9.0	16.1	6.5	2.48	0.26	13.8	4.8	11.3
241	99.2	1.282	52.9	2.5	7.63	20.009	13.750	9.521	18.5	9.0	16.0	6.5	2.46	0.26	13.8	4.8	11.3

Specimen B Shear Data

CU Triaxial Test

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File Location
T-5676.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5676
Sample Location: Guilford County (Sta. 405+70)
Sample Description: Greyish-brown colored clay.
Remarks:

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.829
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.868	2.761	
Height (in)	6.177	6.076	
Weight (grams)	1253.00		1281.00
Moisture (%)	25.43		28.23
Dry Density (pcf)	95.36	104.64	
Saturation (%)	84.43	100.00	
Void Ratio	0.847	0.688	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 68.500
Effective Confining Stress (psi): 18.0
Corrected Peak Deviator Stress (psi): 40.742 at reading number: 259

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	11.2	0.209	50.5	0.0	5.99	0.000	0.000	0.000	18.0	18.0	18.0	18.0	1.00	0.00	18.0	0.0	18.0
1	42.6	0.213	51.6	1.1	5.99	0.066	5.246	5.216	23.2	18.0	22.1	16.9	1.31	0.21	20.6	2.6	19.5
2	54.9	0.218	52.3	1.8	5.99	0.132	7.302	7.239	25.3	18.0	23.4	16.2	1.45	0.25	21.7	3.6	19.8
3	62.9	0.222	52.9	2.5	6.00	0.208	8.647	8.546	26.6	18.0	24.1	15.6	1.55	0.29	22.3	4.3	19.8
4	69.7	0.227	53.4	3.0	6.00	0.283	9.780	9.640	27.7	18.0	24.7	15.1	1.64	0.31	22.9	4.8	19.9
5	75.5	0.231	53.9	3.4	6.01	0.359	10.741	10.559	28.6	18.0	25.2	14.6	1.72	0.32	23.3	5.3	19.9
6	79.3	0.236	54.2	3.7	6.01	0.444	11.375	11.148	29.2	18.0	25.4	14.3	1.78	0.34	23.6	5.6	19.9
7	82.6	0.241	54.6	4.1	6.02	0.520	11.932	11.663	29.7	18.0	25.6	13.9	1.84	0.35	23.9	5.8	19.8
8	86.2	0.246	54.9	4.4	6.02	0.605	12.528	12.211	30.2	18.0	25.8	13.6	1.90	0.36	24.1	6.1	19.7
9	88.9	0.251	55.2	4.7	6.03	0.680	12.989	12.630	30.7	18.0	26.0	13.3	1.95	0.37	24.3	6.3	19.6
10	91.7	0.256	55.4	5.0	6.03	0.765	13.450	13.043	31.1	18.0	26.1	13.1	2.00	0.38	24.6	6.5	19.6
11	94.0	0.261	55.7	5.2	6.04	0.841	13.835	13.383	31.4	18.0	26.2	12.8	2.05	0.39	24.7	6.7	19.5
12	96.7	0.265	55.9	5.5	6.04	0.916	14.296	13.800	31.8	18.0	26.4	12.6	2.10	0.40	24.9	6.9	19.5
13	99.3	0.270	56.1	5.7	6.05	0.992	14.718	14.177	32.2	18.0	26.5	12.4	2.15	0.40	25.1	7.1	19.4
14	101.2	0.274	56.3	5.8	6.05	1.058	15.045	14.464	32.5	18.0	26.7	12.2	2.18	0.40	25.3	7.2	19.4
15	102.7	0.277	56.5	6.0	6.05	1.115	15.295	14.680	32.7	18.0	26.7	12.0	2.22	0.41	25.4	7.3	19.4
16	105.1	0.281	56.7	6.2	6.06	1.181	15.698	15.043	33.1	18.0	26.9	11.8	2.27	0.41	25.6	7.5	19.4
17	107.4	0.286	56.8	6.4	6.06	1.256	16.083	15.380	33.4	18.0	27.0	11.7	2.32	0.41	25.7	7.7	19.3
18	109.3	0.290	57.0	6.5	6.07	1.322	16.390	15.647	33.7	18.0	27.2	11.5	2.36	0.42	25.9	7.8	19.3

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	111.5	0.295	57.1	6.7	6.07	1.407	16.755	15.959	34.0	18.0	27.3	11.4	2.40	0.42	26.0	8.0	19.3
20	113.6	0.299	57.3	6.8	6.08	1.473	17.120	16.281	34.3	18.0	27.5	11.2	2.45	0.42	26.2	8.1	19.4
21	115.1	0.304	57.4	6.9	6.08	1.549	17.370	16.484	34.5	18.0	27.6	11.1	2.48	0.42	26.3	8.2	19.3
22	116.4	0.308	57.5	7.0	6.08	1.625	17.581	16.649	34.7	18.0	27.6	11.0	2.52	0.42	26.4	8.3	19.3
23	117.7	0.313	57.7	7.2	6.09	1.700	17.793	16.813	34.8	18.0	27.7	10.8	2.55	0.43	26.4	8.4	19.2
24	118.8	0.318	57.7	7.3	6.09	1.785	17.985	16.953	35.0	18.0	27.7	10.8	2.58	0.43	26.5	8.5	19.2
25	120.1	0.322	57.9	7.4	6.10	1.851	18.196	17.122	35.2	18.0	27.8	10.6	2.61	0.43	26.6	8.6	19.2
26	122.0	0.327	58.0	7.5	6.10	1.927	18.523	17.398	35.4	18.0	27.9	10.5	2.65	0.43	26.7	8.7	19.2
27	123.8	0.331	58.0	7.6	6.11	1.993	18.811	17.642	35.7	18.0	28.1	10.5	2.69	0.43	26.9	8.8	19.3
28	125.6	0.335	58.1	7.7	6.11	2.059	19.119	17.928	36.0	18.0	28.3	10.4	2.73	0.43	27.0	9.0	19.3
29	127.6	0.339	58.2	7.7	6.12	2.125	19.445	18.235	36.3	18.0	28.5	10.3	2.77	0.42	27.1	9.1	19.4
30	129.4	0.343	58.3	7.8	6.12	2.191	19.753	18.523	36.6	18.0	28.7	10.2	2.82	0.42	27.3	9.3	19.5
31	131.1	0.347	58.4	7.9	6.12	2.267	20.041	18.790	36.8	18.0	28.9	10.1	2.86	0.42	27.4	9.4	19.5
32	132.6	0.351	58.5	8.0	6.13	2.324	20.291	19.022	37.1	18.0	29.0	10.0	2.90	0.42	27.5	9.5	19.5
33	134.0	0.355	58.5	8.1	6.13	2.399	20.521	19.232	37.3	18.0	29.2	10.0	2.93	0.42	27.6	9.6	19.6
34	135.4	0.359	58.6	8.1	6.14	2.465	20.752	19.443	37.5	18.0	29.3	9.9	2.96	0.42	27.8	9.7	19.6
35	137.1	0.363	58.7	8.2	6.14	2.531	21.040	19.711	37.7	18.0	29.6	9.8	3.00	0.42	27.9	9.9	19.7
36	138.3	0.367	58.7	8.2	6.15	2.598	21.232	19.884	37.9	18.0	29.7	9.8	3.03	0.41	28.0	9.9	19.7
37	139.4	0.372	58.8	8.3	6.15	2.673	21.424	20.055	38.1	18.0	29.8	9.7	3.06	0.41	28.1	10.0	19.8
38	140.9	0.376	58.8	8.4	6.15	2.739	21.674	20.284	38.3	18.0	30.0	9.7	3.10	0.41	28.2	10.1	19.8
39	142.3	0.380	58.9	8.4	6.16	2.815	21.905	20.491	38.5	18.0	30.1	9.6	3.13	0.41	28.3	10.2	19.9
40	143.8	0.385	58.9	8.5	6.16	2.890	22.155	20.717	38.7	18.0	30.3	9.6	3.16	0.41	28.4	10.4	19.9
41	144.6	0.389	58.9	8.5	6.17	2.956	22.289	20.833	38.9	18.0	30.4	9.6	3.18	0.41	28.4	10.4	20.0
42	145.7	0.394	59.0	8.5	6.17	3.032	22.481	21.003	39.0	18.0	30.5	9.5	3.21	0.41	28.5	10.5	20.0
43	146.9	0.398	59.0	8.6	6.18	3.108	22.673	21.172	39.2	18.0	30.6	9.5	3.24	0.40	28.6	10.6	20.1
44	147.6	0.403	59.1	8.6	6.18	3.183	22.789	21.266	39.3	18.0	30.7	9.4	3.25	0.40	28.7	10.6	20.1
45	148.3	0.407	59.1	8.6	6.19	3.259	22.904	21.361	39.4	18.0	30.8	9.4	3.27	0.40	28.7	10.7	20.1
46	149.3	0.412	59.2	8.7	6.19	3.334	23.077	21.511	39.5	18.0	30.9	9.3	3.30	0.40	28.8	10.8	20.1
47	150.0	0.417	59.2	8.7	6.20	3.410	23.192	21.605	39.6	18.0	31.0	9.3	3.31	0.40	28.8	10.8	20.2
48	150.3	0.422	59.2	8.7	6.20	3.495	23.250	21.640	39.7	18.0	31.0	9.3	3.32	0.40	28.9	10.8	20.1
49	150.7	0.426	59.2	8.7	6.21	3.570	23.307	21.678	39.7	18.0	31.0	9.3	3.33	0.40	28.9	10.8	20.1
50	151.4	0.432	59.2	8.8	6.21	3.655	23.423	21.770	39.8	18.0	31.0	9.3	3.35	0.40	28.9	10.9	20.1
51	152.3	0.436	59.3	8.8	6.22	3.731	23.576	21.900	39.9	18.0	31.1	9.2	3.37	0.40	29.0	10.9	20.2
52	152.5	0.441	59.3	8.8	6.22	3.807	23.615	21.919	40.0	18.0	31.2	9.2	3.37	0.40	29.0	11.0	20.2
53	153.3	0.446	59.3	8.8	6.23	3.892	23.749	22.028	40.1	18.0	31.2	9.2	3.39	0.40	29.0	11.0	20.2
54	154.0	0.450	59.3	8.9	6.23	3.958	23.865	22.123	40.2	18.0	31.3	9.2	3.41	0.40	29.1	11.1	20.2
55	154.9	0.455	59.3	8.9	6.24	4.043	24.018	22.251	40.3	18.0	31.4	9.2	3.43	0.40	29.2	11.1	20.3
56	155.3	0.460	59.3	8.9	6.24	4.118	24.076	22.288	40.3	18.0	31.5	9.2	3.43	0.40	29.2	11.1	20.3
57	156.1	0.464	59.4	8.9	6.25	4.194	24.211	22.398	40.4	18.0	31.5	9.1	3.45	0.40	29.2	11.2	20.3
58	157.2	0.469	59.4	8.9	6.25	4.269	24.403	22.564	40.6	18.0	31.7	9.1	3.48	0.40	29.3	11.3	20.4
59	158.0	0.473	59.4	8.9	6.26	4.335	24.537	22.677	40.7	18.0	31.8	9.1	3.49	0.39	29.4	11.3	20.5

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	159.1	0.477	59.4	8.9	6.26	4.411	24.710	22.823	40.9	18.0	31.9	9.1	3.50	0.39	29.4	11.4	20.5
61	159.9	0.482	59.4	8.9	6.27	4.487	24.845	22.933	41.0	18.0	32.0	9.1	3.52	0.39	29.5	11.5	20.6
62	161.0	0.486	59.4	8.9	6.27	4.553	25.037	23.100	41.1	18.0	32.2	9.1	3.54	0.39	29.6	11.6	20.6
63	161.5	0.491	59.4	8.9	6.28	4.638	25.114	23.152	41.2	18.0	32.2	9.1	3.55	0.39	29.6	11.6	20.7
64	162.0	0.496	59.4	8.9	6.28	4.713	25.191	23.206	41.2	18.0	32.3	9.1	3.55	0.39	29.6	11.6	20.7
65	162.3	0.500	59.4	8.9	6.29	4.789	25.248	23.242	41.3	18.0	32.3	9.1	3.56	0.38	29.7	11.6	20.7
66	162.9	0.505	59.4	9.0	6.29	4.864	25.344	23.315	41.3	18.0	32.4	9.1	3.57	0.39	29.7	11.7	20.7
67	162.9	0.510	59.4	9.0	6.30	4.949	25.344	23.293	41.3	18.0	32.3	9.1	3.57	0.39	29.7	11.6	20.7
68	163.2	0.515	59.4	9.0	6.30	5.025	25.402	23.329	41.4	18.0	32.4	9.1	3.58	0.38	29.7	11.7	20.7
69	164.3	0.520	59.4	8.9	6.31	5.110	25.575	23.471	41.5	18.0	32.6	9.1	3.58	0.38	29.8	11.7	20.8
70	165.2	0.524	59.4	8.9	6.31	5.176	25.729	23.600	41.6	18.0	32.7	9.1	3.60	0.38	29.8	11.8	20.9
71	166.1	0.529	59.4	8.9	6.32	5.252	25.882	23.726	41.8	18.0	32.8	9.1	3.61	0.38	29.9	11.9	20.9
72	167.0	0.533	59.4	8.9	6.32	5.318	26.036	23.855	41.9	18.0	32.9	9.1	3.63	0.38	30.0	11.9	21.0
73	168.4	0.537	59.4	9.0	6.33	5.384	26.267	24.056	42.1	18.0	33.1	9.1	3.66	0.37	30.1	12.0	21.1
74	169.3	0.541	59.4	9.0	6.33	5.450	26.420	24.183	42.2	18.0	33.2	9.1	3.67	0.37	30.1	12.1	21.1
75	170.5	0.545	59.4	8.9	6.34	5.526	26.612	24.345	42.4	18.0	33.4	9.1	3.68	0.37	30.2	12.2	21.3
76	172.0	0.549	59.4	8.9	6.34	5.592	26.862	24.563	42.6	18.0	33.6	9.1	3.70	0.36	30.3	12.3	21.4
77	173.2	0.553	59.4	8.9	6.35	5.658	27.074	24.745	42.8	18.0	33.8	9.1	3.72	0.36	30.4	12.4	21.5
78	174.4	0.558	59.4	8.9	6.35	5.733	27.266	24.906	42.9	18.0	34.0	9.1	3.74	0.36	30.5	12.5	21.5
79	174.7	0.562	59.4	8.9	6.35	5.800	27.323	24.942	43.0	18.0	34.0	9.1	3.75	0.36	30.5	12.5	21.6
80	175.9	0.565	59.4	8.9	6.36	5.856	27.516	25.107	43.1	18.0	34.2	9.1	3.76	0.36	30.6	12.6	21.6
81	176.6	0.569	59.4	8.9	6.36	5.922	27.631	25.198	43.2	18.0	34.3	9.1	3.77	0.36	30.6	12.6	21.7
82	177.5	0.574	59.4	8.9	6.37	5.998	27.785	25.321	43.4	18.0	34.4	9.1	3.78	0.35	30.7	12.7	21.8
83	178.2	0.578	59.4	8.9	6.37	6.064	27.900	25.411	43.4	18.0	34.5	9.1	3.79	0.35	30.7	12.7	21.8
84	178.9	0.583	59.4	8.9	6.38	6.149	28.015	25.496	43.5	18.0	34.6	9.1	3.80	0.35	30.8	12.7	21.9
85	179.8	0.587	59.4	8.9	6.38	6.215	28.169	25.621	43.7	18.0	34.7	9.1	3.81	0.35	30.8	12.8	21.9
86	180.1	0.591	59.4	8.9	6.39	6.281	28.226	25.657	43.7	18.0	34.8	9.1	3.82	0.35	30.9	12.8	21.9
87	180.5	0.596	59.4	8.9	6.39	6.357	28.284	25.689	43.7	18.0	34.8	9.1	3.81	0.35	30.9	12.8	22.0
88	181.2	0.600	59.4	8.9	6.40	6.432	28.399	25.776	43.8	18.0	34.9	9.1	3.82	0.34	30.9	12.9	22.0
89	181.8	0.605	59.4	8.9	6.40	6.508	28.515	25.862	43.9	18.0	35.0	9.1	3.83	0.34	31.0	12.9	22.1
90	182.4	0.609	59.3	8.9	6.41	6.583	28.611	25.930	44.0	18.0	35.1	9.2	3.83	0.34	31.0	13.0	22.1
91	182.5	0.615	59.3	8.9	6.41	6.669	28.630	25.924	44.0	18.0	35.1	9.2	3.83	0.34	31.0	13.0	22.1
92	183.3	0.619	59.3	8.9	6.42	6.744	28.764	26.028	44.1	18.0	35.2	9.2	3.84	0.34	31.0	13.0	22.2
93	183.7	0.624	59.3	8.9	6.42	6.820	28.822	26.060	44.1	18.0	35.2	9.2	3.84	0.34	31.1	13.0	22.2
94	183.9	0.629	59.3	8.9	6.43	6.905	28.861	26.071	44.1	18.0	35.2	9.2	3.84	0.34	31.1	13.0	22.2
95	183.8	0.634	59.3	8.9	6.44	6.980	28.841	26.031	44.1	18.0	35.2	9.2	3.84	0.34	31.0	13.0	22.2
96	184.7	0.638	59.3	8.9	6.44	7.056	28.995	26.152	44.2	18.0	35.3	9.2	3.85	0.34	31.1	13.1	22.2
97	185.5	0.643	59.3	8.8	6.45	7.131	29.130	26.255	44.3	18.0	35.5	9.2	3.85	0.34	31.2	13.1	22.3
98	186.0	0.647	59.3	8.8	6.45	7.207	29.206	26.305	44.3	18.0	35.5	9.2	3.86	0.34	31.2	13.2	22.4
99	186.8	0.652	59.3	8.8	6.46	7.282	29.341	26.407	44.4	18.0	35.6	9.2	3.87	0.33	31.2	13.2	22.4
100	187.7	0.657	59.3	8.8	6.46	7.358	29.495	26.528	44.6	18.0	35.7	9.2	3.88	0.33	31.3	13.3	22.5

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	188.6	0.661	59.3	8.8	6.47	7.424	29.648	26.650	44.7	18.0	35.9	9.2	3.90	0.33	31.4	13.3	22.5
102	189.1	0.665	59.3	8.8	6.47	7.500	29.725	26.699	44.7	18.0	35.9	9.2	3.89	0.33	31.4	13.3	22.6
103	190.0	0.670	59.3	8.8	6.48	7.575	29.879	26.819	44.9	18.0	36.0	9.2	3.91	0.33	31.4	13.4	22.6
104	190.9	0.674	59.2	8.8	6.48	7.651	30.033	26.938	45.0	18.0	36.2	9.3	3.91	0.33	31.5	13.5	22.7
105	191.9	0.678	59.2	8.8	6.49	7.717	30.186	27.060	45.1	18.0	36.3	9.3	3.92	0.32	31.6	13.5	22.8
106	192.7	0.683	59.2	8.8	6.49	7.793	30.321	27.161	45.2	18.0	36.4	9.3	3.93	0.32	31.6	13.6	22.8
107	193.8	0.688	59.2	8.8	6.50	7.868	30.513	27.315	45.3	18.0	36.6	9.3	3.95	0.32	31.7	13.7	22.9
108	194.6	0.692	59.2	8.8	6.50	7.944	30.648	27.416	45.4	18.0	36.7	9.3	3.96	0.32	31.7	13.7	23.0
109	195.2	0.697	59.2	8.7	6.51	8.019	30.744	27.481	45.5	18.0	36.8	9.3	3.96	0.32	31.8	13.7	23.0
110	195.1	0.702	59.2	8.7	6.51	8.104	30.724	27.438	45.5	18.0	36.7	9.3	3.95	0.32	31.8	13.7	23.0
111	195.0	0.708	59.2	8.7	6.52	8.199	30.705	27.391	45.4	18.0	36.7	9.3	3.95	0.32	31.7	13.7	23.0
112	195.2	0.712	59.2	8.7	6.53	8.274	30.744	27.403	45.4	18.0	36.7	9.3	3.95	0.32	31.7	13.7	23.0
113	196.1	0.717	59.2	8.7	6.53	8.359	30.897	27.518	45.5	18.0	36.8	9.3	3.96	0.32	31.8	13.8	23.0
114	196.7	0.721	59.2	8.7	6.54	8.425	30.993	27.585	45.6	18.0	36.9	9.3	3.96	0.32	31.8	13.8	23.1
115	198.5	0.725	59.2	8.7	6.54	8.491	31.301	27.846	45.9	18.0	37.2	9.3	3.99	0.31	32.0	13.9	23.2
116	200.1	0.729	59.2	8.7	6.55	8.558	31.570	28.071	46.1	18.0	37.4	9.3	4.01	0.31	32.1	14.0	23.4
117	201.5	0.733	59.2	8.7	6.55	8.624	31.800	28.261	46.3	18.0	37.6	9.3	4.02	0.31	32.2	14.1	23.5
118	202.9	0.738	59.2	8.7	6.56	8.699	32.031	28.448	46.5	18.0	37.8	9.3	4.04	0.31	32.3	14.2	23.6
119	204.0	0.742	59.2	8.7	6.56	8.765	32.223	28.602	46.6	18.0	37.9	9.3	4.06	0.30	32.3	14.3	23.6
120	204.7	0.746	59.2	8.7	6.57	8.832	32.338	28.686	46.7	18.0	38.0	9.3	4.07	0.30	32.4	14.3	23.7
121	205.3	0.750	59.2	8.7	6.57	8.898	32.434	28.752	46.8	18.0	38.1	9.3	4.08	0.30	32.4	14.4	23.7
122	205.8	0.754	59.2	8.7	6.57	8.954	32.511	28.803	46.8	18.0	38.2	9.3	4.08	0.30	32.4	14.4	23.7
123	205.8	0.756	59.1	8.7	6.58	9.002	32.511	28.788	46.8	18.0	38.2	9.4	4.07	0.30	32.4	14.4	23.8
124	206.5	0.759	59.1	8.6	6.58	9.039	32.627	28.881	46.9	18.0	38.3	9.4	4.07	0.30	32.5	14.4	23.8
125	206.7	0.762	59.1	8.6	6.58	9.087	32.665	28.900	46.9	18.0	38.3	9.4	4.07	0.30	32.5	14.5	23.9
126	206.8	0.763	59.1	8.6	6.59	9.115	32.684	28.908	46.9	18.0	38.3	9.4	4.07	0.30	32.5	14.5	23.9
127	208.0	0.766	59.1	8.7	6.59	9.162	32.876	29.067	47.1	18.0	38.4	9.4	4.10	0.30	32.6	14.5	23.9
128	209.0	0.769	59.1	8.7	6.59	9.209	33.049	29.209	47.2	18.0	38.6	9.4	4.11	0.30	32.6	14.6	24.0
129	209.6	0.773	59.1	8.7	6.60	9.275	33.145	29.274	47.3	18.0	38.7	9.4	4.12	0.30	32.7	14.6	24.0
130	210.3	0.777	59.1	8.7	6.60	9.342	33.261	29.357	47.4	18.0	38.7	9.4	4.13	0.29	32.7	14.7	24.1
131	210.6	0.781	59.1	8.7	6.61	9.408	33.318	29.387	47.4	18.0	38.8	9.4	4.13	0.29	32.7	14.7	24.1
132	211.4	0.786	59.1	8.6	6.61	9.483	33.453	29.484	47.5	18.0	38.9	9.4	4.13	0.29	32.8	14.7	24.1
133	211.5	0.790	59.1	8.6	6.62	9.549	33.472	29.479	47.5	18.0	38.9	9.4	4.13	0.29	32.8	14.7	24.1
134	212.3	0.795	59.1	8.6	6.62	9.634	33.607	29.572	47.6	18.0	39.0	9.4	4.14	0.29	32.8	14.8	24.2
135	212.6	0.799	59.1	8.6	6.63	9.710	33.645	29.581	47.6	18.0	39.0	9.4	4.14	0.29	32.8	14.8	24.2
136	213.0	0.805	59.1	8.7	6.64	9.795	33.722	29.622	47.7	18.0	39.0	9.4	4.16	0.29	32.8	14.8	24.2
137	213.1	0.809	59.1	8.6	6.64	9.871	33.741	29.614	47.6	18.0	39.0	9.4	4.15	0.29	32.8	14.8	24.2
138	213.6	0.814	59.1	8.6	6.65	9.946	33.818	29.658	47.7	18.0	39.1	9.4	4.15	0.29	32.9	14.8	24.2
139	214.3	0.818	59.1	8.6	6.65	10.022	33.933	29.736	47.8	18.0	39.1	9.4	4.16	0.29	32.9	14.9	24.3
140	214.5	0.824	59.1	8.6	6.66	10.107	33.972	29.741	47.8	18.0	39.1	9.4	4.16	0.29	32.9	14.9	24.3
141	214.6	0.828	59.1	8.6	6.66	10.182	33.991	29.733	47.8	18.0	39.1	9.4	4.16	0.29	32.9	14.9	24.3

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	215.6	0.833	59.1	8.6	6.67	10.258	34.145	29.845	47.9	18.0	39.3	9.4	4.17	0.29	33.0	14.9	24.3
143	215.8	0.837	59.1	8.6	6.68	10.324	34.183	29.857	47.9	18.0	39.3	9.4	4.16	0.29	33.0	14.9	24.4
144	216.7	0.840	59.1	8.6	6.68	10.381	34.337	29.976	48.0	18.0	39.4	9.4	4.18	0.29	33.0	15.0	24.4
145	217.9	0.844	59.1	8.6	6.68	10.447	34.529	30.125	48.2	18.0	39.6	9.4	4.19	0.29	33.1	15.1	24.5
146	218.5	0.848	59.1	8.6	6.69	10.513	34.644	30.205	48.2	18.0	39.6	9.4	4.20	0.28	33.1	15.1	24.5
147	219.5	0.852	59.1	8.6	6.69	10.569	34.798	30.323	48.4	18.0	39.8	9.4	4.21	0.28	33.2	15.2	24.6
148	220.4	0.856	59.1	8.6	6.70	10.636	34.952	30.437	48.5	18.0	39.9	9.4	4.23	0.28	33.3	15.2	24.7
149	221.4	0.860	59.1	8.6	6.70	10.702	35.125	30.569	48.6	18.0	40.0	9.4	4.24	0.28	33.3	15.3	24.7
150	222.2	0.864	59.1	8.6	6.71	10.768	35.259	30.666	48.7	18.0	40.1	9.4	4.25	0.28	33.4	15.3	24.8
151	222.8	0.868	59.1	8.6	6.71	10.843	35.355	30.725	48.8	18.0	40.2	9.4	4.26	0.28	33.4	15.4	24.8
152	223.4	0.872	59.0	8.6	6.72	10.910	35.451	30.787	48.8	18.0	40.3	9.5	4.25	0.28	33.4	15.4	24.9
153	224.2	0.876	59.0	8.6	6.72	10.976	35.586	30.883	48.9	18.0	40.3	9.5	4.26	0.28	33.5	15.4	24.9
154	224.8	0.880	59.0	8.6	6.73	11.042	35.682	30.945	49.0	18.0	40.4	9.5	4.27	0.28	33.5	15.5	24.9
155	225.2	0.884	59.0	8.6	6.73	11.098	35.759	30.993	49.0	18.0	40.5	9.5	4.27	0.28	33.5	15.5	25.0
156	225.8	0.888	59.0	8.6	6.74	11.165	35.855	31.055	49.1	18.0	40.5	9.5	4.28	0.28	33.6	15.5	25.0
157	226.7	0.892	59.0	8.6	6.74	11.231	36.008	31.168	49.2	18.0	40.6	9.5	4.29	0.27	33.6	15.6	25.0
158	227.7	0.895	59.0	8.6	6.75	11.287	36.181	31.301	49.3	18.0	40.8	9.5	4.31	0.27	33.7	15.7	25.1
159	228.5	0.899	59.0	8.6	6.75	11.344	36.316	31.399	49.4	18.0	40.9	9.5	4.32	0.27	33.7	15.7	25.2
160	229.2	0.902	59.0	8.6	6.76	11.401	36.431	31.481	49.5	18.0	40.9	9.5	4.33	0.27	33.8	15.7	25.2
161	230.4	0.906	59.0	8.6	6.76	11.457	36.623	31.630	49.7	18.0	41.1	9.5	4.34	0.27	33.8	15.8	25.3
162	232.0	0.910	59.0	8.6	6.77	11.523	36.892	31.844	49.9	18.0	41.3	9.5	4.36	0.27	34.0	15.9	25.4
163	233.1	0.914	59.0	8.6	6.77	11.590	37.084	31.990	50.0	18.0	41.5	9.5	4.38	0.27	34.0	16.0	25.5
164	234.1	0.918	59.0	8.6	6.78	11.656	37.238	32.101	50.1	18.0	41.6	9.5	4.39	0.27	34.1	16.1	25.5
165	235.6	0.922	59.0	8.5	6.78	11.731	37.488	32.293	50.3	18.0	41.8	9.5	4.40	0.26	34.2	16.1	25.6
166	236.6	0.926	59.0	8.5	6.79	11.797	37.661	32.421	50.5	18.0	41.9	9.5	4.41	0.26	34.2	16.2	25.7
167	237.9	0.930	59.0	8.5	6.79	11.864	37.872	32.582	50.6	18.0	42.1	9.5	4.43	0.26	34.3	16.3	25.8
168	239.0	0.934	59.0	8.5	6.80	11.930	38.064	32.727	50.8	18.0	42.2	9.5	4.45	0.26	34.4	16.4	25.9
169	239.8	0.939	59.0	8.5	6.80	12.005	38.199	32.816	50.8	18.0	42.3	9.5	4.46	0.26	34.4	16.4	25.9
170	241.1	0.943	59.0	8.5	6.81	12.071	38.410	32.977	51.0	18.0	42.5	9.5	4.47	0.26	34.5	16.5	26.0
171	242.1	0.947	59.0	8.5	6.81	12.147	38.583	33.100	51.1	18.0	42.6	9.5	4.48	0.26	34.6	16.5	26.1
172	243.2	0.952	59.0	8.5	6.82	12.213	38.756	33.226	51.3	18.0	42.7	9.5	4.49	0.26	34.6	16.6	26.1
173	244.5	0.956	59.0	8.5	6.82	12.289	38.987	33.399	51.4	18.0	42.9	9.5	4.51	0.25	34.7	16.7	26.2
174	245.2	0.961	59.0	8.5	6.83	12.364	39.102	33.471	51.5	18.0	43.0	9.5	4.51	0.25	34.8	16.7	26.3
175	246.3	0.965	59.0	8.5	6.84	12.440	39.275	33.592	51.6	18.0	43.1	9.5	4.53	0.25	34.8	16.8	26.3
176	247.5	0.970	59.0	8.5	6.84	12.515	39.486	33.748	51.8	18.0	43.3	9.5	4.54	0.25	34.9	16.9	26.4
177	248.7	0.974	59.0	8.5	6.85	12.591	39.678	33.886	51.9	18.0	43.4	9.5	4.56	0.25	35.0	16.9	26.5
178	249.7	0.979	59.0	8.5	6.85	12.666	39.851	34.007	52.0	18.0	43.5	9.5	4.57	0.25	35.0	17.0	26.5
179	250.2	0.984	59.0	8.5	6.86	12.742	39.928	34.044	52.1	18.0	43.6	9.5	4.57	0.25	35.1	17.0	26.5
180	251.1	0.989	58.9	8.5	6.87	12.827	40.082	34.144	52.2	18.0	43.7	9.6	4.57	0.25	35.1	17.1	26.6
181	251.9	0.993	58.9	8.5	6.87	12.903	40.216	34.231	52.3	18.0	43.8	9.6	4.58	0.25	35.1	17.1	26.7
182	252.4	0.998	58.9	8.5	6.88	12.978	40.293	34.267	52.3	18.0	43.8	9.6	4.59	0.25	35.2	17.1	26.7

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	252.9	1.003	58.9	8.5	6.89	13.063	40.389	34.316	52.3	18.0	43.9	9.6	4.59	0.25	35.2	17.2	26.7
184	254.2	1.008	58.9	8.5	6.89	13.139	40.601	34.469	52.5	18.0	44.0	9.6	4.61	0.25	35.3	17.2	26.8
185	255.5	1.012	58.9	8.5	6.90	13.214	40.812	34.622	52.7	18.0	44.2	9.6	4.62	0.24	35.3	17.3	26.9
186	256.4	1.017	58.9	8.5	6.90	13.290	40.966	34.725	52.8	18.0	44.3	9.6	4.62	0.24	35.4	17.4	26.9
187	257.2	1.022	58.9	8.5	6.91	13.365	41.100	34.810	52.8	18.0	44.4	9.6	4.63	0.24	35.4	17.4	27.0
188	258.7	1.026	58.9	8.5	6.92	13.441	41.350	34.995	53.0	18.0	44.6	9.6	4.65	0.24	35.5	17.5	27.1
189	260.2	1.031	58.9	8.5	6.92	13.526	41.600	35.176	53.2	18.0	44.8	9.6	4.67	0.24	35.6	17.6	27.2
190	260.9	1.035	58.9	8.4	6.93	13.592	41.715	35.248	53.3	18.0	44.9	9.6	4.67	0.24	35.7	17.6	27.2
191	261.8	1.040	58.9	8.4	6.93	13.668	41.869	35.350	53.4	18.0	45.0	9.6	4.68	0.24	35.7	17.7	27.3
192	263.3	1.044	58.9	8.4	6.94	13.734	42.119	35.537	53.6	18.0	45.1	9.6	4.70	0.24	35.8	17.8	27.4
193	265.1	1.048	58.9	8.4	6.95	13.809	42.426	35.771	53.8	18.0	45.4	9.6	4.71	0.23	35.9	17.9	27.5
194	266.3	1.053	58.8	8.4	6.95	13.885	42.618	35.904	53.9	18.0	45.6	9.7	4.71	0.23	36.0	18.0	27.6
195	267.2	1.058	58.8	8.4	6.96	13.960	42.772	36.004	54.0	18.0	45.7	9.7	4.72	0.23	36.0	18.0	27.7
196	268.8	1.062	58.8	8.3	6.96	14.036	43.041	36.203	54.2	18.0	45.9	9.7	4.73	0.23	36.1	18.1	27.8
197	270.4	1.067	58.8	8.3	6.97	14.112	43.310	36.401	54.4	18.0	46.1	9.7	4.75	0.23	36.2	18.2	27.9
198	271.0	1.071	58.8	8.3	6.98	14.178	43.406	36.455	54.5	18.0	46.2	9.7	4.75	0.23	36.3	18.2	28.0
199	272.4	1.075	58.8	8.3	6.98	14.253	43.637	36.620	54.7	18.0	46.3	9.7	4.76	0.23	36.3	18.3	28.0
200	274.2	1.079	58.7	8.3	6.99	14.319	43.944	36.855	54.9	18.0	46.6	9.8	4.78	0.22	36.5	18.4	28.2
201	275.7	1.084	58.7	8.2	6.99	14.395	44.194	37.035	55.1	18.0	46.9	9.8	4.77	0.22	36.5	18.5	28.3
202	277.0	1.088	58.7	8.2	7.00	14.461	44.405	37.187	55.2	18.0	47.0	9.8	4.78	0.22	36.6	18.6	28.4
203	278.7	1.092	58.6	8.2	7.00	14.527	44.693	37.404	55.4	18.0	47.3	9.9	4.79	0.22	36.7	18.7	28.6
204	280.8	1.097	58.6	8.2	7.01	14.603	45.039	37.666	55.7	18.0	47.5	9.9	4.81	0.22	36.9	18.8	28.7
205	282.8	1.101	58.6	8.1	7.02	14.669	45.385	37.931	56.0	18.0	47.9	9.9	4.82	0.21	37.0	19.0	28.9
206	284.2	1.105	58.5	8.1	7.02	14.744	45.616	38.093	56.1	18.0	48.1	10.0	4.82	0.21	37.1	19.0	29.0
207	286.7	1.109	58.5	8.0	7.03	14.811	46.039	38.423	56.5	18.0	48.4	10.0	4.83	0.21	37.2	19.2	29.2
208	288.7	1.114	58.4	8.0	7.03	14.886	46.365	38.666	56.7	18.0	48.7	10.1	4.84	0.21	37.4	19.3	29.4
209	290.7	1.118	58.4	7.9	7.04	14.952	46.692	38.913	56.9	18.0	49.1	10.1	4.84	0.20	37.5	19.5	29.6
210	291.9	1.122	58.3	7.8	7.04	15.018	46.903	39.062	57.1	18.0	49.3	10.2	4.83	0.20	37.6	19.5	29.7
211	293.2	1.127	58.2	7.8	7.05	15.094	47.115	39.206	57.2	18.0	49.5	10.3	4.82	0.20	37.6	19.6	29.9
212	294.8	1.131	58.2	7.7	7.06	15.169	47.384	39.399	57.4	18.0	49.7	10.3	4.81	0.20	37.7	19.7	30.0
213	296.1	1.135	58.1	7.6	7.06	15.236	47.595	39.547	57.6	18.0	50.0	10.4	4.79	0.19	37.8	19.8	30.2
214	297.3	1.140	58.0	7.5	7.07	15.311	47.806	39.690	57.7	18.0	50.2	10.5	4.76	0.19	37.9	19.8	30.4
215	298.9	1.144	57.9	7.4	7.07	15.377	48.075	39.886	57.9	18.0	50.5	10.6	4.75	0.19	38.0	19.9	30.6
216	300.8	1.148	57.7	7.3	7.08	15.453	48.383	40.109	58.1	18.0	50.9	10.8	4.73	0.18	38.1	20.1	30.8
217	301.6	1.153	57.6	7.2	7.09	15.528	48.517	40.186	58.2	18.0	51.1	10.9	4.70	0.18	38.1	20.1	31.0
218	302.5	1.158	57.5	7.0	7.09	15.604	48.671	40.279	58.3	18.0	51.3	11.0	4.66	0.17	38.2	20.1	31.2
219	303.2	1.162	57.4	6.9	7.10	15.679	48.786	40.340	58.4	18.0	51.5	11.1	4.62	0.17	38.2	20.2	31.3
220	303.8	1.167	57.2	6.8	7.11	15.764	48.882	40.379	58.4	18.0	51.7	11.3	4.58	0.17	38.2	20.2	31.5
221	304.0	1.172	57.0	6.5	7.11	15.840	48.921	40.375	58.4	18.0	51.9	11.5	4.52	0.16	38.2	20.2	31.7
222	303.9	1.176	56.8	6.4	7.12	15.916	48.902	40.322	58.4	18.0	52.0	11.7	4.46	0.16	38.2	20.2	31.8
223	303.8	1.181	56.7	6.2	7.13	15.991	48.882	40.269	58.3	18.0	52.1	11.8	4.40	0.15	38.2	20.1	32.0

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	303.0	1.186	56.5	6.0	7.13	16.076	48.748	40.114	58.1	18.0	52.2	12.0	4.33	0.15	38.1	20.1	32.1
225	301.1	1.191	56.3	5.8	7.14	16.152	48.440	39.820	57.9	18.0	52.1	12.2	4.25	0.15	37.9	19.9	32.2
226	299.2	1.195	56.1	5.6	7.15	16.227	48.114	39.509	57.5	18.0	51.9	12.4	4.18	0.14	37.8	19.8	32.2
227	298.3	1.200	55.9	5.5	7.15	16.303	47.960	39.344	57.4	18.0	51.9	12.6	4.13	0.14	37.7	19.7	32.2
228	297.1	1.205	55.8	5.3	7.16	16.378	47.768	39.147	57.2	18.0	51.9	12.7	4.07	0.14	37.6	19.6	32.3
229	296.1	1.209	55.6	5.2	7.17	16.454	47.595	38.967	57.0	18.0	51.8	12.9	4.03	0.13	37.5	19.5	32.3
230	296.0	1.214	55.5	5.1	7.17	16.539	47.576	38.910	56.9	18.0	51.9	13.0	4.00	0.13	37.5	19.5	32.4
231	295.6	1.218	55.5	5.0	7.18	16.605	47.518	38.831	56.9	18.0	51.9	13.0	3.98	0.13	37.4	19.4	32.4
232	294.8	1.223	55.4	5.0	7.18	16.681	47.384	38.683	56.7	18.0	51.7	13.1	3.96	0.13	37.4	19.3	32.4
233	294.6	1.227	55.4	4.9	7.19	16.747	47.345	38.619	56.7	18.0	51.7	13.1	3.95	0.13	37.3	19.3	32.4
234	295.7	1.232	55.4	5.0	7.20	16.822	47.537	38.743	56.8	18.0	51.8	13.1	3.97	0.13	37.4	19.4	32.4
235	297.6	1.236	55.5	5.0	7.20	16.898	47.845	38.963	57.0	18.0	52.0	13.0	3.99	0.13	37.5	19.5	32.5
236	299.1	1.240	55.5	5.0	7.21	16.964	48.095	39.139	57.2	18.0	52.1	13.0	4.01	0.13	37.6	19.6	32.6
237	299.7	1.245	55.5	5.1	7.22	17.040	48.210	39.198	57.2	18.0	52.2	13.0	4.02	0.13	37.6	19.6	32.6
238	300.8	1.249	55.6	5.1	7.22	17.115	48.383	39.305	57.3	18.0	52.2	12.9	4.04	0.13	37.7	19.7	32.6
239	301.9	1.254	55.6	5.1	7.23	17.191	48.575	39.428	57.5	18.0	52.4	12.9	4.05	0.13	37.7	19.7	32.7
240	303.2	1.259	55.6	5.1	7.24	17.266	48.786	39.566	57.6	18.0	52.5	12.9	4.06	0.13	37.8	19.8	32.7
241	304.7	1.263	55.5	5.1	7.24	17.342	49.036	39.735	57.8	18.0	52.7	13.0	4.06	0.13	37.9	19.9	32.8
242	306.1	1.268	55.5	5.0	7.25	17.417	49.267	39.889	57.9	18.0	52.9	13.0	4.07	0.13	38.0	19.9	32.9
243	307.2	1.272	55.5	5.0	7.26	17.493	49.459	40.010	58.0	18.0	53.0	13.0	4.07	0.12	38.0	20.0	33.0
244	308.1	1.276	55.4	5.0	7.26	17.559	49.612	40.104	58.1	18.0	53.2	13.1	4.07	0.12	38.1	20.1	33.1
245	308.9	1.281	55.4	4.9	7.27	17.635	49.747	40.177	58.2	18.0	53.3	13.1	4.06	0.12	38.1	20.1	33.2
246	310.0	1.285	55.4	4.9	7.27	17.701	49.920	40.287	58.3	18.0	53.4	13.1	4.06	0.12	38.2	20.1	33.3
247	311.0	1.290	55.3	4.9	7.28	17.776	50.093	40.391	58.4	18.0	53.6	13.2	4.06	0.12	38.2	20.2	33.4
248	311.8	1.294	55.3	4.8	7.29	17.843	50.227	40.469	58.5	18.0	53.7	13.2	4.06	0.12	38.3	20.2	33.5
249	312.3	1.298	55.2	4.7	7.29	17.918	50.304	40.494	58.5	18.0	53.8	13.3	4.05	0.12	38.3	20.2	33.5
250	313.7	1.302	55.2	4.7	7.30	17.984	50.535	40.650	58.7	18.0	54.0	13.3	4.05	0.12	38.4	20.3	33.6
251	314.2	1.307	55.1	4.6	7.31	18.069	50.631	40.685	58.7	18.0	54.1	13.4	4.04	0.11	38.4	20.3	33.7
252	314.2	1.311	55.1	4.6	7.31	18.135	50.631	40.652	58.7	18.0	54.1	13.4	4.03	0.11	38.4	20.3	33.7
253	314.7	1.316	55.0	4.6	7.32	18.211	50.708	40.677	58.7	18.0	54.1	13.5	4.02	0.11	38.4	20.3	33.8
254	314.8	1.320	55.0	4.5	7.32	18.277	50.727	40.659	58.7	18.0	54.2	13.5	4.01	0.11	38.4	20.3	33.8
255	315.6	1.325	54.9	4.5	7.33	18.353	50.861	40.730	58.8	18.0	54.3	13.6	4.00	0.11	38.4	20.4	33.9
256	315.7	1.329	54.9	4.4	7.34	18.419	50.881	40.712	58.7	18.0	54.3	13.6	3.99	0.11	38.4	20.4	34.0
257	316.2	1.333	54.8	4.4	7.34	18.494	50.957	40.736	58.8	18.0	54.4	13.7	3.98	0.11	38.4	20.4	34.0
258	316.3	1.338	54.8	4.3	7.35	18.570	50.977	40.714	58.7	18.0	54.4	13.7	3.97	0.11	38.4	20.4	34.1
259	316.8	1.342	54.7	4.3	7.36	18.636	51.054	40.742	58.8	18.0	54.5	13.8	3.96	0.10	38.4	20.4	34.1
260	316.4	1.346	54.7	4.2	7.36	18.711	50.996	40.657	58.7	18.0	54.5	13.8	3.94	0.10	38.4	20.3	34.2
261	317.0	1.350	54.6	4.2	7.37	18.778	51.092	40.701	58.7	18.0	54.6	13.9	3.94	0.10	38.4	20.4	34.2
262	317.1	1.356	54.6	4.1	7.38	18.863	51.111	40.673	58.7	18.0	54.6	13.9	3.92	0.10	38.4	20.3	34.2
263	317.0	1.360	54.5	4.1	7.38	18.929	51.092	40.624	58.7	18.0	54.6	14.0	3.91	0.10	38.3	20.3	34.3
264	317.5	1.364	54.5	4.0	7.39	19.004	51.169	40.648	58.7	18.0	54.7	14.0	3.90	0.10	38.4	20.3	34.4

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
265	317.3	1.369	54.4	3.9	7.40	19.080	51.150	40.593	58.6	18.0	54.7	14.1	3.88	0.10	38.3	20.3	34.4
266	317.1	1.373	54.4	3.9	7.40	19.155	51.111	40.524	58.6	18.0	54.7	14.1	3.87	0.10	38.3	20.3	34.4
267	316.8	1.378	54.3	3.8	7.41	19.231	51.054	40.439	58.5	18.0	54.6	14.2	3.85	0.09	38.3	20.2	34.4
268	315.4	1.382	54.2	3.8	7.42	19.307	50.823	40.214	58.2	18.0	54.5	14.3	3.82	0.09	38.1	20.1	34.4
269	314.8	1.388	54.2	3.7	7.43	19.392	50.727	40.093	58.1	18.0	54.4	14.3	3.79	0.09	38.1	20.0	34.4
270	313.7	1.392	54.0	3.6	7.43	19.467	50.535	39.900	57.9	18.0	54.4	14.5	3.76	0.09	38.0	20.0	34.4
271	311.6	1.397	53.9	3.5	7.44	19.543	50.189	39.584	57.6	18.0	54.1	14.6	3.72	0.09	37.8	19.8	34.3
272	309.8	1.401	53.8	3.4	7.45	19.618	49.881	39.299	57.3	18.0	54.0	14.7	3.68	0.09	37.7	19.6	34.3
273	307.6	1.406	53.7	3.3	7.45	19.694	49.516	38.968	57.0	18.0	53.7	14.8	3.64	0.08	37.5	19.5	34.2
274	305.0	1.411	53.7	3.2	7.46	19.769	49.094	38.591	56.6	18.0	53.4	14.8	3.61	0.08	37.3	19.3	34.1
275	302.3	1.415	53.7	3.2	7.47	19.845	48.633	38.185	56.2	18.0	53.0	14.8	3.57	0.08	37.1	19.1	33.9
276	300.9	1.420	53.6	3.2	7.48	19.921	48.402	37.963	56.0	18.0	52.8	14.9	3.55	0.08	37.0	19.0	33.9
277	300.3	1.424	53.6	3.2	7.48	19.996	48.306	37.850	55.9	18.0	52.7	14.9	3.54	0.08	37.0	18.9	33.8
278	299.6	1.425	53.6	3.2	7.48	20.006	48.191	37.753	55.8	18.0	52.6	14.9	3.54	0.08	36.9	18.9	33.8

Specimen C Shear Data

CU Triaxial Test

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File Location
T-5676.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5676
Sample Location: Guilford County (Sta. 405+70)
Sample Description: Tannish-brown colored soft clay.
Remarks: 25° shear plane with slicken side.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.829
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.858	2.734	
Height (in)	6.605	6.312	
Weight (grams)	1270.00		1296.00
Moisture (%)	25.62		28.19
Dry Density (pcf)	90.89	103.96	
Saturation (%)	76.85	100.00	
Void Ratio	0.938	0.699	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 87.000
Effective Confining Stress (psi): 36.0
Corrected Peak Deviator Stress (psi): 65.042 at reading number: 67

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	27.1	0.403	51.0	0.0	5.87	0.000	0.000	0.000	36.0	36.0	36.0	36.0	1.00	0.00	36.0	0.0	36.0
1	59.4	0.409	51.9	0.9	5.87	0.099	5.501	5.455	41.4	36.0	40.5	35.1	1.16	0.17	38.7	2.7	37.8
2	79.2	0.415	53.4	2.4	5.88	0.190	8.880	8.786	44.8	36.0	42.4	33.6	1.26	0.27	40.4	4.4	38.0
3	87.4	0.420	54.4	3.4	5.88	0.271	10.274	10.137	46.1	36.0	42.7	32.6	1.31	0.34	41.1	5.1	37.7
4	104.7	0.425	55.7	4.7	5.89	0.353	13.221	13.032	49.0	36.0	44.3	31.3	1.42	0.36	42.5	6.5	37.8
5	117.7	0.430	56.9	5.9	5.89	0.425	15.441	15.204	51.2	36.0	45.3	30.1	1.51	0.39	43.6	7.6	37.7
6	129.4	0.435	58.0	7.0	5.90	0.507	17.425	17.133	53.1	36.0	46.1	29.0	1.59	0.41	44.5	8.6	37.5
7	139.9	0.440	59.0	8.0	5.90	0.588	19.213	18.863	54.8	36.0	46.9	28.0	1.67	0.42	45.4	9.4	37.5
8	149.8	0.445	59.8	8.8	5.91	0.660	20.902	20.499	56.5	36.0	47.7	27.2	1.75	0.43	46.2	10.2	37.4
9	159.2	0.450	60.6	9.6	5.91	0.742	22.513	22.048	58.0	36.0	48.4	26.4	1.84	0.44	47.0	11.0	37.4
10	168.2	0.454	61.4	10.4	5.92	0.814	24.045	23.522	59.5	36.0	49.1	25.6	1.92	0.44	47.7	11.8	37.4
11	176.6	0.460	62.1	11.1	5.92	0.895	25.479	24.891	60.9	36.0	49.8	24.9	2.00	0.45	48.4	12.4	37.3
12	184.6	0.464	62.7	11.7	5.93	0.968	26.835	26.186	62.2	36.0	50.5	24.3	2.08	0.45	49.1	13.1	37.4
13	192.5	0.469	63.2	12.2	5.93	1.049	28.190	27.472	63.5	36.0	51.3	23.8	2.16	0.44	49.7	13.7	37.5
14	200.0	0.474	63.7	12.7	5.94	1.122	29.467	28.686	64.7	36.0	52.0	23.3	2.23	0.44	50.3	14.3	37.6
15	207.1	0.479	64.2	13.2	5.94	1.203	30.666	29.813	65.8	36.0	52.6	22.8	2.31	0.44	50.9	14.9	37.7
16	214.8	0.484	64.6	13.6	5.94	1.275	31.982	31.061	67.0	36.0	53.4	22.4	2.39	0.44	51.5	15.5	37.9
17	221.8	0.489	65.0	14.0	5.95	1.357	33.180	32.184	68.2	36.0	54.2	22.0	2.46	0.44	52.1	16.1	38.1
18	229.1	0.493	65.4	14.4	5.95	1.429	34.418	33.351	69.3	36.0	54.9	21.6	2.55	0.43	52.7	16.7	38.3

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	235.8	0.498	65.7	14.7	5.96	1.501	35.557	34.419	70.4	36.0	55.7	21.3	2.62	0.43	53.2	17.2	38.5
20	242.8	0.502	66.0	15.0	5.96	1.574	36.756	35.544	71.5	36.0	56.5	21.0	2.69	0.42	53.8	17.8	38.7
21	249.6	0.507	66.3	15.2	5.97	1.646	37.915	36.628	72.6	36.0	57.4	20.7	2.77	0.42	54.3	18.3	39.1
22	256.0	0.512	66.5	15.5	5.97	1.728	38.995	37.626	73.6	36.0	58.1	20.5	2.84	0.41	54.8	18.8	39.3
23	262.5	0.517	66.8	15.8	5.98	1.800	40.115	38.669	74.7	36.0	58.9	20.2	2.91	0.41	55.3	19.3	39.6
24	269.4	0.521	67.0	16.0	5.98	1.872	41.294	39.767	75.8	36.0	59.7	20.0	2.99	0.40	55.9	19.9	39.9
25	275.7	0.526	67.2	16.2	5.99	1.945	42.354	40.748	76.7	36.0	60.5	19.8	3.06	0.40	56.4	20.4	40.2
26	282.5	0.530	67.4	16.4	5.99	2.017	43.514	41.831	77.8	36.0	61.4	19.6	3.14	0.39	56.9	20.9	40.5
27	288.6	0.535	67.5	16.5	5.99	2.089	44.555	42.819	78.8	36.0	62.3	19.5	3.20	0.39	57.4	21.4	40.9
28	294.7	0.540	67.7	16.6	6.00	2.162	45.596	43.805	79.8	36.0	63.1	19.3	3.27	0.38	57.9	21.9	41.2
29	300.6	0.544	67.7	16.7	6.00	2.234	46.598	44.752	80.7	36.0	64.0	19.3	3.32	0.37	58.4	22.4	41.6
30	306.6	0.549	67.9	16.8	6.01	2.306	47.619	45.716	81.7	36.0	64.9	19.1	3.39	0.37	58.8	22.9	42.0
31	312.4	0.554	68.0	17.0	6.01	2.388	48.621	46.655	82.6	36.0	65.7	19.0	3.45	0.36	59.3	23.3	42.3
32	318.0	0.558	68.1	17.0	6.02	2.460	49.564	47.540	83.5	36.0	66.5	18.9	3.51	0.36	59.8	23.8	42.7
33	323.6	0.563	68.2	17.2	6.02	2.533	50.527	48.442	84.4	36.0	67.3	18.8	3.57	0.35	60.2	24.2	43.0
34	329.4	0.568	68.2	17.2	6.03	2.605	51.509	49.362	85.3	36.0	68.2	18.8	3.62	0.35	60.7	24.7	43.5
35	328.7	0.572	68.1	17.1	6.03	2.677	51.391	49.210	85.2	36.0	68.1	18.9	3.61	0.35	60.6	24.6	43.5
36	339.0	0.577	68.2	17.2	6.03	2.750	53.140	50.874	86.9	36.0	69.7	18.8	3.70	0.34	61.4	25.4	44.3
37	344.5	0.581	68.2	17.2	6.04	2.822	54.083	51.751	87.7	36.0	70.5	18.8	3.76	0.33	61.9	25.9	44.7
38	349.3	0.586	68.2	17.2	6.04	2.903	54.908	52.509	88.5	36.0	71.3	18.8	3.80	0.33	62.2	26.3	45.0
39	354.3	0.591	68.2	17.2	6.05	2.976	55.752	53.288	89.3	36.0	72.1	18.8	3.84	0.32	62.6	26.6	45.4
40	359.1	0.595	68.2	17.2	6.05	3.048	56.577	54.048	90.0	36.0	72.8	18.8	3.88	0.32	63.0	27.0	45.8
41	363.8	0.600	68.2	17.2	6.06	3.120	57.363	54.768	90.8	36.0	73.6	18.8	3.91	0.31	63.4	27.4	46.2
42	368.4	0.605	68.1	17.1	6.06	3.193	58.149	55.488	91.5	36.0	74.3	18.9	3.94	0.31	63.7	27.7	46.6
43	372.9	0.609	68.1	17.1	6.07	3.265	58.915	56.187	92.2	36.0	75.1	18.9	3.97	0.30	64.1	28.1	47.0
44	377.2	0.614	68.0	17.0	6.07	3.347	59.662	56.860	92.8	36.0	75.8	19.0	4.00	0.30	64.4	28.4	47.4
45	380.9	0.619	68.0	17.0	6.08	3.419	60.290	57.424	93.4	36.0	76.4	19.0	4.02	0.30	64.7	28.7	47.7
46	385.7	0.623	68.0	17.0	6.08	3.491	61.096	58.158	94.1	36.0	77.2	19.0	4.06	0.29	65.1	29.1	48.1
47	389.8	0.628	67.9	16.9	6.09	3.564	61.803	58.796	94.8	36.0	77.9	19.1	4.08	0.29	65.4	29.4	48.5
48	393.5	0.633	67.8	16.8	6.09	3.636	62.432	59.357	95.3	36.0	78.5	19.2	4.10	0.28	65.7	29.7	48.9
49	397.6	0.637	67.7	16.7	6.09	3.708	63.139	59.993	96.0	36.0	79.2	19.3	4.12	0.28	66.0	30.0	49.3
50	399.4	0.642	67.6	16.6	6.10	3.781	63.433	60.230	96.2	36.0	79.6	19.4	4.11	0.28	66.1	30.1	49.5
51	403.6	0.646	67.5	16.5	6.10	3.853	64.160	60.883	96.9	36.0	80.3	19.5	4.13	0.27	66.4	30.4	49.9
52	407.7	0.651	67.5	16.4	6.11	3.925	64.848	61.498	97.5	36.0	81.0	19.5	4.15	0.27	66.7	30.7	50.3
53	411.1	0.655	67.4	16.4	6.11	3.998	65.437	62.016	98.0	36.0	81.6	19.6	4.16	0.26	67.0	31.0	50.6
54	413.6	0.660	67.3	16.2	6.12	4.070	65.850	62.365	98.3	36.0	82.1	19.7	4.16	0.26	67.2	31.2	50.9
55	413.7	0.665	67.1	16.1	6.12	4.143	65.869	62.336	98.3	36.0	82.2	19.9	4.14	0.26	67.2	31.2	51.0
56	418.1	0.669	67.0	16.0	6.13	4.215	66.616	63.003	99.0	36.0	83.0	20.0	4.15	0.25	67.5	31.5	51.5
57	420.5	0.674	66.9	15.9	6.13	4.287	67.029	63.350	99.3	36.0	83.4	20.1	4.15	0.25	67.7	31.7	51.8
58	422.9	0.679	66.8	15.8	6.14	4.369	67.441	63.690	99.7	36.0	83.9	20.2	4.16	0.25	67.8	31.8	52.0
59	425.3	0.683	66.7	15.7	6.14	4.432	67.854	64.042	100.0	36.0	84.3	20.3	4.16	0.24	68.0	32.0	52.3

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	427.9	0.687	66.6	15.6	6.15	4.504	68.286	64.405	100.4	36.0	84.8	20.4	4.15	0.24	68.2	32.2	52.6
61	429.0	0.692	66.5	15.4	6.15	4.577	68.482	64.543	100.5	36.0	85.1	20.5	4.14	0.24	68.3	32.3	52.8
62	431.0	0.697	66.3	15.3	6.16	4.649	68.816	64.812	100.8	36.0	85.5	20.7	4.14	0.24	68.4	32.4	53.1
63	432.2	0.701	66.1	15.1	6.16	4.721	69.032	64.968	101.0	36.0	85.8	20.9	4.11	0.23	68.5	32.5	53.3
64	432.8	0.706	66.1	15.0	6.16	4.803	69.131	65.006	101.0	36.0	85.9	20.9	4.10	0.23	68.5	32.5	53.4
65	432.7	0.711	65.9	14.9	6.17	4.875	69.111	64.937	100.9	36.0	86.0	21.1	4.08	0.23	68.5	32.5	53.5
66	433.5	0.715	65.8	14.8	6.17	4.948	69.248	65.017	101.0	36.0	86.2	21.2	4.07	0.23	68.5	32.5	53.7
67	434.0	0.720	65.7	14.7	6.18	5.020	69.327	65.042	101.0	36.0	86.3	21.3	4.05	0.23	68.5	32.5	53.8
68	432.1	0.725	65.5	14.5	6.18	5.092	69.013	64.694	100.7	36.0	86.2	21.5	4.01	0.22	68.3	32.3	53.8
69	431.8	0.729	65.4	14.4	6.19	5.165	68.954	64.588	100.6	36.0	86.2	21.6	3.99	0.22	68.3	32.3	53.9
70	430.5	0.734	65.3	14.3	6.19	5.246	68.738	64.327	100.3	36.0	86.0	21.7	3.96	0.22	68.1	32.2	53.9
71	428.5	0.739	65.2	14.2	6.20	5.318	68.404	63.961	99.9	36.0	85.8	21.8	3.93	0.22	68.0	32.0	53.8
72	428.2	0.743	65.1	14.1	6.20	5.391	68.345	63.856	99.8	36.0	85.8	21.9	3.92	0.22	67.9	31.9	53.8
73	427.4	0.748	65.0	14.0	6.21	5.463	68.207	63.676	99.7	36.0	85.7	22.0	3.89	0.22	67.8	31.8	53.9
74	426.5	0.753	64.9	13.9	6.21	5.545	68.050	63.472	99.5	36.0	85.6	22.1	3.87	0.22	67.7	31.7	53.8
75	425.3	0.758	64.8	13.8	6.22	5.617	67.854	63.238	99.2	36.0	85.5	22.2	3.85	0.22	67.6	31.6	53.8
76	423.2	0.762	64.6	13.6	6.22	5.689	67.500	62.855	98.8	36.0	85.2	22.4	3.81	0.22	67.4	31.4	53.8
77	422.2	0.767	64.5	13.5	6.23	5.762	67.323	62.639	98.6	36.0	85.1	22.5	3.79	0.22	67.3	31.3	53.8
78	420.6	0.772	64.4	13.4	6.23	5.843	67.048	62.326	98.3	36.0	84.9	22.6	3.76	0.22	67.1	31.2	53.7
79	418.7	0.776	64.4	13.4	6.24	5.915	66.734	61.981	98.0	36.0	84.6	22.6	3.74	0.22	67.0	31.0	53.6
80	416.8	0.781	64.3	13.2	6.24	5.988	66.400	61.619	97.6	36.0	84.4	22.7	3.71	0.21	66.8	30.8	53.5
81	416.9	0.786	64.2	13.2	6.25	6.060	66.420	61.590	97.6	36.0	84.4	22.8	3.70	0.21	66.8	30.8	53.6
82	415.6	0.790	64.1	13.1	6.25	6.132	66.203	61.339	97.3	36.0	84.2	22.9	3.68	0.21	66.7	30.7	53.6
83	414.6	0.795	64.0	13.0	6.26	6.205	66.027	61.125	97.1	36.0	84.1	23.0	3.66	0.21	66.5	30.6	53.5
84	414.0	0.799	63.9	12.8	6.26	6.277	65.928	60.985	97.0	36.0	84.1	23.1	3.64	0.21	66.5	30.5	53.6
85	413.0	0.804	63.8	12.8	6.27	6.349	65.752	60.772	96.8	36.0	84.0	23.2	3.62	0.21	66.4	30.4	53.6
86	412.1	0.808	63.7	12.7	6.27	6.422	65.594	60.577	96.6	36.0	83.9	23.3	3.60	0.21	66.3	30.3	53.6
87	410.9	0.813	63.6	12.6	6.28	6.494	65.398	60.346	96.3	36.0	83.8	23.4	3.58	0.21	66.2	30.2	53.6
88	411.3	0.818	63.5	12.5	6.28	6.567	65.457	60.354	96.3	36.0	83.8	23.5	3.57	0.21	66.2	30.2	53.6
89	410.8	0.822	63.4	12.4	6.29	6.639	65.378	60.233	96.2	36.0	83.8	23.6	3.55	0.21	66.1	30.1	53.7
90	409.8	0.827	63.3	12.2	6.29	6.711	65.202	60.021	96.0	36.0	83.8	23.7	3.53	0.20	66.0	30.0	53.7
91	409.4	0.831	63.1	12.1	6.30	6.784	65.143	59.919	95.9	36.0	83.8	23.9	3.51	0.20	65.9	30.0	53.8
92	407.8	0.836	63.1	12.0	6.30	6.856	64.868	59.615	95.6	36.0	83.6	23.9	3.49	0.20	65.8	29.8	53.7
93	406.2	0.840	62.9	11.9	6.31	6.928	64.593	59.313	95.3	36.0	83.4	24.1	3.47	0.20	65.6	29.7	53.7
94	403.9	0.845	62.8	11.8	6.31	7.001	64.200	58.900	94.9	36.0	83.1	24.2	3.44	0.20	65.4	29.5	53.6
95	401.1	0.850	62.7	11.7	6.32	7.073	63.728	58.416	94.4	36.0	82.7	24.3	3.40	0.20	65.2	29.2	53.5
96	398.8	0.854	62.6	11.6	6.32	7.145	63.335	58.005	94.0	36.0	82.4	24.4	3.38	0.20	65.0	29.0	53.4
97	396.6	0.859	62.5	11.4	6.33	7.218	62.962	57.613	93.6	36.0	82.2	24.5	3.35	0.20	64.8	28.8	53.3
98	394.3	0.863	62.3	11.3	6.33	7.290	62.569	57.203	93.2	36.0	81.9	24.7	3.32	0.20	64.6	28.6	53.3
99	392.1	0.868	62.2	11.2	6.34	7.363	62.196	56.812	92.8	36.0	81.6	24.8	3.29	0.20	64.4	28.4	53.2
100	389.9	0.873	62.2	11.2	6.34	7.444	61.823	56.416	92.4	36.0	81.2	24.8	3.27	0.20	64.2	28.2	53.0

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	387.7	0.878	62.1	11.1	6.35	7.516	61.449	56.026	92.0	36.0	80.9	24.9	3.25	0.20	64.0	28.0	52.9
102	384.3	0.882	62.0	11.0	6.35	7.589	60.860	55.437	91.4	36.0	80.4	25.0	3.22	0.20	63.7	27.7	52.7
103	379.8	0.887	61.9	10.9	6.36	7.661	60.094	54.685	90.7	36.0	79.8	25.1	3.18	0.20	63.3	27.3	52.4
104	377.4	0.892	61.8	10.8	6.36	7.742	59.681	54.256	90.2	36.0	79.5	25.2	3.15	0.20	63.1	27.1	52.3
105	374.0	0.896	61.7	10.7	6.37	7.815	59.112	53.687	89.7	36.0	79.0	25.3	3.12	0.20	62.8	26.8	52.1
106	371.5	0.901	61.7	10.6	6.37	7.887	58.679	53.246	89.2	36.0	78.6	25.3	3.10	0.20	62.6	26.6	52.0
107	368.5	0.906	61.6	10.6	6.38	7.959	58.169	52.734	88.7	36.0	78.1	25.4	3.08	0.20	62.3	26.4	51.7
108	366.4	0.911	61.6	10.6	6.38	8.041	57.815	52.361	88.3	36.0	77.8	25.4	3.06	0.20	62.2	26.2	51.6
109	362.8	0.915	61.5	10.5	6.39	8.113	57.206	51.760	87.7	36.0	77.2	25.5	3.03	0.20	61.9	25.9	51.3
110	362.0	0.920	61.5	10.5	6.39	8.186	57.069	51.592	87.6	36.0	77.1	25.5	3.02	0.20	61.8	25.8	51.3
111	360.5	0.925	61.4	10.4	6.40	8.267	56.813	51.312	87.3	36.0	76.9	25.6	3.01	0.20	61.6	25.7	51.2
112	359.0	0.929	61.4	10.4	6.40	8.339	56.558	51.036	87.0	36.0	76.6	25.6	3.00	0.20	61.5	25.5	51.1
113	358.6	0.934	61.4	10.4	6.41	8.412	56.479	50.924	86.9	36.0	76.5	25.6	2.99	0.20	61.4	25.5	51.0
114	358.1	0.939	61.4	10.4	6.41	8.484	56.401	50.811	86.8	36.0	76.4	25.6	2.99	0.20	61.4	25.4	51.0
115	357.6	0.943	61.4	10.4	6.42	8.556	56.322	50.698	86.7	36.0	76.3	25.6	2.98	0.21	61.3	25.3	50.9
116	356.6	0.948	61.5	10.4	6.42	8.629	56.145	50.496	86.5	36.0	76.0	25.5	2.98	0.21	61.2	25.2	50.8
117	355.7	0.953	61.4	10.4	6.43	8.710	55.988	50.307	86.3	36.0	75.9	25.6	2.97	0.21	61.1	25.2	50.7
118	355.2	0.957	61.4	10.4	6.43	8.783	55.909	50.194	86.2	36.0	75.8	25.6	2.96	0.21	61.1	25.1	50.7
119	354.3	0.962	61.4	10.4	6.44	8.855	55.752	50.011	86.0	36.0	75.6	25.6	2.95	0.21	61.0	25.0	50.6
120	354.4	0.966	61.4	10.4	6.44	8.918	55.772	49.993	86.0	36.0	75.6	25.6	2.95	0.21	61.0	25.0	50.6
121	354.0	0.971	61.4	10.4	6.45	8.991	55.693	49.881	85.9	36.0	75.5	25.6	2.95	0.21	60.9	24.9	50.6
122	353.0	0.975	61.4	10.4	6.45	9.063	55.536	49.698	85.7	36.0	75.3	25.6	2.94	0.21	60.8	24.8	50.5
123	352.9	0.980	61.4	10.4	6.46	9.135	55.517	49.640	85.6	36.0	75.2	25.6	2.94	0.21	60.8	24.8	50.4
124	352.5	0.984	61.4	10.4	6.46	9.208	55.438	49.529	85.5	36.0	75.1	25.6	2.94	0.21	60.7	24.8	50.3
125	352.2	0.989	61.4	10.4	6.47	9.289	55.399	49.448	85.4	36.0	75.0	25.6	2.93	0.21	60.7	24.7	50.3
126	351.3	0.993	61.4	10.4	6.47	9.352	55.242	49.270	85.3	36.0	74.9	25.6	2.92	0.21	60.6	24.6	50.3
127	351.2	0.998	61.4	10.4	6.48	9.425	55.222	49.213	85.2	36.0	74.8	25.6	2.92	0.21	60.6	24.6	50.2
128	350.8	1.003	61.4	10.4	6.48	9.497	55.163	49.119	85.1	36.0	74.7	25.6	2.92	0.21	60.5	24.6	50.1
129	350.1	1.007	61.5	10.4	6.49	9.569	55.045	48.973	85.0	36.0	74.5	25.5	2.92	0.21	60.5	24.5	50.0
130	349.8	1.012	61.5	10.4	6.50	9.642	54.986	48.880	84.9	36.0	74.4	25.5	2.91	0.21	60.4	24.4	50.0
131	348.6	1.016	61.4	10.4	6.50	9.714	54.790	48.663	84.6	36.0	74.2	25.6	2.90	0.21	60.3	24.3	49.9
132	348.2	1.021	61.4	10.4	6.51	9.796	54.711	48.547	84.5	36.0	74.1	25.6	2.90	0.21	60.3	24.3	49.9
133	347.7	1.026	61.4	10.4	6.51	9.868	54.633	48.437	84.4	36.0	74.0	25.6	2.89	0.21	60.2	24.2	49.8
134	347.0	1.031	61.4	10.4	6.52	9.940	54.515	48.291	84.3	36.0	73.9	25.6	2.89	0.22	60.1	24.1	49.7
135	345.8	1.035	61.4	10.4	6.52	10.013	54.299	48.057	84.0	36.0	73.6	25.6	2.88	0.22	60.0	24.0	49.6
136	345.4	1.040	61.5	10.4	6.53	10.085	54.240	47.965	83.9	36.0	73.5	25.5	2.88	0.22	60.0	24.0	49.5
137	345.0	1.045	61.5	10.4	6.53	10.166	54.161	47.850	83.8	36.0	73.4	25.5	2.87	0.22	59.9	23.9	49.5
138	344.6	1.049	61.5	10.4	6.54	10.239	54.102	47.758	83.7	36.0	73.3	25.5	2.87	0.22	59.9	23.9	49.4
139	343.7	1.054	61.4	10.4	6.54	10.311	53.945	47.578	83.6	36.0	73.2	25.6	2.86	0.22	59.8	23.8	49.4
140	343.6	1.059	61.5	10.4	6.55	10.384	53.925	47.521	83.5	36.0	73.1	25.5	2.86	0.22	59.7	23.8	49.3
141	343.3	1.063	61.5	10.5	6.55	10.456	53.886	47.447	83.4	36.0	72.9	25.5	2.86	0.22	59.7	23.7	49.2

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	342.8	1.068	61.5	10.5	6.56	10.537	53.788	47.315	83.3	36.0	72.8	25.5	2.86	0.22	59.6	23.7	49.2
143	342.2	1.073	61.5	10.5	6.57	10.610	53.690	47.189	83.2	36.0	72.7	25.5	2.85	0.22	59.6	23.6	49.1
144	342.2	1.077	61.5	10.5	6.57	10.682	53.690	47.150	83.1	36.0	72.6	25.5	2.85	0.22	59.6	23.6	49.0
145	342.2	1.082	61.5	10.5	6.58	10.754	53.690	47.111	83.1	36.0	72.6	25.5	2.85	0.22	59.5	23.6	49.1
146	341.4	1.086	61.5	10.4	6.58	10.827	53.552	46.949	82.9	36.0	72.5	25.5	2.84	0.22	59.5	23.5	49.0
147	341.3	1.091	61.5	10.5	6.59	10.899	53.532	46.893	82.9	36.0	72.4	25.5	2.84	0.22	59.4	23.4	48.9
148	340.9	1.096	61.5	10.5	6.59	10.971	53.474	46.802	82.8	36.0	72.3	25.5	2.84	0.22	59.4	23.4	48.9
149	340.2	1.100	61.5	10.5	6.60	11.044	53.356	46.658	82.6	36.0	72.1	25.5	2.83	0.23	59.3	23.3	48.8
150	340.2	1.105	61.5	10.5	6.60	11.116	53.356	46.620	82.6	36.0	72.1	25.5	2.83	0.22	59.3	23.3	48.8
151	339.8	1.109	61.5	10.5	6.61	11.189	53.277	46.511	82.5	36.0	72.0	25.5	2.82	0.23	59.2	23.3	48.8
152	339.5	1.114	61.5	10.4	6.61	11.261	53.238	46.438	82.4	36.0	72.0	25.5	2.82	0.22	59.2	23.2	48.8
153	339.1	1.118	61.5	10.4	6.62	11.333	53.159	46.330	82.3	36.0	71.9	25.5	2.81	0.23	59.1	23.2	48.7
154	339.4	1.123	61.5	10.4	6.62	11.406	53.218	46.343	82.3	36.0	71.9	25.5	2.81	0.23	59.2	23.2	48.7
155	339.3	1.128	61.5	10.5	6.63	11.478	53.198	46.288	82.3	36.0	71.8	25.5	2.82	0.23	59.1	23.1	48.6
156	338.5	1.132	61.5	10.5	6.64	11.550	53.061	46.127	82.1	36.0	71.6	25.5	2.81	0.23	59.0	23.1	48.6
157	338.6	1.137	61.5	10.5	6.64	11.623	53.081	46.106	82.1	36.0	71.6	25.5	2.81	0.23	59.0	23.1	48.6
158	338.4	1.141	61.5	10.5	6.65	11.695	53.041	46.033	82.0	36.0	71.5	25.5	2.81	0.23	59.0	23.0	48.5
159	338.2	1.146	61.5	10.4	6.65	11.767	53.002	45.960	81.9	36.0	71.5	25.5	2.80	0.23	59.0	23.0	48.5
160	337.8	1.150	61.4	10.4	6.66	11.840	52.943	45.870	81.9	36.0	71.4	25.6	2.79	0.23	58.9	22.9	48.5
161	337.5	1.155	61.5	10.4	6.66	11.912	52.884	45.780	81.8	36.0	71.3	25.5	2.79	0.23	58.9	22.9	48.4
162	336.8	1.160	61.5	10.5	6.67	11.993	52.766	45.633	81.6	36.0	71.1	25.5	2.79	0.23	58.8	22.8	48.3
163	337.2	1.164	61.5	10.4	6.67	12.057	52.845	45.669	81.7	36.0	71.2	25.5	2.79	0.23	58.8	22.8	48.4
164	336.8	1.169	61.5	10.4	6.68	12.129	52.766	45.561	81.5	36.0	71.1	25.5	2.78	0.23	58.8	22.8	48.3
165	336.2	1.174	61.5	10.4	6.69	12.211	52.668	45.432	81.4	36.0	71.0	25.5	2.78	0.23	58.7	22.7	48.3
166	336.0	1.178	61.4	10.4	6.69	12.283	52.629	45.360	81.3	36.0	70.9	25.6	2.77	0.23	58.7	22.7	48.3
167	336.0	1.183	61.4	10.4	6.70	12.355	52.629	45.322	81.3	36.0	70.9	25.6	2.77	0.23	58.6	22.7	48.3
168	335.4	1.188	61.4	10.4	6.70	12.428	52.531	45.197	81.2	36.0	70.8	25.6	2.77	0.23	58.6	22.6	48.2
169	334.4	1.193	61.4	10.4	6.71	12.509	52.354	45.000	81.0	36.0	70.6	25.6	2.76	0.23	58.5	22.5	48.1
170	333.9	1.197	61.4	10.4	6.71	12.581	52.275	44.893	80.9	36.0	70.5	25.6	2.75	0.23	58.4	22.4	48.1
171	333.1	1.202	61.4	10.4	6.72	12.654	52.138	44.735	80.7	36.0	70.4	25.6	2.75	0.23	58.4	22.4	48.0
172	332.4	1.206	61.4	10.4	6.72	12.726	52.020	44.595	80.6	36.0	70.2	25.6	2.74	0.23	58.3	22.3	47.9
173	331.5	1.211	61.3	10.3	6.73	12.798	51.863	44.420	80.4	36.0	70.1	25.7	2.73	0.23	58.2	22.2	47.9
174	330.8	1.216	61.3	10.3	6.74	12.880	51.745	44.275	80.3	36.0	70.0	25.7	2.72	0.23	58.1	22.1	47.8
175	329.6	1.221	61.3	10.3	6.74	12.952	51.548	44.067	80.0	36.0	69.8	25.7	2.71	0.23	58.0	22.0	47.7
176	330.0	1.225	61.3	10.3	6.75	13.025	51.607	44.081	80.1	36.0	69.8	25.7	2.72	0.23	58.0	22.0	47.7
177	330.2	1.230	61.3	10.3	6.75	13.097	51.647	44.078	80.1	36.0	69.8	25.7	2.72	0.23	58.0	22.0	47.7
178	330.2	1.234	61.3	10.3	6.76	13.169	51.647	44.040	80.0	36.0	69.7	25.7	2.71	0.23	58.0	22.0	47.7
179	329.6	1.239	61.3	10.3	6.76	13.242	51.548	43.918	79.9	36.0	69.6	25.7	2.71	0.23	57.9	22.0	47.7
180	329.0	1.244	61.3	10.3	6.77	13.314	51.450	43.795	79.8	36.0	69.5	25.7	2.70	0.23	57.9	21.9	47.6
181	328.2	1.248	61.3	10.2	6.78	13.386	51.313	43.639	79.6	36.0	69.4	25.7	2.70	0.23	57.8	21.8	47.6
182	328.5	1.253	61.2	10.2	6.78	13.459	51.352	43.636	79.6	36.0	69.4	25.8	2.69	0.23	57.8	21.8	47.6

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	328.0	1.257	61.2	10.2	6.79	13.522	51.273	43.535	79.5	36.0	69.4	25.8	2.69	0.23	57.8	21.8	47.6
184	327.1	1.261	61.2	10.2	6.79	13.594	51.116	43.362	79.3	36.0	69.2	25.8	2.68	0.23	57.7	21.7	47.5
185	326.3	1.266	61.2	10.2	6.80	13.667	50.979	43.207	79.2	36.0	69.0	25.8	2.67	0.24	57.6	21.6	47.4
186	326.1	1.270	61.2	10.2	6.80	13.739	50.939	43.136	79.1	36.0	69.0	25.8	2.67	0.24	57.6	21.6	47.4
187	325.6	1.275	61.2	10.2	6.81	13.812	50.861	43.031	79.0	36.0	68.8	25.8	2.67	0.24	57.5	21.5	47.3
188	325.4	1.279	61.2	10.2	6.82	13.884	50.821	42.961	78.9	36.0	68.7	25.8	2.67	0.24	57.5	21.5	47.3
189	324.6	1.284	61.2	10.2	6.82	13.956	50.684	42.806	78.8	36.0	68.6	25.8	2.66	0.24	57.4	21.4	47.2
190	324.0	1.289	61.2	10.2	6.83	14.029	50.586	42.684	78.7	36.0	68.5	25.8	2.65	0.24	57.3	21.3	47.2
191	323.2	1.293	61.1	10.1	6.83	14.101	50.448	42.530	78.5	36.0	68.4	25.9	2.64	0.24	57.2	21.3	47.1
192	323.1	1.298	61.2	10.2	6.84	14.173	50.429	42.476	78.5	36.0	68.3	25.8	2.65	0.24	57.2	21.2	47.1
193	322.7	1.302	61.1	10.1	6.84	14.246	50.370	42.389	78.4	36.0	68.2	25.9	2.64	0.24	57.2	21.2	47.1
194	322.2	1.307	61.1	10.1	6.85	14.318	50.291	42.286	78.3	36.0	68.1	25.9	2.64	0.24	57.1	21.1	47.0
195	321.9	1.311	61.1	10.1	6.86	14.390	50.232	42.199	78.2	36.0	68.1	25.9	2.63	0.24	57.1	21.1	47.0
196	321.3	1.317	61.1	10.1	6.86	14.472	50.134	42.074	78.1	36.0	67.9	25.9	2.63	0.24	57.0	21.0	46.9
197	320.7	1.321	61.2	10.2	6.87	14.535	50.036	41.958	77.9	36.0	67.8	25.8	2.63	0.24	57.0	21.0	46.8
198	320.3	1.326	61.2	10.2	6.87	14.617	49.957	41.850	77.8	36.0	67.7	25.8	2.62	0.24	56.9	20.9	46.7
199	319.8	1.330	61.1	10.1	6.88	14.689	49.878	41.747	77.7	36.0	67.6	25.9	2.61	0.24	56.9	20.9	46.7
200	319.1	1.335	61.1	10.1	6.89	14.761	49.761	41.611	77.6	36.0	67.5	25.9	2.61	0.24	56.8	20.8	46.7
201	318.6	1.340	61.1	10.1	6.89	14.843	49.662	41.486	77.5	36.0	67.4	25.9	2.60	0.24	56.7	20.7	46.6
202	318.3	1.345	61.1	10.1	6.90	14.915	49.623	41.417	77.4	36.0	67.3	25.9	2.60	0.24	56.7	20.7	46.6
203	317.3	1.349	61.2	10.2	6.90	14.987	49.446	41.231	77.2	36.0	67.1	25.8	2.60	0.25	56.6	20.6	46.4
204	317.1	1.354	61.2	10.2	6.91	15.060	49.407	41.162	77.1	36.0	67.0	25.8	2.59	0.25	56.6	20.6	46.4
205	316.9	1.359	61.1	10.1	6.92	15.141	49.387	41.105	77.1	36.0	67.0	25.9	2.59	0.25	56.5	20.6	46.4
206	316.6	1.363	61.1	10.1	6.92	15.213	49.328	41.019	77.0	36.0	66.9	25.9	2.59	0.25	56.5	20.5	46.4
207	316.1	1.368	61.2	10.2	6.93	15.286	49.250	40.917	76.9	36.0	66.7	25.8	2.58	0.25	56.4	20.5	46.3
208	315.6	1.373	61.1	10.1	6.93	15.358	49.152	40.798	76.8	36.0	66.7	25.9	2.58	0.25	56.4	20.4	46.3
209	315.3	1.377	61.1	10.1	6.94	15.431	49.112	40.729	76.7	36.0	66.6	25.9	2.58	0.25	56.3	20.4	46.2
210	314.8	1.382	61.1	10.1	6.95	15.512	49.014	40.606	76.6	36.0	66.5	25.9	2.57	0.25	56.3	20.3	46.2
211	314.4	1.386	61.1	10.1	6.95	15.575	48.955	40.525	76.5	36.0	66.4	25.9	2.56	0.25	56.2	20.3	46.2
212	314.3	1.391	61.1	10.1	6.96	15.648	48.936	40.473	76.5	36.0	66.4	25.9	2.56	0.25	56.2	20.2	46.1
213	314.1	1.396	61.1	10.1	6.96	15.729	48.896	40.401	76.4	36.0	66.3	25.9	2.56	0.25	56.2	20.2	46.1
214	313.8	1.400	61.1	10.1	6.97	15.792	48.857	40.336	76.3	36.0	66.2	25.9	2.56	0.25	56.2	20.2	46.1
215	313.5	1.405	61.1	10.1	6.98	15.865	48.798	40.252	76.2	36.0	66.2	25.9	2.55	0.25	56.1	20.1	46.0
216	313.3	1.409	61.1	10.1	6.98	15.937	48.759	40.183	76.2	36.0	66.1	25.9	2.55	0.25	56.1	20.1	46.0
217	313.1	1.414	61.1	10.1	6.99	16.009	48.739	40.131	76.1	36.0	66.0	25.9	2.55	0.25	56.0	20.1	46.0
218	313.1	1.418	61.1	10.1	6.99	16.082	48.739	40.096	76.1	36.0	66.0	25.9	2.55	0.25	56.0	20.0	45.9
219	312.7	1.423	61.1	10.0	7.00	16.154	48.660	39.995	76.0	36.0	65.9	25.9	2.54	0.25	56.0	20.0	45.9
220	312.4	1.427	61.0	10.0	7.01	16.226	48.621	39.927	75.9	36.0	65.9	26.0	2.54	0.25	55.9	20.0	45.9
221	312.1	1.432	61.0	10.0	7.01	16.299	48.562	39.842	75.8	36.0	65.8	26.0	2.53	0.25	55.9	19.9	45.9
222	311.9	1.436	61.0	10.0	7.02	16.371	48.523	39.774	75.8	36.0	65.8	26.0	2.53	0.25	55.9	19.9	45.9
223	311.5	1.441	61.0	10.0	7.02	16.444	48.464	39.690	75.7	36.0	65.7	26.0	2.53	0.25	55.8	19.8	45.8

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	310.8	1.446	61.0	10.0	7.03	16.516	48.346	39.557	75.5	36.0	65.5	26.0	2.52	0.25	55.8	19.8	45.8
225	310.5	1.450	61.0	10.0	7.04	16.588	48.287	39.472	75.5	36.0	65.5	26.0	2.52	0.25	55.7	19.7	45.7
226	309.4	1.455	61.0	10.0	7.04	16.661	48.110	39.290	75.3	36.0	65.3	26.0	2.51	0.25	55.6	19.6	45.6
227	308.9	1.459	61.0	10.0	7.05	16.733	48.012	39.174	75.2	36.0	65.2	26.0	2.51	0.26	55.6	19.6	45.6
228	308.3	1.464	61.0	10.0	7.05	16.805	47.914	39.057	75.0	36.0	65.1	26.0	2.50	0.26	55.5	19.5	45.5
229	307.8	1.469	60.9	9.9	7.06	16.887	47.835	38.953	74.9	36.0	65.0	26.1	2.49	0.25	55.5	19.5	45.5
230	307.6	1.474	60.9	9.9	7.07	16.959	47.796	38.886	74.9	36.0	64.9	26.1	2.49	0.26	55.4	19.4	45.5
231	307.8	1.478	60.9	9.9	7.07	17.031	47.835	38.884	74.9	36.0	64.9	26.1	2.49	0.26	55.4	19.4	45.5
232	307.0	1.483	60.9	9.9	7.08	17.104	47.698	38.735	74.7	36.0	64.8	26.1	2.49	0.26	55.4	19.4	45.4
233	306.7	1.487	60.9	9.9	7.09	17.176	47.639	38.652	74.6	36.0	64.7	26.1	2.48	0.26	55.3	19.3	45.4
234	306.6	1.492	60.9	9.9	7.09	17.258	47.619	38.597	74.6	36.0	64.7	26.1	2.48	0.26	55.3	19.3	45.4
235	305.9	1.497	60.9	9.8	7.10	17.330	47.501	38.465	74.4	36.0	64.6	26.1	2.47	0.26	55.2	19.2	45.4
236	305.9	1.502	60.9	9.8	7.11	17.402	47.501	38.430	74.4	36.0	64.6	26.1	2.47	0.26	55.2	19.2	45.4
237	305.9	1.506	60.9	9.8	7.11	17.475	47.501	38.396	74.4	36.0	64.5	26.1	2.47	0.26	55.2	19.2	45.3
238	305.1	1.511	60.9	9.8	7.12	17.547	47.364	38.248	74.2	36.0	64.4	26.1	2.46	0.26	55.1	19.1	45.3
239	304.6	1.515	60.9	9.8	7.12	17.619	47.285	38.149	74.1	36.0	64.3	26.1	2.46	0.26	55.1	19.1	45.2
240	304.3	1.520	60.9	9.8	7.13	17.692	47.226	38.066	74.0	36.0	64.2	26.1	2.46	0.26	55.0	19.0	45.2
241	304.1	1.524	60.8	9.8	7.14	17.764	47.207	38.016	74.0	36.0	64.2	26.2	2.45	0.26	55.0	19.0	45.2
242	303.8	1.530	60.8	9.8	7.14	17.846	47.148	37.929	73.9	36.0	64.1	26.2	2.45	0.26	54.9	19.0	45.2
243	303.6	1.534	60.8	9.8	7.15	17.909	47.109	37.867	73.9	36.0	64.1	26.2	2.44	0.26	54.9	18.9	45.2
244	302.9	1.539	60.8	9.8	7.16	17.990	46.991	37.732	73.7	36.0	64.0	26.2	2.44	0.26	54.8	18.9	45.1
245	303.0	1.543	60.8	9.8	7.16	18.063	47.010	37.714	73.7	36.0	63.9	26.2	2.44	0.26	54.8	18.9	45.0
246	302.9	1.548	60.8	9.8	7.17	18.135	46.991	37.664	73.6	36.0	63.9	26.2	2.44	0.26	54.8	18.8	45.1
247	302.3	1.552	60.8	9.8	7.18	18.207	46.892	37.550	73.5	36.0	63.7	26.2	2.43	0.26	54.8	18.8	45.0
248	302.3	1.556	60.8	9.8	7.18	18.271	46.892	37.520	73.5	36.0	63.7	26.2	2.43	0.26	54.7	18.8	44.9
249	301.5	1.561	60.8	9.8	7.19	18.343	46.755	37.374	73.4	36.0	63.6	26.2	2.43	0.26	54.7	18.7	44.9
250	301.4	1.566	60.7	9.7	7.19	18.415	46.735	37.324	73.3	36.0	63.6	26.3	2.42	0.26	54.6	18.7	44.9
251	301.4	1.570	60.7	9.7	7.20	18.488	46.735	37.290	73.3	36.0	63.5	26.3	2.42	0.26	54.6	18.6	44.9
252	300.9	1.575	60.8	9.8	7.21	18.560	46.657	37.192	73.2	36.0	63.4	26.2	2.42	0.26	54.6	18.6	44.8
253	300.8	1.579	60.8	9.8	7.21	18.632	46.637	37.143	73.1	36.0	63.4	26.2	2.42	0.26	54.6	18.6	44.8
254	300.5	1.584	60.8	9.8	7.22	18.705	46.578	37.061	73.0	36.0	63.3	26.2	2.41	0.26	54.5	18.5	44.8
255	300.0	1.588	60.7	9.7	7.23	18.777	46.500	36.963	72.9	36.0	63.2	26.3	2.41	0.26	54.5	18.5	44.7
256	299.6	1.593	60.7	9.7	7.23	18.850	46.441	36.882	72.9	36.0	63.2	26.3	2.40	0.26	54.4	18.4	44.7
257	299.5	1.597	60.7	9.6	7.24	18.922	46.421	36.832	72.8	36.0	63.2	26.3	2.40	0.26	54.4	18.4	44.8
258	299.3	1.602	60.7	9.7	7.25	18.994	46.382	36.767	72.8	36.0	63.1	26.3	2.40	0.26	54.4	18.4	44.7
259	299.2	1.607	60.7	9.6	7.25	19.067	46.362	36.718	72.7	36.0	63.1	26.3	2.39	0.26	54.3	18.4	44.7
260	299.2	1.611	60.7	9.7	7.26	19.139	46.362	36.684	72.7	36.0	63.0	26.3	2.39	0.26	54.3	18.3	44.6
261	298.7	1.616	60.7	9.7	7.27	19.220	46.283	36.583	72.6	36.0	62.9	26.3	2.39	0.26	54.3	18.3	44.6
262	298.7	1.621	60.7	9.6	7.27	19.293	46.283	36.549	72.5	36.0	62.9	26.3	2.39	0.26	54.3	18.3	44.6
263	298.3	1.625	60.6	9.6	7.28	19.365	46.205	36.452	72.4	36.0	62.8	26.4	2.38	0.26	54.2	18.2	44.6
264	298.3	1.630	60.6	9.6	7.28	19.437	46.205	36.419	72.4	36.0	62.8	26.4	2.38	0.26	54.2	18.2	44.6

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
265	298.0	1.635	60.6	9.6	7.29	19.519	46.166	36.350	72.3	36.0	62.7	26.4	2.38	0.26	54.2	18.2	44.6
266	297.6	1.640	60.6	9.6	7.30	19.591	46.087	36.253	72.2	36.0	62.6	26.4	2.37	0.26	54.1	18.1	44.5
267	297.3	1.644	60.6	9.6	7.31	19.664	46.048	36.188	72.2	36.0	62.6	26.4	2.37	0.27	54.1	18.1	44.5
268	297.1	1.649	60.6	9.6	7.31	19.736	46.008	36.123	72.1	36.0	62.5	26.4	2.37	0.27	54.0	18.1	44.4
269	296.9	1.654	60.6	9.6	7.32	19.817	45.969	36.054	72.0	36.0	62.5	26.4	2.36	0.27	54.0	18.0	44.4
270	296.8	1.659	60.5	9.5	7.33	19.890	45.949	36.005	72.0	36.0	62.5	26.5	2.36	0.26	54.0	18.0	44.5
271	296.4	1.664	60.5	9.5	7.33	19.971	45.891	35.921	71.9	36.0	62.4	26.5	2.36	0.27	53.9	18.0	44.4
272	296.7	1.666	60.5	9.5	7.34	20.007	45.930	35.936	71.9	36.0	62.4	26.5	2.36	0.27	54.0	18.0	44.4

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. U-2412B

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project 39406.1.1 **County** GUILFORD **Owner**

Date: Sampled 3/13/13 **Received** 7/1/13 **Reported** 7/3/13

Sampled from ROADWAY **By** N ROBERSON

Submitted by SURIYATI 2002 **Standard Specifications**

786473 TO 786474
7/11/13

TEST RESULTS

Proj. Sample No.		ST-6 #1	ST-6 #2				
Lab. Sample No.		786473	786474				
Retained #4 Sieve	%	-	-				
Passing #10 Sieve	%	100	100				
Passing #40 Sieve	%	99	100				
Passing #200 Sieve	%	85	82				

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	2.2	1.0				
Fine Sand Ret - #270	%	18.9	23.8				
Silt 0.05 - 0.005 mm	%	58.6	63.0				
Clay < 0.005 mm	%	20.3	12.2				
T-#		T-5702	T-5702				
Specific Gravity		2.789	2.784				

L. L.		40	38				
P. I.		10	4				
AASHTO Classification		A-4(10)	A-4(5)				
Station		405+70	405+70				
Offset		3 FT RT	3 FT RT				
Alignment		L	L				
Location							
Depth (Ft)		45.00	45.00				
	to	46.70	46.70				
Final Moisture	%	27.51	22.29				

cc: N ROBERSON
GREG BODENHEIMER

Sample #1 taken from middle of shelby tube.
Sample #2 taken from bottom of shelby tube.

Soils Engineer

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	22.27	23.61	**Plastic Limits:**	0	
Dry Density (pcf):	101.93	106.87	**Plasticity Index (%):**	0	
Saturation (%):	87.94	104.96			
Void Ratio:	0.7006	0.6221	**Specific Gravity:**	2.784	Measured

Soil Description: Yellowish tan colored silt

Project Number: 39406.1.1 **Depth:** 45.0 - 46.7 ft

Sample Number: ST-6 **Boring Number:**

Project: U-2412B

Client: T-5702

Location: Guilford County (Sta. 405+70)

Remarks:
Solid Height = 0.58871 inches ; Est. Blows/Ft = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	22.27	23.61	**Plastic Limits:**	0	
Dry Density (pcf):	101.93	106.87	**Plasticity Index (%):**	0	
Saturation (%):	87.94	104.96			
Void Ratio:	0.7006	0.6221	**Specific Gravity:**	2.784	Measured

Soil Description: Yellowish tan colored silt

Project Number: 39406.1.1 **Depth:** 45.0 - 46.7 ft

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Project: U-2412B

Client: T-5702

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Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	22.27	23.61	**Plastic Limits:**	0	
Dry Density (pcf):	101.93	106.87	**Plasticity Index (%):**	0	
Saturation (%):	87.94	104.96			
Void Ratio:	0.7006	0.6221	**Specific Gravity:**	2.784	Measured

Soil Description: Yellowish tan colored silt

Project Number: 39406.1.1 **Depth:** 45.0 - 46.7 ft

Sample Number: ST-6 **Boring Number:**

Project: U-2412B

Client: T-5702

Location: Guilford County (Sta. 405+70)

Remarks:
Solid Height = 0.58871 inches ; Est. Blows/Ft = NA

Consolidation Test Results
Summary

Project: U-2412B
Location: Guilford County (Sta. 405+70)
Job Number: T-5702

Project Number: 39406.1.1

Sample Number: ST-6
Boring Number:
Depth: 45.0 - 46.7 ft
Sample Type: Undisturbed

Soil Description:
Yellowish tan colored silt
Remarks:
Solid Height = 0.58871 inches ; Est. Blows/Ft = NA

Test Number:
Test Date:

Index	Load Sequence (tsf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	1.0011	0.4124	0.00	0.7006	0.000		0.000	
1	0.063	0.0021	0.9990	0.4103	0.21	0.6970	0.035		21876.857	
2	0.125	0.0047	0.9964	0.4077	0.47	0.6926	0.063		12291.817	
3	0.250	0.0076	0.9935	0.4048	0.76	0.6877	0.063		12123.384	
4	0.500	0.0146	0.9865	0.3978	1.46	0.6758	0.103		7311.148	
5	1.000	0.0208	0.9803	0.3916	2.08	0.6653	0.090		8262.359	
6	2.000	0.0311	0.9700	0.3813	3.11	0.6478	0.144		5056.030	
7	4.000	0.0453	0.9558	0.3671	4.53	0.6237	0.250		2827.631	
8	2.000	0.0411	0.9600	0.3713	4.11	0.6308	0.000		0.000	
9	1.000	0.0372	0.9639	0.3752	3.72	0.6374	0.000		0.000	
10	0.500	0.0330	0.9681	0.3794	3.30	0.6445	0.000		0.000	
11	1.000	0.0366	0.9645	0.3758	3.66	0.6384	0.000		0.000	
12	2.000	0.0404	0.9607	0.3720	4.04	0.6320	0.000		0.000	
13	4.000	0.0464	0.9547	0.3660	4.63	0.6218	0.000		0.000	
14	8.000	0.0638	0.9373	0.3486	6.37	0.5922	0.220		3090.034	
15	16.000	0.0886	0.9125	0.3238	8.85	0.5501	1.563		412.226	
16	4.000	0.0828	0.9183	0.3296	8.27	0.5599	0.000		0.000	
17	0.016	0.0462	0.9549	0.3662	4.61	0.6221	0.000		0.000	

Tested By:

Checked By:

Consolidation Test
Consolidation Specimen Information

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County (Sta. 405+70)
Job Number: T-5702 **Test Date:**

Sample Number: ST-6 **Soil Description:**
Boring Number: Yellowish tan colored silt
Depth: 45.0 - 46.7 ft **Remarks:**
Sample Type: Undisturbed Solid Height = 0.58871 inches ; Est. Blows/Ft = NA

Test Number:
Liquid Limit: 0.0000 **Initial Void Ratio:** 0.7006 **Initial Height (in):** 1.0011
Plastic Limit: 0.0000 **Plasticity Index (%):** 0.0000 **Initial Diameter (in):** 2.5000
Specific Gravity: 2.7840 Measured **Weight of Ring (g):** 111.0800

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	160.77	162.54
Dry Soil + Container (g)	131.49	131.49
Weight of Container (g)	0.00	0.00
Moisture Content (%)	22.27	23.61
Void Ratio	0.7006	0.6221
Saturation (%)	87.94	104.96
Dry Density (pcf)	101.93	106.87

Tested By: **Checked By:**

ncdot

Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date

Tested By:

Effective Stress at Maximum Deviator Stress Criterion

Deviator Stress Vs. Axial Strain

Initial	Specimen A	B	C	D
Water Content (%)		23.0	20.6	
Dry Density (pcf)		98.6	105.5	
Saturation (%)		83.83	88.65	
Void Ratio		0.761	0.643	
Diameter (in)		2.850	2.856	
Height (in)		5.921	6.095	
Specific Gravity		2.79	2.78	
Liquid Limit		0	0	
Plastic Limit		0	0	
After Consolidation	**A**	**B**	**C**	**D**
B-Value		0.00	0.00	
Water Content (%)		25.3	23.3	
Dry Density (pcf)		104.37	112.10	
Saturation (%)		100.00	100.00	
Void Ratio		0.668	0.550	
Effective Stress (psi)		9.0	36.0	
Back Press. (psi)		53.0	55.2	
Rate of Strain		0.009	0.009	

Maximium Deviator Stress Criterion		After Shear	A	B	C	D
C (psi)	0.0	σ'1 at Failure (psi)		21.07	88.86	
C' (psi)	0.0	σ'3 at Failure (psi)		9.40	33.27	
Ø (deg)	0.0					
Ø' (deg)	0.0					

Project:	U-2412B		N/A	N/A
Location:	Guilford County (Sta. 405+70)			
Project Number:	39406.1.1			
Boring Number:				
Sample Number:	ST-6			
Depth:	45.0 - 46.7 ft			
Sample Type:	Undisturbed	Failure of sample #2		
Description:				
Test Type	Consolidated Undrained			
Remarks	Research			

ncdot

Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date:

Tested By:

Deviator Stress vs. Axial Strain

Principal Stress Ratio vs. Axial Strain

Change in Pore Pressure vs. Axial Strain

Mohr Stress Circles at Maximum Deviator Stress Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at Maximum Principal Stress Ratio Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at 15% Axial Strain Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)
Q (psi)
80.0
60.0
40.0
20.0
0.0
0.0
20.0
40.0
60.0
80.0
P' (psi)
Specimen A
Specimen B
Specimen C
Specimen D
Tangent Line

Stress Paths (Total)
(C' = 0.0 Ø' = 0.0)
Q (psi)
80.0
60.0
40.0
20.0
0.0
0.0
20.0
40.0
60.0
80.0
P (psi)

Specimen B Shear Data

CU Triaxial Test

ncdot

File Location
T-5702.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5702
Sample Location: Guilford County (Sta. 405+70)
Sample Description: Tannish colored silt
Remarks: Slicken side observed.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.789
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.850	2.794	
Height (in)	5.921	5.821	
Weight (grams)	1203.00		1247.00
Moisture (%)	23.01		27.51
Dry Density (pcf)	98.62	104.37	
Saturation (%)	83.83	100.00	
Void Ratio	0.761	0.668	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 62.000
Effective Confining Stress (psi): 9.0
Corrected Peak Deviator Stress (psi): 11.673 at reading number: 256

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	29.6	0.141	53.0	0.0	6.13	0.000	0.000	0.000	9.0	9.0	9.0	9.0	1.00	0.00	9.0	0.0	9.0
1	45.0	0.145	53.2	0.3	6.14	0.069	2.513	2.484	11.5	9.0	11.2	8.8	1.28	0.11	10.3	1.2	10.0
2	47.8	0.150	53.4	0.4	6.14	0.148	2.982	2.920	11.9	9.0	11.6	8.6	1.34	0.13	10.5	1.5	10.1
3	49.5	0.154	53.5	0.5	6.15	0.227	3.245	3.148	12.2	9.0	11.7	8.5	1.37	0.15	10.6	1.6	10.1
4	50.6	0.158	53.5	0.6	6.15	0.296	3.432	3.306	12.3	9.0	11.8	8.5	1.39	0.17	10.7	1.7	10.1
5	51.9	0.163	53.6	0.6	6.16	0.375	3.639	3.478	12.5	9.0	11.9	8.4	1.42	0.18	10.8	1.7	10.1
6	53.0	0.168	53.7	0.7	6.16	0.454	3.826	3.630	12.6	9.0	11.9	8.3	1.44	0.20	10.8	1.8	10.1
7	53.9	0.172	53.8	0.8	6.17	0.532	3.976	3.746	12.8	9.0	12.0	8.2	1.46	0.21	10.9	1.9	10.1
8	54.9	0.176	53.9	0.9	6.17	0.601	4.126	3.865	12.9	9.0	12.0	8.1	1.47	0.23	10.9	1.9	10.1
9	55.9	0.181	53.9	0.9	6.17	0.680	4.295	3.998	13.0	9.0	12.1	8.1	1.49	0.23	11.0	2.0	10.1
10	56.7	0.185	54.0	1.0	6.18	0.759	4.426	4.094	13.1	9.0	12.1	8.0	1.51	0.25	11.1	2.0	10.0
11	57.3	0.190	54.1	1.1	6.18	0.838	4.520	4.152	13.2	9.0	12.1	7.9	1.52	0.26	11.1	2.1	10.0
12	57.9	0.195	54.1	1.1	6.19	0.917	4.614	4.211	13.2	9.0	12.1	7.9	1.53	0.26	11.1	2.1	10.0
13	58.2	0.199	54.2	1.2	6.19	0.996	4.670	4.232	13.2	9.0	12.1	7.8	1.54	0.28	11.1	2.1	9.9
14	59.1	0.204	54.2	1.2	6.20	1.075	4.820	4.346	13.4	9.0	12.1	7.8	1.56	0.28	11.2	2.2	10.0
15	59.7	0.208	54.3	1.3	6.20	1.144	4.914	4.408	13.4	9.0	12.1	7.7	1.57	0.29	11.2	2.2	9.9
16	60.6	0.212	54.3	1.3	6.21	1.223	5.064	4.521	13.5	9.0	12.2	7.7	1.59	0.30	11.3	2.3	9.9
17	61.3	0.216	54.4	1.4	6.21	1.292	5.177	4.601	13.6	9.0	12.2	7.6	1.60	0.30	11.3	2.3	9.9
18	62.3	0.221	54.4	1.4	6.22	1.370	5.346	4.733	13.8	9.0	12.3	7.6	1.62	0.30	11.4	2.4	10.0

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	63.1	0.225	54.4	1.5	6.22	1.439	5.477	4.831	13.8	9.0	12.4	7.6	1.64	0.30	11.4	2.4	10.0
20	64.1	0.229	54.5	1.5	6.23	1.508	5.627	4.948	14.0	9.0	12.5	7.5	1.66	0.30	11.5	2.5	10.0
21	64.8	0.234	54.5	1.5	6.23	1.587	5.739	5.023	14.0	9.0	12.5	7.5	1.67	0.30	11.5	2.5	10.0
22	65.4	0.238	54.5	1.5	6.24	1.656	5.852	5.103	14.1	9.0	12.6	7.5	1.68	0.30	11.6	2.6	10.0
23	66.1	0.242	54.6	1.6	6.24	1.725	5.964	5.182	14.2	9.0	12.6	7.4	1.70	0.30	11.6	2.6	10.0
24	66.0	0.246	54.6	1.6	6.25	1.804	5.946	5.128	14.1	9.0	12.5	7.4	1.69	0.31	11.6	2.6	10.0
25	66.7	0.251	54.6	1.6	6.25	1.883	6.058	5.203	14.2	9.0	12.6	7.4	1.70	0.31	11.6	2.6	10.0
26	67.6	0.255	54.6	1.7	6.25	1.952	6.208	5.319	14.3	9.0	12.7	7.4	1.72	0.31	11.7	2.7	10.0
27	68.1	0.259	54.7	1.7	6.26	2.031	6.283	5.368	14.4	9.0	12.7	7.3	1.73	0.32	11.7	2.7	10.0
28	68.4	0.264	54.7	1.7	6.26	2.110	6.340	5.419	14.4	9.0	12.7	7.3	1.74	0.31	11.7	2.7	10.0
29	69.4	0.268	54.7	1.7	6.27	2.179	6.490	5.561	14.6	9.0	12.9	7.3	1.76	0.31	11.8	2.8	10.1
30	69.8	0.273	54.7	1.8	6.27	2.258	6.565	5.629	14.6	9.0	12.9	7.3	1.78	0.31	11.8	2.8	10.1
31	70.4	0.277	54.7	1.8	6.28	2.337	6.658	5.716	14.7	9.0	13.0	7.3	1.79	0.31	11.9	2.9	10.1
32	71.1	0.282	54.8	1.8	6.28	2.416	6.771	5.820	14.8	9.0	13.1	7.2	1.80	0.31	11.9	2.9	10.1
33	71.4	0.286	54.8	1.8	6.29	2.494	6.827	5.870	14.9	9.0	13.1	7.2	1.81	0.30	12.0	2.9	10.2
34	72.3	0.291	54.8	1.8	6.29	2.573	6.977	6.010	15.0	9.0	13.2	7.2	1.83	0.30	12.0	3.0	10.2
35	72.3	0.295	54.8	1.8	6.30	2.642	6.977	6.006	15.0	9.0	13.2	7.2	1.83	0.30	12.0	3.0	10.2
36	72.8	0.300	54.8	1.8	6.30	2.731	7.052	6.072	15.1	9.0	13.3	7.2	1.84	0.30	12.1	3.0	10.2
37	73.3	0.305	54.8	1.8	6.31	2.810	7.127	6.140	15.2	9.0	13.3	7.2	1.86	0.30	12.1	3.1	10.2
38	73.7	0.310	54.8	1.8	6.32	2.899	7.202	6.206	15.2	9.0	13.4	7.2	1.86	0.30	12.1	3.1	10.3
39	73.7	0.314	54.8	1.8	6.32	2.978	7.202	6.201	15.2	9.0	13.4	7.2	1.86	0.30	12.1	3.1	10.3
40	74.2	0.320	54.8	1.8	6.33	3.066	7.277	6.267	15.3	9.0	13.4	7.2	1.87	0.29	12.2	3.1	10.3
41	74.4	0.324	54.9	1.9	6.33	3.145	7.315	6.298	15.3	9.0	13.4	7.1	1.88	0.30	12.2	3.1	10.3
42	74.3	0.329	54.9	1.9	6.34	3.234	7.296	6.273	15.3	9.0	13.4	7.1	1.88	0.30	12.2	3.1	10.3
43	74.2	0.334	54.9	1.9	6.34	3.313	7.277	6.249	15.3	9.0	13.4	7.1	1.87	0.30	12.1	3.1	10.3
44	74.6	0.339	54.9	1.9	6.35	3.392	7.352	6.316	15.3	9.0	13.5	7.1	1.88	0.30	12.2	3.2	10.3
45	75.0	0.343	54.9	1.9	6.35	3.471	7.409	6.364	15.4	9.0	13.5	7.1	1.89	0.29	12.2	3.2	10.3
46	75.5	0.348	54.9	1.9	6.36	3.549	7.484	6.431	15.4	9.0	13.6	7.1	1.90	0.29	12.2	3.2	10.4
47	75.2	0.352	54.9	1.9	6.36	3.618	7.446	6.389	15.4	9.0	13.5	7.1	1.89	0.29	12.2	3.2	10.3
48	75.8	0.356	54.9	1.9	6.37	3.697	7.540	6.474	15.5	9.0	13.6	7.1	1.91	0.29	12.3	3.2	10.4
49	76.0	0.361	54.9	1.9	6.37	3.776	7.578	6.504	15.5	9.0	13.6	7.1	1.91	0.29	12.3	3.3	10.4
50	76.4	0.366	54.9	1.9	6.38	3.855	7.634	6.552	15.6	9.0	13.7	7.1	1.92	0.29	12.3	3.3	10.4
51	76.7	0.370	54.9	1.9	6.38	3.934	7.690	6.600	15.6	9.0	13.7	7.1	1.93	0.29	12.3	3.3	10.4
52	77.4	0.375	54.9	1.9	6.39	4.013	7.803	6.702	15.7	9.0	13.8	7.1	1.94	0.28	12.4	3.4	10.5
53	77.5	0.379	54.9	1.9	6.39	4.092	7.821	6.714	15.7	9.0	13.8	7.1	1.94	0.28	12.4	3.4	10.5
54	77.8	0.384	54.9	1.9	6.40	4.171	7.859	6.744	15.8	9.0	13.9	7.1	1.94	0.28	12.4	3.4	10.5
55	77.6	0.388	54.9	1.9	6.40	4.240	7.840	6.720	15.7	9.0	13.8	7.1	1.94	0.28	12.4	3.4	10.5
56	78.2	0.393	54.9	1.9	6.41	4.318	7.934	6.804	15.8	9.0	13.9	7.1	1.96	0.28	12.4	3.4	10.5
57	78.4	0.397	54.9	1.9	6.41	4.397	7.971	6.834	15.9	9.0	14.0	7.1	1.96	0.28	12.4	3.4	10.5
58	78.8	0.402	54.9	1.9	6.42	4.476	8.028	6.881	15.9	9.0	14.0	7.1	1.96	0.27	12.5	3.4	10.6
59	79.6	0.406	54.9	1.9	6.43	4.555	8.159	7.000	16.0	9.0	14.1	7.1	1.98	0.27	12.5	3.5	10.6

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	80.1	0.410	54.9	1.9	6.43	4.624	8.234	7.066	16.1	9.0	14.2	7.1	1.99	0.26	12.6	3.5	10.7
61	80.6	0.415	54.9	1.9	6.44	4.703	8.328	7.149	16.2	9.0	14.3	7.1	2.00	0.26	12.6	3.6	10.7
62	81.1	0.419	54.8	1.8	6.44	4.772	8.403	7.215	16.2	9.0	14.4	7.2	2.01	0.26	12.6	3.6	10.8
63	81.6	0.424	54.9	1.9	6.45	4.851	8.478	7.279	16.3	9.0	14.4	7.1	2.02	0.26	12.7	3.6	10.8
64	82.2	0.428	54.8	1.8	6.45	4.920	8.590	7.380	16.4	9.0	14.6	7.2	2.03	0.25	12.7	3.7	10.9
65	82.6	0.432	54.8	1.8	6.45	4.989	8.647	7.428	16.4	9.0	14.6	7.2	2.04	0.25	12.7	3.7	10.9
66	82.9	0.436	54.8	1.8	6.46	5.068	8.703	7.475	16.5	9.0	14.6	7.2	2.04	0.25	12.8	3.7	10.9
67	83.5	0.440	54.8	1.8	6.46	5.137	8.797	7.558	16.6	9.0	14.7	7.2	2.05	0.24	12.8	3.8	11.0
68	83.7	0.445	54.8	1.8	6.47	5.216	8.834	7.586	16.6	9.0	14.8	7.2	2.06	0.24	12.8	3.8	11.0
69	84.1	0.449	54.8	1.8	6.47	5.285	8.890	7.633	16.7	9.0	14.8	7.2	2.06	0.24	12.8	3.8	11.0
70	84.3	0.453	54.8	1.8	6.48	5.354	8.928	7.663	16.7	9.0	14.9	7.2	2.06	0.24	12.8	3.8	11.0
71	84.9	0.457	54.8	1.8	6.48	5.433	9.022	7.744	16.8	9.0	14.9	7.2	2.07	0.23	12.9	3.9	11.1
72	85.3	0.462	54.8	1.8	6.49	5.511	9.097	7.808	16.8	9.0	15.0	7.2	2.08	0.23	12.9	3.9	11.1
73	85.8	0.467	54.8	1.8	6.50	5.590	9.172	7.872	16.9	9.0	15.1	7.2	2.09	0.23	13.0	3.9	11.1
74	85.9	0.471	54.8	1.8	6.50	5.659	9.191	7.883	16.9	9.0	15.1	7.2	2.09	0.23	13.0	3.9	11.2
75	86.5	0.475	54.8	1.8	6.51	5.738	9.284	7.964	17.0	9.0	15.2	7.2	2.10	0.22	13.0	4.0	11.2
76	87.0	0.480	54.7	1.8	6.51	5.817	9.359	8.028	17.0	9.0	15.3	7.3	2.11	0.22	13.0	4.0	11.3
77	87.1	0.484	54.7	1.8	6.52	5.896	9.378	8.038	17.1	9.0	15.3	7.3	2.11	0.22	13.0	4.0	11.3
78	87.5	0.489	54.7	1.8	6.52	5.975	9.453	8.101	17.1	9.0	15.4	7.3	2.12	0.22	13.1	4.1	11.3
79	88.0	0.494	54.7	1.7	6.53	6.054	9.528	8.164	17.2	9.0	15.5	7.3	2.12	0.21	13.1	4.1	11.4
80	88.1	0.499	54.7	1.7	6.53	6.142	9.547	8.173	17.2	9.0	15.5	7.3	2.12	0.21	13.1	4.1	11.4
81	88.1	0.503	54.7	1.7	6.54	6.221	9.547	8.166	17.2	9.0	15.5	7.3	2.12	0.21	13.1	4.1	11.4
82	88.3	0.508	54.7	1.7	6.55	6.310	9.584	8.192	17.2	9.0	15.5	7.3	2.12	0.21	13.1	4.1	11.4
83	88.5	0.513	54.7	1.7	6.55	6.389	9.603	8.202	17.2	9.0	15.5	7.3	2.12	0.21	13.1	4.1	11.4
84	88.9	0.518	54.6	1.7	6.56	6.478	9.678	8.264	17.3	9.0	15.6	7.4	2.12	0.20	13.1	4.1	11.5
85	88.8	0.523	54.6	1.7	6.56	6.557	9.659	8.239	17.3	9.0	15.6	7.4	2.12	0.20	13.1	4.1	11.5
86	89.1	0.527	54.6	1.6	6.57	6.635	9.716	8.284	17.3	9.0	15.7	7.4	2.12	0.20	13.2	4.1	11.5
87	89.4	0.533	54.6	1.6	6.57	6.724	9.753	8.310	17.3	9.0	15.7	7.4	2.13	0.20	13.2	4.2	11.5
88	89.4	0.537	54.6	1.6	6.58	6.793	9.753	8.303	17.3	9.0	15.7	7.4	2.12	0.19	13.2	4.2	11.6
89	89.4	0.541	54.6	1.6	6.58	6.872	9.753	8.296	17.3	9.0	15.7	7.4	2.12	0.19	13.2	4.1	11.6
90	89.7	0.546	54.6	1.6	6.59	6.951	9.810	8.340	17.4	9.0	15.7	7.4	2.13	0.19	13.2	4.2	11.6
91	89.9	0.550	54.6	1.6	6.60	7.030	9.847	8.368	17.4	9.0	15.8	7.4	2.13	0.19	13.2	4.2	11.6
92	90.3	0.555	54.6	1.6	6.60	7.109	9.903	8.412	17.4	9.0	15.9	7.4	2.13	0.19	13.2	4.2	11.6
93	90.5	0.559	54.6	1.6	6.61	7.178	9.941	8.440	17.5	9.0	15.9	7.4	2.13	0.19	13.2	4.2	11.7
94	90.6	0.564	54.5	1.5	6.61	7.257	9.960	8.450	17.5	9.0	15.9	7.5	2.13	0.18	13.2	4.2	11.7
95	91.1	0.568	54.5	1.5	6.62	7.335	10.035	8.511	17.5	9.0	16.0	7.5	2.14	0.18	13.3	4.3	11.7
96	91.1	0.573	54.5	1.5	6.62	7.414	10.035	8.503	17.5	9.0	16.0	7.5	2.13	0.18	13.3	4.3	11.7
97	91.3	0.577	54.5	1.5	6.63	7.493	10.072	8.530	17.5	9.0	16.0	7.5	2.14	0.18	13.3	4.3	11.8
98	91.6	0.582	54.5	1.5	6.63	7.572	10.110	8.557	17.6	9.0	16.1	7.5	2.14	0.18	13.3	4.3	11.8
99	92.0	0.587	54.5	1.5	6.64	7.651	10.185	8.618	17.6	9.0	16.1	7.5	2.15	0.17	13.3	4.3	11.8
100	91.9	0.591	54.5	1.5	6.65	7.730	10.166	8.593	17.6	9.0	16.1	7.5	2.14	0.17	13.3	4.3	11.8

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	92.2	0.596	54.4	1.5	6.65	7.809	10.222	8.637	17.7	9.0	16.2	7.6	2.14	0.17	13.3	4.3	11.9
102	92.4	0.600	54.4	1.5	6.66	7.888	10.241	8.646	17.7	9.0	16.2	7.6	2.14	0.17	13.3	4.3	11.9
103	92.6	0.604	54.4	1.4	6.66	7.957	10.278	8.673	17.7	9.0	16.3	7.6	2.14	0.17	13.4	4.3	11.9
104	93.1	0.609	54.4	1.4	6.67	8.035	10.353	8.734	17.8	9.0	16.3	7.6	2.15	0.16	13.4	4.4	12.0
105	93.4	0.613	54.4	1.4	6.67	8.104	10.410	8.779	17.8	9.0	16.4	7.6	2.15	0.16	13.4	4.4	12.0
106	93.9	0.618	54.4	1.4	6.68	8.183	10.485	8.839	17.9	9.0	16.5	7.6	2.16	0.16	13.4	4.4	12.0
107	94.1	0.621	54.4	1.4	6.68	8.242	10.522	8.868	17.9	9.0	16.5	7.6	2.16	0.16	13.5	4.4	12.0
108	94.3	0.626	54.4	1.4	6.69	8.321	10.560	8.894	17.9	9.0	16.5	7.6	2.16	0.15	13.5	4.4	12.1
109	94.8	0.630	54.3	1.3	6.69	8.400	10.635	8.954	18.0	9.0	16.6	7.7	2.17	0.15	13.5	4.5	12.1
110	95.4	0.634	54.3	1.3	6.70	8.469	10.729	9.033	18.1	9.0	16.7	7.7	2.18	0.15	13.5	4.5	12.2
111	95.9	0.639	54.3	1.3	6.71	8.548	10.822	9.110	18.1	9.0	16.8	7.7	2.18	0.14	13.6	4.6	12.3
112	96.0	0.643	54.3	1.3	6.71	8.617	10.841	9.120	18.1	9.0	16.8	7.7	2.18	0.14	13.6	4.6	12.3
113	96.6	0.647	54.3	1.3	6.72	8.686	10.935	9.198	18.2	9.0	16.9	7.7	2.19	0.14	13.6	4.6	12.3
114	97.1	0.651	54.3	1.3	6.72	8.765	11.010	9.258	18.3	9.0	17.0	7.7	2.20	0.14	13.6	4.6	12.4
115	97.4	0.655	54.2	1.3	6.73	8.834	11.066	9.301	18.3	9.0	17.1	7.8	2.20	0.14	13.7	4.7	12.4
116	97.4	0.660	54.2	1.2	6.73	8.913	11.066	9.293	18.3	9.0	17.1	7.8	2.19	0.13	13.7	4.6	12.4
117	98.0	0.665	54.2	1.2	6.74	8.992	11.160	9.369	18.4	9.0	17.2	7.8	2.20	0.13	13.7	4.7	12.5
118	98.2	0.669	54.2	1.2	6.74	9.061	11.197	9.396	18.4	9.0	17.2	7.8	2.21	0.13	13.7	4.7	12.5
119	98.5	0.673	54.2	1.2	6.75	9.140	11.235	9.421	18.4	9.0	17.2	7.8	2.20	0.13	13.7	4.7	12.5
120	98.9	0.678	54.2	1.2	6.76	9.219	11.310	9.480	18.5	9.0	17.3	7.8	2.21	0.13	13.8	4.7	12.6
121	99.4	0.682	54.2	1.2	6.76	9.297	11.385	9.539	18.6	9.0	17.4	7.8	2.22	0.12	13.8	4.8	12.6
122	99.6	0.687	54.2	1.2	6.77	9.376	11.423	9.564	18.6	9.0	17.4	7.8	2.22	0.12	13.8	4.8	12.6
123	99.4	0.692	54.1	1.1	6.77	9.455	11.385	9.521	18.5	9.0	17.4	7.9	2.21	0.12	13.8	4.8	12.6
124	99.3	0.697	54.1	1.1	6.78	9.544	11.366	9.494	18.5	9.0	17.4	7.9	2.20	0.12	13.8	4.7	12.7
125	99.5	0.701	54.1	1.1	6.79	9.623	11.404	9.519	18.5	9.0	17.4	7.9	2.20	0.12	13.8	4.8	12.7
126	99.6	0.706	54.1	1.1	6.79	9.712	11.423	9.526	18.5	9.0	17.5	7.9	2.20	0.11	13.8	4.8	12.7
127	99.6	0.711	54.1	1.1	6.80	9.790	11.423	9.517	18.5	9.0	17.5	7.9	2.20	0.11	13.8	4.8	12.7
128	99.7	0.716	54.0	1.1	6.80	9.879	11.441	9.524	18.5	9.0	17.5	8.0	2.20	0.11	13.8	4.8	12.7
129	99.8	0.721	54.0	1.1	6.81	9.958	11.460	9.532	18.5	9.0	17.5	8.0	2.20	0.11	13.8	4.8	12.7
130	100.6	0.725	54.0	1.0	6.82	10.037	11.591	9.641	18.7	9.0	17.6	8.0	2.21	0.11	13.8	4.8	12.8
131	100.3	0.730	54.0	1.0	6.82	10.116	11.535	9.581	18.6	9.0	17.6	8.0	2.19	0.10	13.8	4.8	12.8
132	100.5	0.735	54.0	1.0	6.83	10.195	11.573	9.606	18.6	9.0	17.6	8.0	2.20	0.10	13.8	4.8	12.8
133	101.1	0.739	54.0	1.0	6.83	10.264	11.666	9.682	18.7	9.0	17.7	8.0	2.21	0.10	13.9	4.8	12.9
134	100.9	0.743	53.9	1.0	6.84	10.343	11.629	9.639	18.7	9.0	17.7	8.1	2.20	0.10	13.8	4.8	12.9
135	100.6	0.748	53.9	1.0	6.85	10.421	11.591	9.596	18.6	9.0	17.6	8.1	2.19	0.10	13.8	4.8	12.9
136	100.8	0.752	53.9	0.9	6.85	10.500	11.610	9.604	18.6	9.0	17.7	8.1	2.19	0.10	13.8	4.8	12.9
137	101.2	0.756	53.9	0.9	6.86	10.569	11.685	9.663	18.7	9.0	17.7	8.1	2.20	0.10	13.8	4.8	12.9
138	101.3	0.761	53.9	0.9	6.86	10.648	11.704	9.670	18.7	9.0	17.8	8.1	2.19	0.09	13.9	4.8	12.9
139	101.7	0.766	53.9	0.9	6.87	10.727	11.760	9.711	18.7	9.0	17.8	8.1	2.20	0.09	13.9	4.9	13.0
140	101.9	0.770	53.9	0.9	6.87	10.796	11.798	9.737	18.8	9.0	17.9	8.1	2.20	0.09	13.9	4.9	13.0
141	102.3	0.774	53.9	0.9	6.88	10.875	11.854	9.778	18.8	9.0	17.9	8.1	2.20	0.09	13.9	4.9	13.0

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	102.4	0.779	53.9	0.9	6.89	10.964	11.873	9.784	18.8	9.0	17.9	8.1	2.20	0.09	13.9	4.9	13.0
143	102.4	0.783	53.8	0.8	6.89	11.033	11.873	9.776	18.8	9.0	17.9	8.2	2.20	0.09	13.9	4.9	13.1
144	102.5	0.788	53.8	0.8	6.90	11.112	11.891	9.783	18.8	9.0	18.0	8.2	2.19	0.08	13.9	4.9	13.1
145	102.7	0.793	53.8	0.8	6.91	11.190	11.929	9.807	18.8	9.0	18.0	8.2	2.20	0.08	13.9	4.9	13.1
146	102.8	0.797	53.8	0.8	6.91	11.269	11.948	9.814	18.8	9.0	18.0	8.2	2.19	0.08	13.9	4.9	13.1
147	102.8	0.801	53.8	0.8	6.92	11.338	11.948	9.806	18.8	9.0	18.0	8.2	2.19	0.08	13.9	4.9	13.1
148	103.5	0.806	53.8	0.8	6.92	11.417	12.060	9.896	18.9	9.0	18.1	8.2	2.20	0.08	14.0	4.9	13.2
149	103.7	0.810	53.7	0.8	6.93	11.486	12.098	9.921	18.9	9.0	18.2	8.3	2.20	0.08	14.0	5.0	13.2
150	104.0	0.814	53.7	0.8	6.93	11.565	12.135	9.945	19.0	9.0	18.2	8.3	2.20	0.08	14.0	5.0	13.2
151	104.2	0.818	53.7	0.7	6.94	11.634	12.173	9.969	19.0	9.0	18.3	8.3	2.20	0.07	14.0	5.0	13.3
152	104.3	0.822	53.7	0.7	6.95	11.703	12.192	9.977	19.0	9.0	18.3	8.3	2.20	0.07	14.0	5.0	13.3
153	105.0	0.826	53.7	0.7	6.95	11.772	12.304	10.068	19.1	9.0	18.4	8.3	2.21	0.07	14.1	5.0	13.3
154	105.5	0.830	53.7	0.7	6.96	11.841	12.379	10.126	19.1	9.0	18.4	8.3	2.22	0.07	14.1	5.1	13.4
155	105.7	0.834	53.7	0.7	6.96	11.910	12.417	10.150	19.2	9.0	18.5	8.3	2.22	0.07	14.1	5.1	13.4
156	106.5	0.839	53.7	0.7	6.97	11.989	12.548	10.256	19.3	9.0	18.6	8.3	2.23	0.07	14.1	5.1	13.5
157	107.1	0.844	53.7	0.7	6.97	12.068	12.642	10.329	19.3	9.0	18.7	8.3	2.24	0.07	14.2	5.2	13.5
158	107.2	0.848	53.6	0.6	6.98	12.137	12.660	10.337	19.4	9.0	18.7	8.4	2.23	0.06	14.2	5.2	13.5
159	107.3	0.852	53.6	0.6	6.99	12.216	12.679	10.343	19.4	9.0	18.7	8.4	2.24	0.06	14.2	5.2	13.5
160	107.3	0.856	53.6	0.6	6.99	12.285	12.679	10.334	19.4	9.0	18.7	8.4	2.23	0.06	14.2	5.2	13.6
161	107.7	0.861	53.6	0.6	7.00	12.364	12.736	10.374	19.4	9.0	18.8	8.4	2.23	0.06	14.2	5.2	13.6
162	107.5	0.865	53.6	0.6	7.00	12.443	12.717	10.347	19.4	9.0	18.8	8.4	2.23	0.06	14.2	5.2	13.6
163	108.0	0.870	53.6	0.6	7.01	12.521	12.792	10.403	19.4	9.0	18.8	8.4	2.23	0.06	14.2	5.2	13.6
164	108.5	0.875	53.6	0.6	7.02	12.600	12.867	10.458	19.5	9.0	18.9	8.4	2.24	0.06	14.2	5.2	13.7
165	108.6	0.879	53.5	0.6	7.02	12.679	12.886	10.464	19.5	9.0	18.9	8.5	2.24	0.05	14.2	5.2	13.7
166	108.5	0.884	53.5	0.5	7.03	12.758	12.867	10.438	19.5	9.0	18.9	8.5	2.23	0.05	14.2	5.2	13.7
167	108.8	0.888	53.5	0.5	7.04	12.837	12.923	10.477	19.5	9.0	19.0	8.5	2.23	0.05	14.3	5.2	13.7
168	109.0	0.893	53.5	0.5	7.04	12.916	12.961	10.499	19.5	9.0	19.0	8.5	2.24	0.05	14.3	5.2	13.7
169	109.2	0.898	53.5	0.5	7.05	13.005	12.979	10.504	19.5	9.0	19.0	8.5	2.23	0.05	14.3	5.3	13.8
170	109.2	0.903	53.5	0.5	7.06	13.083	12.979	10.494	19.5	9.0	19.0	8.5	2.23	0.05	14.3	5.2	13.8
171	109.5	0.907	53.5	0.5	7.06	13.162	13.036	10.533	19.6	9.0	19.1	8.5	2.24	0.05	14.3	5.3	13.8
172	109.6	0.912	53.5	0.5	7.07	13.251	13.054	10.537	19.6	9.0	19.1	8.5	2.23	0.04	14.3	5.3	13.8
173	109.7	0.916	53.5	0.5	7.07	13.320	13.073	10.544	19.6	9.0	19.1	8.5	2.23	0.04	14.3	5.3	13.8
174	109.8	0.921	53.4	0.4	7.08	13.399	13.092	10.550	19.6	9.0	19.1	8.6	2.23	0.04	14.3	5.3	13.9
175	110.1	0.926	53.4	0.4	7.09	13.488	13.129	10.571	19.6	9.0	19.2	8.6	2.23	0.04	14.3	5.3	13.9
176	110.3	0.931	53.4	0.4	7.09	13.567	13.167	10.593	19.6	9.0	19.2	8.6	2.23	0.04	14.3	5.3	13.9
177	110.4	0.935	53.4	0.4	7.10	13.636	13.186	10.600	19.6	9.0	19.2	8.6	2.23	0.04	14.3	5.3	13.9
178	110.9	0.939	53.4	0.4	7.11	13.714	13.261	10.655	19.7	9.0	19.3	8.6	2.24	0.04	14.3	5.3	13.9
179	111.2	0.944	53.4	0.4	7.11	13.793	13.317	10.693	19.7	9.0	19.3	8.6	2.24	0.04	14.4	5.3	14.0
180	111.5	0.948	53.4	0.4	7.12	13.862	13.354	10.716	19.7	9.0	19.4	8.6	2.24	0.04	14.4	5.4	14.0
181	111.3	0.953	53.3	0.4	7.13	13.941	13.336	10.689	19.7	9.0	19.4	8.7	2.23	0.03	14.4	5.3	14.0
182	111.3	0.957	53.3	0.4	7.13	14.020	13.336	10.679	19.7	9.0	19.3	8.7	2.23	0.03	14.4	5.3	14.0

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	111.7	0.962	53.3	0.4	7.14	14.099	13.392	10.717	19.7	9.0	19.4	8.7	2.24	0.03	14.4	5.4	14.0
184	111.9	0.966	53.3	0.3	7.15	14.178	13.429	10.738	19.8	9.0	19.4	8.7	2.23	0.03	14.4	5.4	14.1
185	111.9	0.971	53.3	0.3	7.15	14.257	13.429	10.728	19.7	9.0	19.4	8.7	2.23	0.03	14.4	5.4	14.1
186	112.4	0.976	53.3	0.3	7.16	14.336	13.505	10.781	19.8	9.0	19.5	8.7	2.24	0.03	14.4	5.4	14.1
187	112.6	0.980	53.3	0.3	7.17	14.414	13.542	10.803	19.8	9.0	19.5	8.7	2.24	0.03	14.4	5.4	14.1
188	112.8	0.985	53.3	0.3	7.17	14.493	13.580	10.824	19.8	9.0	19.5	8.7	2.24	0.03	14.4	5.4	14.1
189	112.7	0.989	53.2	0.3	7.18	14.572	13.561	10.797	19.8	9.0	19.6	8.8	2.23	0.02	14.4	5.4	14.2
190	112.5	0.994	53.2	0.3	7.19	14.651	13.523	10.755	19.8	9.0	19.5	8.8	2.23	0.02	14.4	5.4	14.1
191	112.8	0.998	53.2	0.2	7.19	14.720	13.580	10.793	19.8	9.0	19.6	8.8	2.23	0.02	14.4	5.4	14.2
192	112.8	1.003	53.2	0.2	7.20	14.799	13.580	10.783	19.8	9.0	19.6	8.8	2.23	0.02	14.4	5.4	14.2
193	113.2	1.007	53.2	0.2	7.20	14.868	13.636	10.821	19.8	9.0	19.6	8.8	2.23	0.02	14.4	5.4	14.2
194	113.8	1.011	53.2	0.2	7.21	14.947	13.730	10.890	19.9	9.0	19.7	8.8	2.24	0.02	14.5	5.4	14.3
195	114.1	1.015	53.2	0.2	7.22	15.016	13.786	10.928	19.9	9.0	19.7	8.8	2.24	0.02	14.5	5.5	14.3
196	114.2	1.020	53.2	0.2	7.22	15.095	13.805	10.934	20.0	9.0	19.8	8.8	2.24	0.02	14.5	5.5	14.3
197	114.8	1.024	53.2	0.2	7.23	15.174	13.898	11.002	20.0	9.0	19.8	8.8	2.24	0.02	14.5	5.5	14.3
198	114.9	1.028	53.2	0.2	7.24	15.243	13.917	11.008	20.0	9.0	19.9	8.8	2.25	0.02	14.5	5.5	14.3
199	115.7	1.032	53.1	0.1	7.24	15.312	14.048	11.110	20.1	9.0	20.0	8.9	2.25	0.01	14.6	5.6	14.4
200	115.8	1.037	53.1	0.1	7.25	15.391	14.067	11.115	20.1	9.0	20.0	8.9	2.25	0.01	14.6	5.6	14.4
201	116.2	1.041	53.1	0.1	7.25	15.460	14.123	11.153	20.2	9.0	20.1	8.9	2.25	0.01	14.6	5.6	14.5
202	116.6	1.046	53.1	0.1	7.26	15.538	14.199	11.205	20.2	9.0	20.1	8.9	2.26	0.01	14.6	5.6	14.5
203	116.7	1.050	53.1	0.1	7.27	15.607	14.217	11.211	20.2	9.0	20.1	8.9	2.26	0.01	14.6	5.6	14.5
204	116.9	1.054	53.1	0.1	7.27	15.686	14.236	11.216	20.2	9.0	20.1	8.9	2.26	0.01	14.6	5.6	14.5
205	117.2	1.059	53.1	0.1	7.28	15.765	14.292	11.252	20.3	9.0	20.2	8.9	2.26	0.01	14.6	5.6	14.6
206	117.4	1.063	53.1	0.1	7.29	15.834	14.330	11.273	20.3	9.0	20.2	8.9	2.26	0.01	14.7	5.6	14.6
207	117.6	1.067	53.0	0.1	7.29	15.913	14.349	11.278	20.3	9.0	20.2	9.0	2.26	0.01	14.7	5.6	14.6
208	117.8	1.072	53.0	0.1	7.30	15.992	14.386	11.298	20.3	9.0	20.3	9.0	2.26	0.01	14.7	5.6	14.6
209	118.2	1.077	53.0	0.1	7.31	16.071	14.461	11.350	20.4	9.0	20.3	9.0	2.27	0.01	14.7	5.7	14.6
210	118.6	1.081	53.0	0.1	7.31	16.150	14.517	11.386	20.4	9.0	20.3	9.0	2.27	0.01	14.7	5.7	14.7
211	119.2	1.086	53.0	0.0	7.32	16.229	14.611	11.453	20.5	9.0	20.4	9.0	2.27	0.00	14.7	5.7	14.7
212	118.8	1.090	53.0	0.0	7.33	16.308	14.555	11.394	20.4	9.0	20.4	9.0	2.27	0.00	14.7	5.7	14.7
213	119.3	1.096	53.0	0.0	7.34	16.396	14.630	11.444	20.5	9.0	20.5	9.0	2.27	0.00	14.7	5.7	14.7
214	119.2	1.100	53.0	0.0	7.34	16.475	14.611	11.417	20.4	9.0	20.4	9.0	2.27	0.00	14.7	5.7	14.7
215	119.4	1.105	53.0	0.0	7.35	16.554	14.649	11.436	20.5	9.0	20.5	9.0	2.27	0.00	14.7	5.7	14.7
216	119.5	1.109	53.0	0.0	7.36	16.633	14.667	11.440	20.5	9.0	20.5	9.0	2.26	0.00	14.7	5.7	14.8
217	119.7	1.114	53.0	0.0	7.36	16.712	14.705	10.886	19.9	9.0	19.9	9.0	2.20	0.00	14.5	5.4	14.5
218	119.7	1.119	53.0	0.0	7.37	16.791	14.705	10.872	19.9	9.0	19.9	9.0	2.20	0.00	14.5	5.4	14.5
219	119.7	1.123	52.9	-0.1	7.38	16.869	14.705	10.857	19.9	9.0	19.9	9.1	2.20	-0.01	14.4	5.4	14.5
220	119.6	1.128	52.9	-0.1	7.38	16.948	14.686	10.828	19.8	9.0	19.9	9.1	2.19	-0.01	14.4	5.4	14.5
221	120.0	1.132	52.9	-0.1	7.39	17.027	14.742	10.860	19.9	9.0	19.9	9.1	2.20	-0.01	14.4	5.4	14.5
222	120.3	1.136	52.9	-0.1	7.40	17.096	14.799	10.894	19.9	9.0	20.0	9.1	2.20	-0.01	14.5	5.4	14.6
223	120.2	1.141	52.9	-0.1	7.40	17.175	14.780	10.864	19.9	9.0	20.0	9.1	2.19	-0.01	14.4	5.4	14.5

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	120.3	1.145	52.9	-0.1	7.41	17.254	14.799	10.865	19.9	9.0	20.0	9.1	2.19	-0.01	14.5	5.4	14.5
225	120.9	1.149	52.9	-0.1	7.42	17.323	14.892	10.930	19.9	9.0	20.0	9.1	2.20	-0.01	14.5	5.5	14.6
226	121.3	1.154	52.9	-0.1	7.42	17.402	14.968	10.978	20.0	9.0	20.1	9.1	2.20	-0.01	14.5	5.5	14.6
227	121.3	1.159	52.9	-0.1	7.43	17.481	14.968	10.963	20.0	9.0	20.1	9.1	2.20	-0.01	14.5	5.5	14.6
228	121.7	1.163	52.8	-0.1	7.44	17.550	15.024	10.997	20.0	9.0	20.2	9.2	2.20	-0.01	14.5	5.5	14.7
229	122.3	1.168	52.8	-0.1	7.45	17.639	15.118	11.058	20.1	9.0	20.2	9.2	2.21	-0.01	14.5	5.5	14.7
230	122.3	1.172	52.8	-0.1	7.45	17.717	15.118	11.043	20.1	9.0	20.2	9.2	2.21	-0.01	14.5	5.5	14.7
231	122.2	1.177	52.8	-0.1	7.46	17.796	15.099	11.013	20.0	9.0	20.2	9.2	2.20	-0.01	14.5	5.5	14.7
232	122.6	1.181	52.8	-0.2	7.47	17.865	15.174	11.062	20.1	9.0	20.3	9.2	2.20	-0.02	14.5	5.5	14.7
233	123.0	1.186	52.8	-0.2	7.47	17.944	15.230	11.093	20.1	9.0	20.3	9.2	2.21	-0.02	14.6	5.5	14.7
234	123.0	1.190	52.8	-0.2	7.48	18.023	15.230	11.079	20.1	9.0	20.3	9.2	2.20	-0.02	14.6	5.5	14.8
235	123.2	1.195	52.8	-0.2	7.49	18.102	15.268	11.095	20.1	9.0	20.3	9.2	2.20	-0.02	14.6	5.5	14.8
236	123.9	1.199	52.8	-0.2	7.50	18.181	15.380	11.172	20.2	9.0	20.4	9.2	2.21	-0.02	14.6	5.6	14.8
237	124.0	1.203	52.8	-0.2	7.50	18.250	15.399	11.174	20.2	9.0	20.4	9.2	2.21	-0.02	14.6	5.6	14.8
238	124.1	1.207	52.7	-0.2	7.51	18.319	15.418	11.177	20.2	9.0	20.4	9.3	2.21	-0.02	14.6	5.6	14.8
239	124.2	1.212	52.7	-0.2	7.52	18.398	15.436	11.177	20.2	9.0	20.4	9.3	2.21	-0.02	14.6	5.6	14.8
240	124.5	1.216	52.7	-0.2	7.52	18.467	15.474	11.195	20.2	9.0	20.4	9.3	2.21	-0.02	14.6	5.6	14.8
241	125.3	1.221	52.7	-0.3	7.53	18.546	15.605	11.287	20.3	9.0	20.6	9.3	2.22	-0.02	14.7	5.6	14.9
242	125.7	1.225	52.7	-0.3	7.54	18.624	15.680	11.333	20.4	9.0	20.6	9.3	2.22	-0.02	14.7	5.7	14.9
243	126.2	1.229	52.7	-0.3	7.54	18.693	15.755	11.381	20.4	9.0	20.7	9.3	2.22	-0.03	14.7	5.7	15.0
244	126.4	1.234	52.7	-0.3	7.55	18.772	15.793	11.396	20.4	9.0	20.7	9.3	2.22	-0.03	14.7	5.7	15.0
245	126.8	1.238	52.7	-0.3	7.56	18.841	15.849	11.428	20.4	9.0	20.7	9.3	2.23	-0.03	14.7	5.7	15.0
246	126.6	1.242	52.7	-0.3	7.56	18.910	15.830	11.400	20.4	9.0	20.7	9.3	2.22	-0.03	14.7	5.7	15.0
247	127.1	1.246	52.7	-0.3	7.57	18.989	15.905	11.445	20.5	9.0	20.8	9.3	2.23	-0.03	14.7	5.7	15.1
248	127.4	1.251	52.7	-0.3	7.58	19.058	15.962	11.478	20.5	9.0	20.8	9.3	2.23	-0.03	14.8	5.7	15.1
249	127.7	1.255	52.7	-0.3	7.58	19.137	15.999	11.493	20.5	9.0	20.8	9.3	2.23	-0.03	14.8	5.7	15.1
250	127.9	1.260	52.6	-0.4	7.59	19.216	16.037	11.508	20.5	9.0	20.9	9.4	2.23	-0.03	14.8	5.8	15.1
251	128.4	1.264	52.7	-0.3	7.60	19.285	16.112	11.555	20.6	9.0	20.9	9.3	2.24	-0.03	14.8	5.8	15.1
252	128.8	1.268	52.6	-0.4	7.61	19.364	16.187	11.600	20.6	9.0	21.0	9.4	2.24	-0.03	14.8	5.8	15.2
253	129.2	1.273	52.6	-0.4	7.61	19.443	16.243	11.630	20.6	9.0	21.0	9.4	2.24	-0.03	14.8	5.8	15.2
254	129.3	1.277	52.6	-0.4	7.62	19.522	16.262	11.629	20.6	9.0	21.0	9.4	2.24	-0.03	14.8	5.8	15.2
255	129.6	1.282	52.6	-0.4	7.63	19.601	16.318	11.659	20.7	9.0	21.1	9.4	2.24	-0.03	14.8	5.8	15.2
256	129.9	1.287	52.6	-0.4	7.63	19.679	16.355	11.673	20.7	9.0	21.1	9.4	2.24	-0.03	14.9	5.8	15.2
257	129.7	1.292	52.6	-0.4	7.64	19.768	16.337	11.641	20.7	9.0	21.0	9.4	2.24	-0.03	14.8	5.8	15.2
258	129.6	1.296	52.6	-0.4	7.65	19.847	16.318	11.610	20.6	9.0	21.0	9.4	2.23	-0.04	14.8	5.8	15.2
259	129.9	1.301	52.6	-0.4	7.66	19.926	16.355	11.625	20.6	9.0	21.1	9.4	2.23	-0.04	14.8	5.8	15.2
260	130.2	1.306	52.6	-0.4	7.67	20.005	16.412	11.654	20.7	9.0	21.1	9.4	2.24	-0.04	14.8	5.8	15.3

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)

Specimen C Shear Data

CU Triaxial Test

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File Location
T-5702.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5702
Sample Location: Guilford County (Sta. 405+70)
Sample Description: Tannish colored silt
Remarks: Slicken side observed at shear plane.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.7839999
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.856	2.795	
Height (in)	6.095	5.986	
Weight (grams)	1304.00		1322.00
Moisture (%)	20.63		22.29
Dry Density (pcf)	105.47	112.10	
Saturation (%)	88.65	100.00	
Void Ratio	0.643	0.550	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 91.200
Effective Confining Stress (psi): 36.0
Corrected Peak Deviator Stress (psi): 55.590 at reading number: 113

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	36.7	0.171	55.2	0.0	6.14	0.000	0.000	0.000	36.0	36.0	36.0	36.0	1.00	0.00	36.0	0.0	36.0
1	67.1	0.174	54.5	-0.7	6.14	0.048	4.960	4.938	40.9	36.0	41.6	36.7	1.13	-0.15	38.4	2.5	39.2
2	93.4	0.180	55.7	0.5	6.15	0.143	9.243	9.173	45.1	36.0	44.7	35.5	1.26	0.05	40.6	4.6	40.1
3	110.3	0.186	56.8	1.5	6.15	0.238	12.004	11.882	47.9	36.0	46.3	34.4	1.34	0.13	41.9	5.9	40.4
4	124.2	0.191	57.7	2.5	6.16	0.324	14.259	14.085	50.1	36.0	47.6	33.5	1.42	0.18	43.0	7.0	40.5
5	136.2	0.196	58.6	3.4	6.16	0.410	16.213	15.985	52.0	36.0	48.6	32.6	1.49	0.21	44.0	8.0	40.6
6	146.8	0.201	59.4	4.2	6.17	0.496	17.941	17.657	53.6	36.0	49.4	31.8	1.56	0.24	44.8	8.8	40.6
7	156.6	0.206	60.2	5.0	6.17	0.572	19.538	19.201	55.2	36.0	50.2	31.0	1.62	0.26	45.6	9.6	40.6
8	166.0	0.210	60.9	5.6	6.18	0.649	21.078	20.686	56.7	36.0	51.0	30.3	1.68	0.27	46.3	10.3	40.7
9	174.9	0.215	61.4	6.2	6.18	0.734	22.525	22.070	58.0	36.0	51.8	29.8	1.74	0.28	47.0	11.0	40.8
10	183.8	0.220	62.0	6.8	6.19	0.820	23.971	23.452	59.4	36.0	52.7	29.2	1.80	0.29	47.7	11.7	40.9
11	191.8	0.225	62.4	7.2	6.19	0.897	25.286	24.707	60.7	36.0	53.5	28.8	1.86	0.29	48.3	12.4	41.1
12	199.7	0.230	62.9	7.7	6.20	0.973	26.564	25.922	61.9	36.0	54.2	28.3	1.92	0.30	48.9	13.0	41.3
13	207.5	0.235	63.2	8.0	6.20	1.059	27.841	27.130	63.1	36.0	55.1	28.0	1.97	0.30	49.5	13.6	41.5
14	215.1	0.239	63.6	8.3	6.21	1.135	29.081	28.304	64.3	36.0	55.9	27.6	2.02	0.29	50.1	14.2	41.8
15	222.5	0.244	63.8	8.6	6.21	1.211	30.283	29.440	65.4	36.0	56.8	27.4	2.08	0.29	50.7	14.7	42.1
16	230.0	0.249	64.1	8.9	6.22	1.297	31.504	30.585	66.6	36.0	57.7	27.1	2.13	0.29	51.3	15.3	42.4
17	237.4	0.253	64.4	9.1	6.22	1.373	32.707	31.717	67.7	36.0	58.5	26.8	2.18	0.29	51.8	15.9	42.7
18	244.5	0.258	64.6	9.3	6.23	1.450	33.872	32.810	68.8	36.0	59.4	26.6	2.23	0.28	52.4	16.4	43.0

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	251.2	0.263	64.7	9.5	6.23	1.526	34.961	33.827	69.8	36.0	60.3	26.5	2.28	0.28	52.9	16.9	43.4
20	258.3	0.267	64.9	9.7	6.24	1.602	36.107	34.898	70.9	36.0	61.2	26.3	2.33	0.28	53.4	17.4	43.8
21	264.8	0.272	65.0	9.8	6.24	1.688	37.178	35.886	71.9	36.0	62.1	26.2	2.37	0.27	53.9	17.9	44.1
22	271.6	0.277	65.1	9.9	6.25	1.765	38.286	36.916	72.9	36.0	63.0	26.1	2.42	0.27	54.4	18.5	44.5
23	278.0	0.281	65.2	10.0	6.25	1.841	39.320	37.871	73.8	36.0	63.9	26.0	2.46	0.26	54.9	18.9	44.9
24	284.1	0.286	65.3	10.1	6.26	1.917	40.315	38.788	74.8	36.0	64.7	25.9	2.50	0.26	55.4	19.4	45.3
25	290.2	0.291	65.4	10.2	6.26	1.993	41.311	39.703	75.7	36.0	65.5	25.8	2.54	0.26	55.8	19.9	45.7
26	296.7	0.295	65.4	10.2	6.27	2.070	42.363	40.699	76.7	36.0	66.5	25.8	2.58	0.25	56.3	20.3	46.1
27	302.9	0.300	65.4	10.2	6.27	2.146	43.377	41.659	77.6	36.0	67.4	25.8	2.62	0.24	56.8	20.8	46.6
28	308.6	0.304	65.5	10.2	6.28	2.222	44.317	42.545	78.5	36.0	68.3	25.7	2.65	0.24	57.2	21.3	47.0
29	314.5	0.309	65.5	10.2	6.28	2.299	45.275	43.447	79.4	36.0	69.2	25.7	2.69	0.24	57.7	21.7	47.5
30	319.7	0.313	65.4	10.2	6.29	2.375	46.120	44.238	80.2	36.0	70.0	25.8	2.72	0.23	58.1	22.1	47.9
31	325.0	0.319	65.4	10.2	6.29	2.461	46.984	45.041	81.0	36.0	70.8	25.8	2.75	0.23	58.5	22.5	48.3
32	329.7	0.323	65.4	10.2	6.30	2.537	47.755	45.756	81.7	36.0	71.5	25.8	2.77	0.22	58.9	22.9	48.7
33	334.7	0.328	65.3	10.1	6.30	2.613	48.562	46.506	82.5	36.0	72.4	25.9	2.80	0.22	59.2	23.3	49.1
34	339.1	0.332	65.3	10.1	6.31	2.690	49.276	47.164	83.1	36.0	73.1	25.9	2.82	0.21	59.6	23.6	49.5
35	343.2	0.337	65.3	10.0	6.31	2.766	49.953	47.784	83.8	36.0	73.7	25.9	2.84	0.21	59.9	23.9	49.8
36	347.5	0.341	65.2	9.9	6.32	2.842	50.648	48.421	84.4	36.0	74.4	26.0	2.86	0.21	60.2	24.2	50.2
37	351.8	0.346	65.1	9.9	6.32	2.919	51.343	49.057	85.0	36.0	75.2	26.1	2.88	0.20	60.5	24.5	50.6
38	355.3	0.351	65.0	9.8	6.33	2.995	51.925	49.583	85.6	36.0	75.8	26.2	2.89	0.20	60.8	24.8	51.0
39	359.1	0.355	64.9	9.7	6.33	3.071	52.545	50.144	86.1	36.0	76.4	26.3	2.91	0.19	61.0	25.1	51.3
40	362.4	0.360	64.8	9.6	6.34	3.148	53.071	50.614	86.6	36.0	77.0	26.4	2.92	0.19	61.3	25.3	51.7
41	365.5	0.364	64.7	9.5	6.34	3.224	53.578	51.064	87.0	36.0	77.5	26.5	2.93	0.19	61.5	25.5	52.0
42	361.7	0.369	64.7	9.4	6.35	3.300	52.958	50.424	86.4	36.0	77.0	26.5	2.90	0.19	61.2	25.2	51.8
43	366.6	0.373	64.6	9.4	6.35	3.376	53.766	51.164	87.1	36.0	77.8	26.6	2.92	0.18	61.6	25.6	52.2
44	370.2	0.378	64.5	9.3	6.36	3.453	54.349	51.685	87.7	36.0	78.4	26.7	2.94	0.18	61.8	25.8	52.6
45	373.6	0.383	64.4	9.1	6.36	3.529	54.893	52.169	88.1	36.0	79.0	26.8	2.94	0.18	62.1	26.1	52.9
46	376.4	0.387	64.2	9.0	6.37	3.605	55.363	52.580	88.6	36.0	79.5	27.0	2.95	0.17	62.3	26.3	53.2
47	378.7	0.392	64.1	8.9	6.37	3.682	55.739	52.900	88.9	36.0	80.0	27.1	2.95	0.17	62.4	26.4	53.5
48	380.8	0.397	64.0	8.8	6.38	3.767	56.077	53.177	89.2	36.0	80.4	27.2	2.96	0.17	62.6	26.6	53.8
49	382.8	0.401	63.8	8.6	6.38	3.844	56.396	53.441	89.4	36.0	80.8	27.4	2.95	0.16	62.7	26.7	54.1
50	379.9	0.406	63.7	8.5	6.39	3.920	55.927	52.947	88.9	36.0	80.4	27.5	2.93	0.16	62.4	26.5	53.9
51	382.8	0.411	63.6	8.4	6.39	3.996	56.396	53.355	89.3	36.0	80.9	27.6	2.94	0.16	62.7	26.7	54.2
52	384.9	0.415	63.5	8.3	6.40	4.073	56.734	53.637	89.6	36.0	81.3	27.7	2.94	0.15	62.8	26.8	54.5
53	386.2	0.420	63.4	8.2	6.40	4.149	56.960	53.810	89.8	36.0	81.6	27.8	2.94	0.15	62.9	26.9	54.7
54	387.6	0.425	63.3	8.1	6.41	4.235	57.185	53.977	89.9	36.0	81.9	27.9	2.93	0.15	63.0	27.0	54.9
55	388.9	0.429	63.2	8.0	6.41	4.311	57.392	54.131	90.1	36.0	82.1	28.0	2.93	0.15	63.0	27.1	55.1
56	385.9	0.434	63.1	7.9	6.42	4.397	56.903	53.614	89.6	36.0	81.7	28.1	2.91	0.15	62.8	26.8	54.9
57	388.2	0.439	63.0	7.8	6.42	4.473	57.279	53.930	89.9	36.0	82.1	28.2	2.91	0.14	62.9	27.0	55.2
58	389.9	0.444	62.9	7.7	6.43	4.550	57.561	54.155	90.1	36.0	82.5	28.3	2.91	0.14	63.1	27.1	55.4
59	391.5	0.448	62.8	7.5	6.43	4.626	57.824	54.362	90.3	36.0	82.8	28.4	2.91	0.14	63.2	27.2	55.6

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	392.3	0.453	62.7	7.5	6.44	4.702	57.956	54.443	90.4	36.0	83.0	28.5	2.91	0.14	63.2	27.2	55.7
61	393.5	0.457	62.6	7.4	6.45	4.778	58.143	54.578	90.6	36.0	83.2	28.6	2.91	0.14	63.3	27.3	55.9
62	390.4	0.462	62.5	7.3	6.45	4.855	57.636	54.051	90.0	36.0	82.8	28.7	2.88	0.13	63.0	27.0	55.7
63	392.7	0.467	62.4	7.2	6.46	4.941	58.012	54.359	90.3	36.0	83.2	28.8	2.89	0.13	63.2	27.2	56.0
64	395.0	0.472	62.3	7.1	6.46	5.017	58.388	54.671	90.6	36.0	83.6	28.9	2.89	0.13	63.3	27.3	56.2
65	396.6	0.476	62.2	7.0	6.47	5.093	58.651	54.876	90.8	36.0	83.8	29.0	2.89	0.13	63.4	27.4	56.4
66	397.6	0.481	62.1	6.9	6.47	5.170	58.820	54.992	91.0	36.0	84.1	29.1	2.89	0.13	63.5	27.5	56.6
67	393.2	0.485	62.0	6.8	6.48	5.246	58.087	54.253	90.2	36.0	83.5	29.2	2.86	0.12	63.1	27.1	56.3
68	394.9	0.490	61.9	6.7	6.48	5.322	58.369	54.475	90.4	36.0	83.8	29.3	2.86	0.12	63.2	27.2	56.5
69	396.1	0.494	61.8	6.6	6.49	5.398	58.575	54.626	90.6	36.0	84.0	29.4	2.86	0.12	63.3	27.3	56.7
70	397.6	0.499	61.8	6.5	6.49	5.475	58.820	54.812	90.8	36.0	84.3	29.4	2.86	0.12	63.4	27.4	56.9
71	398.6	0.504	61.7	6.4	6.50	5.551	58.970	54.909	90.9	36.0	84.4	29.5	2.86	0.12	63.4	27.5	57.0
72	391.9	0.508	61.5	6.3	6.50	5.627	57.880	53.836	89.8	36.0	83.5	29.7	2.81	0.12	62.9	26.9	56.6
73	395.6	0.513	61.5	6.3	6.51	5.704	58.482	54.359	90.3	36.0	84.0	29.7	2.83	0.12	63.2	27.2	56.9
74	397.4	0.517	61.4	6.2	6.51	5.780	58.782	54.597	90.6	36.0	84.4	29.8	2.83	0.11	63.3	27.3	57.1
75	399.3	0.522	61.3	6.1	6.52	5.856	59.083	54.836	90.8	36.0	84.7	29.9	2.84	0.11	63.4	27.4	57.3
76	401.0	0.526	61.3	6.0	6.52	5.933	59.364	55.056	91.0	36.0	85.0	29.9	2.84	0.11	63.5	27.5	57.5
77	402.1	0.532	61.1	5.9	6.53	6.018	59.552	55.181	91.2	36.0	85.2	30.1	2.84	0.11	63.6	27.6	57.6
78	396.8	0.536	61.1	5.8	6.54	6.095	58.688	54.324	90.3	36.0	84.5	30.1	2.80	0.11	63.1	27.2	57.3
79	399.8	0.541	61.0	5.8	6.54	6.171	59.177	54.738	90.7	36.0	85.0	30.2	2.81	0.11	63.3	27.4	57.6
80	401.9	0.545	60.9	5.7	6.55	6.247	59.515	55.010	91.0	36.0	85.3	30.3	2.82	0.10	63.5	27.5	57.8
81	404.0	0.550	60.8	5.6	6.55	6.324	59.853	55.281	91.3	36.0	85.7	30.4	2.82	0.10	63.6	27.6	58.0
82	398.1	0.554	60.7	5.5	6.56	6.400	58.895	54.339	90.3	36.0	84.8	30.5	2.78	0.10	63.1	27.2	57.7
83	401.7	0.559	60.7	5.4	6.56	6.476	59.477	54.838	90.8	36.0	85.4	30.5	2.80	0.10	63.4	27.4	58.0
84	403.8	0.564	60.6	5.4	6.57	6.553	59.815	55.109	91.1	36.0	85.7	30.6	2.80	0.10	63.5	27.6	58.2
85	405.5	0.569	60.5	5.2	6.57	6.638	60.097	55.321	91.3	36.0	86.1	30.7	2.80	0.09	63.6	27.7	58.4
86	406.8	0.573	60.4	5.2	6.58	6.715	60.304	55.468	91.4	36.0	86.3	30.8	2.80	0.09	63.7	27.7	58.6
87	394.2	0.578	60.1	4.9	6.58	6.791	58.256	53.513	89.5	36.0	84.6	31.1	2.72	0.09	62.7	26.8	57.8
88	403.3	0.582	60.2	5.0	6.59	6.867	59.740	54.851	90.8	36.0	85.8	31.0	2.77	0.09	63.4	27.4	58.4
89	405.4	0.587	60.1	4.9	6.60	6.944	60.078	55.120	91.1	36.0	86.2	31.1	2.77	0.09	63.5	27.6	58.6
90	406.6	0.592	60.0	4.8	6.60	7.029	60.285	55.260	91.2	36.0	86.4	31.2	2.77	0.09	63.6	27.6	58.8
91	407.9	0.597	59.9	4.7	6.61	7.106	60.492	55.406	91.4	36.0	86.7	31.3	2.77	0.09	63.7	27.7	59.0
92	408.7	0.601	59.8	4.6	6.61	7.182	60.623	55.482	91.5	36.0	86.9	31.4	2.77	0.08	63.7	27.7	59.1
93	403.1	0.606	59.7	4.5	6.62	7.258	59.703	54.582	90.6	36.0	86.1	31.5	2.73	0.08	63.3	27.3	58.8
94	405.0	0.610	59.6	4.4	6.62	7.335	60.022	54.833	90.8	36.0	86.4	31.6	2.74	0.08	63.4	27.4	59.0
95	406.4	0.615	59.5	4.3	6.63	7.420	60.247	54.990	91.0	36.0	86.7	31.7	2.74	0.08	63.5	27.5	59.2
96	407.7	0.620	59.5	4.2	6.63	7.497	60.454	55.135	91.1	36.0	86.9	31.7	2.74	0.08	63.5	27.6	59.3
97	401.2	0.625	59.3	4.1	6.64	7.573	59.402	54.116	90.1	36.0	86.0	31.9	2.70	0.08	63.0	27.1	58.9
98	404.3	0.629	59.3	4.0	6.65	7.649	59.909	54.540	90.5	36.0	86.5	31.9	2.71	0.07	63.2	27.3	59.2
99	406.8	0.634	59.2	3.9	6.65	7.726	60.304	54.858	90.8	36.0	86.9	32.0	2.71	0.07	63.4	27.4	59.5
100	408.3	0.638	59.1	3.9	6.66	7.802	60.548	55.037	91.0	36.0	87.1	32.1	2.71	0.07	63.5	27.5	59.6

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	400.3	0.643	58.9	3.7	6.66	7.878	59.252	53.797	89.8	36.0	86.1	32.3	2.67	0.07	62.9	26.9	59.2
102	405.9	0.647	58.9	3.7	6.67	7.955	60.172	54.599	90.6	36.0	86.9	32.3	2.69	0.07	63.3	27.3	59.6
103	408.5	0.652	58.8	3.6	6.67	8.031	60.586	54.933	90.9	36.0	87.3	32.4	2.70	0.07	63.4	27.5	59.9
104	410.0	0.657	58.7	3.5	6.68	8.117	60.830	55.105	91.1	36.0	87.6	32.5	2.70	0.06	63.5	27.6	60.0
105	411.6	0.662	58.7	3.4	6.68	8.193	61.093	55.300	91.3	36.0	87.8	32.5	2.70	0.06	63.6	27.7	60.2
106	408.3	0.666	58.5	3.3	6.69	8.269	60.548	54.754	90.7	36.0	87.4	32.7	2.68	0.06	63.4	27.4	60.0
107	410.8	0.671	58.4	3.2	6.70	8.346	60.961	55.087	91.1	36.0	87.8	32.8	2.68	0.06	63.5	27.5	60.3
108	412.8	0.675	58.4	3.1	6.70	8.422	61.281	55.333	91.3	36.0	88.2	32.8	2.69	0.06	63.6	27.7	60.5
109	414.3	0.680	58.3	3.1	6.71	8.498	61.525	55.509	91.5	36.0	88.4	32.9	2.69	0.06	63.7	27.8	60.7
110	410.6	0.685	58.2	3.0	6.71	8.575	60.924	54.913	90.9	36.0	87.9	33.0	2.66	0.05	63.4	27.5	60.4
111	413.0	0.689	58.1	2.9	6.72	8.651	61.318	55.227	91.2	36.0	88.3	33.1	2.67	0.05	63.6	27.6	60.7
112	415.2	0.694	58.0	2.8	6.72	8.727	61.675	55.506	91.5	36.0	88.7	33.2	2.67	0.05	63.7	27.8	60.9
113	416.1	0.699	57.9	2.7	6.73	8.813	61.825	55.590	91.6	36.0	88.9	33.3	2.67	0.05	63.8	27.8	61.1
114	412.9	0.703	57.8	2.6	6.74	8.889	61.299	55.063	91.0	36.0	88.5	33.4	2.65	0.05	63.5	27.5	60.9
115	414.9	0.708	57.7	2.5	6.74	8.966	61.638	55.324	91.3	36.0	88.8	33.5	2.65	0.05	63.6	27.7	61.1
116	416.6	0.713	57.6	2.4	6.75	9.042	61.901	55.517	91.5	36.0	89.1	33.6	2.65	0.04	63.7	27.8	61.3
117	408.0	0.717	57.4	2.2	6.75	9.118	60.510	54.206	90.2	36.0	88.0	33.8	2.61	0.04	63.1	27.1	60.9
118	413.6	0.722	57.5	2.3	6.76	9.195	61.412	54.979	91.0	36.0	88.7	33.7	2.63	0.04	63.5	27.5	61.2
119	415.6	0.726	57.4	2.2	6.76	9.271	61.750	55.239	91.2	36.0	89.0	33.8	2.63	0.04	63.6	27.6	61.4
120	417.1	0.731	57.3	2.1	6.77	9.357	61.995	55.407	91.4	36.0	89.3	33.9	2.63	0.04	63.7	27.7	61.6
121	413.6	0.736	57.2	1.9	6.78	9.433	61.412	54.832	90.8	36.0	88.9	34.0	2.61	0.04	63.4	27.4	61.5
122	415.6	0.741	57.1	1.9	6.78	9.509	61.750	55.091	91.1	36.0	89.2	34.1	2.62	0.03	63.5	27.5	61.6
123	416.8	0.745	57.0	1.8	6.79	9.586	61.938	55.214	91.2	36.0	89.4	34.2	2.61	0.03	63.6	27.6	61.8
124	412.2	0.750	56.9	1.7	6.79	9.671	61.187	54.482	90.5	36.0	88.8	34.3	2.59	0.03	63.2	27.2	61.6
125	414.1	0.755	56.8	1.6	6.80	9.748	61.506	54.724	90.7	36.0	89.1	34.4	2.59	0.03	63.3	27.4	61.7
126	415.9	0.759	56.8	1.5	6.81	9.824	61.788	54.931	90.9	36.0	89.4	34.4	2.59	0.03	63.4	27.5	61.9
127	413.0	0.764	56.6	1.4	6.81	9.900	61.318	54.461	90.4	36.0	89.0	34.6	2.58	0.03	63.2	27.2	61.8
128	413.9	0.768	56.6	1.3	6.82	9.977	61.469	54.549	90.5	36.0	89.2	34.6	2.57	0.02	63.2	27.3	61.9
129	414.5	0.774	56.4	1.2	6.82	10.062	61.562	54.581	90.6	36.0	89.3	34.8	2.57	0.02	63.3	27.3	62.1
130	410.7	0.778	56.4	1.1	6.83	10.139	60.943	53.977	90.0	36.0	88.8	34.8	2.55	0.02	63.0	27.0	61.8
131	411.6	0.783	56.3	1.0	6.84	10.215	61.093	54.065	90.0	36.0	89.0	34.9	2.55	0.02	63.0	27.0	62.0
132	408.1	0.787	56.2	1.0	6.84	10.291	60.529	53.513	89.5	36.0	88.5	35.0	2.53	0.02	62.7	26.8	61.8
133	409.1	0.792	56.1	0.9	6.85	10.368	60.680	53.601	89.6	36.0	88.7	35.1	2.53	0.02	62.8	26.8	61.9
134	403.9	0.796	56.0	0.7	6.85	10.444	59.834	52.798	88.8	36.0	88.0	35.2	2.50	0.01	62.4	26.4	61.6
135	406.2	0.801	56.0	0.7	6.86	10.520	60.210	53.089	89.1	36.0	88.3	35.2	2.51	0.01	62.5	26.5	61.8
136	403.2	0.806	55.8	0.6	6.86	10.597	59.721	52.606	88.6	36.0	88.0	35.4	2.49	0.01	62.3	26.3	61.7
137	404.9	0.810	55.8	0.6	6.87	10.673	60.003	52.812	88.8	36.0	88.2	35.4	2.49	0.01	62.4	26.4	61.8
138	399.6	0.815	55.6	0.4	6.88	10.749	59.139	51.995	88.0	36.0	87.6	35.6	2.46	0.01	62.0	26.0	61.6
139	402.0	0.819	55.6	0.4	6.88	10.826	59.534	52.302	88.3	36.0	87.9	35.6	2.47	0.01	62.1	26.2	61.7
140	401.7	0.824	55.5	0.3	6.89	10.902	59.477	52.206	88.2	36.0	87.9	35.7	2.46	0.01	62.1	26.1	61.8
141	399.3	0.828	55.5	0.2	6.89	10.978	59.083	51.809	87.8	36.0	87.5	35.7	2.45	0.00	61.9	25.9	61.6

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	399.6	0.833	55.4	0.2	6.90	11.054	59.139	51.815	87.8	36.0	87.6	35.8	2.45	0.00	61.9	25.9	61.7
143	397.2	0.838	55.3	0.1	6.91	11.131	58.745	51.419	87.4	36.0	87.3	35.9	2.43	0.00	61.7	25.7	61.6
144	392.6	0.843	55.2	0.0	6.91	11.217	57.993	50.701	86.7	36.0	86.7	36.0	2.41	0.00	61.3	25.4	61.4
145	395.0	0.847	55.1	-0.1	6.92	11.293	58.388	51.007	87.0	36.0	87.1	36.1	2.41	0.00	61.5	25.5	61.6
146	394.0	0.852	55.1	-0.2	6.92	11.369	58.219	50.813	86.8	36.0	86.9	36.1	2.41	0.00	61.4	25.4	61.5
147	390.8	0.856	55.0	-0.2	6.93	11.445	57.711	50.319	86.3	36.0	86.5	36.2	2.39	0.00	61.1	25.2	61.4
148	387.6	0.861	54.9	-0.4	6.94	11.522	57.185	49.809	85.8	36.0	86.1	36.3	2.37	-0.01	60.9	24.9	61.2
149	387.2	0.866	54.9	-0.4	6.94	11.608	57.110	49.694	85.7	36.0	86.0	36.3	2.37	-0.01	60.8	24.8	61.2
150	385.3	0.871	54.8	-0.4	6.95	11.684	56.810	49.385	85.4	36.0	85.8	36.4	2.36	-0.01	60.7	24.7	61.1
151	382.9	0.875	54.7	-0.5	6.96	11.760	56.415	48.993	85.0	36.0	85.5	36.5	2.34	-0.01	60.5	24.5	61.0
152	379.7	0.880	54.7	-0.6	6.96	11.837	55.889	48.487	84.5	36.0	85.0	36.5	2.33	-0.01	60.2	24.2	60.8
153	380.1	0.885	54.7	-0.6	6.97	11.922	55.964	48.505	84.5	36.0	85.0	36.5	2.33	-0.01	60.2	24.3	60.8
154	376.5	0.890	54.6	-0.6	6.97	11.999	55.382	47.950	83.9	36.0	84.6	36.6	2.31	-0.01	59.9	24.0	60.6
155	377.0	0.894	54.5	-0.7	6.98	12.075	55.457	47.973	83.9	36.0	84.6	36.7	2.31	-0.01	60.0	24.0	60.6
156	374.4	0.899	54.5	-0.8	6.99	12.151	55.025	47.552	83.5	36.0	84.3	36.7	2.29	-0.02	59.7	23.8	60.5
157	374.6	0.903	54.5	-0.8	6.99	12.228	55.062	47.543	83.5	36.0	84.3	36.7	2.29	-0.02	59.7	23.8	60.5
158	372.9	0.908	54.4	-0.8	7.00	12.304	54.781	47.253	83.2	36.0	84.1	36.8	2.28	-0.02	59.6	23.6	60.4
159	371.6	0.913	54.3	-0.9	7.01	12.390	54.574	47.025	83.0	36.0	83.9	36.9	2.28	-0.02	59.5	23.5	60.4
160	368.5	0.917	54.2	-1.0	7.01	12.466	54.067	46.540	82.5	36.0	83.5	37.0	2.26	-0.02	59.2	23.3	60.3
161	368.0	0.921	54.2	-1.0	7.02	12.533	53.992	46.438	82.4	36.0	83.4	37.0	2.26	-0.02	59.2	23.2	60.2
162	366.2	0.926	54.2	-1.0	7.02	12.609	53.691	46.134	82.1	36.0	83.2	37.0	2.25	-0.02	59.0	23.1	60.1
163	365.0	0.931	54.1	-1.1	7.03	12.685	53.503	45.929	81.9	36.0	83.0	37.1	2.24	-0.02	58.9	23.0	60.0
164	364.0	0.936	54.1	-1.1	7.04	12.771	53.334	45.736	81.7	36.0	82.8	37.1	2.23	-0.02	58.8	22.9	60.0
165	362.6	0.940	54.1	-1.2	7.04	12.848	53.109	45.498	81.5	36.0	82.6	37.1	2.23	-0.03	58.7	22.7	59.9
166	360.3	0.944	54.0	-1.2	7.05	12.914	52.733	45.136	81.1	36.0	82.4	37.2	2.21	-0.03	58.5	22.6	59.8
167	359.3	0.949	53.9	-1.3	7.05	12.991	52.564	44.948	80.9	36.0	82.2	37.3	2.21	-0.03	58.4	22.5	59.7
168	358.1	0.953	53.9	-1.3	7.06	13.067	52.376	44.745	80.7	36.0	82.0	37.3	2.20	-0.03	58.3	22.4	59.7
169	356.6	0.958	53.9	-1.4	7.07	13.143	52.132	44.493	80.5	36.0	81.8	37.3	2.19	-0.03	58.2	22.2	59.6
170	354.6	0.963	53.8	-1.5	7.07	13.220	51.812	44.176	80.1	36.0	81.6	37.4	2.18	-0.03	58.1	22.1	59.5
171	352.8	0.967	53.7	-1.5	7.08	13.296	51.512	43.876	79.8	36.0	81.3	37.5	2.17	-0.03	57.9	21.9	59.4
172	352.0	0.972	53.7	-1.5	7.09	13.382	51.380	43.718	79.7	36.0	81.2	37.5	2.17	-0.04	57.8	21.9	59.4
173	349.7	0.977	53.7	-1.6	7.09	13.458	51.005	43.353	79.3	36.0	80.9	37.5	2.15	-0.04	57.7	21.7	59.2
174	348.3	0.981	53.6	-1.6	7.10	13.534	50.779	43.120	79.1	36.0	80.7	37.6	2.15	-0.04	57.5	21.6	59.1
175	346.7	0.986	53.6	-1.6	7.10	13.611	50.516	42.854	78.8	36.0	80.4	37.6	2.14	-0.04	57.4	21.4	59.0
176	344.4	0.991	53.5	-1.7	7.11	13.687	50.140	42.491	78.5	36.0	80.2	37.7	2.13	-0.04	57.2	21.2	58.9
177	342.4	0.995	53.5	-1.7	7.12	13.763	49.821	42.177	78.2	36.0	79.8	37.7	2.12	-0.04	57.1	21.1	58.8
178	339.8	1.000	53.5	-1.7	7.12	13.840	49.389	41.767	77.7	36.0	79.5	37.7	2.11	-0.04	56.9	20.9	58.6
179	337.9	1.005	53.5	-1.8	7.13	13.925	49.088	41.466	77.4	36.0	79.2	37.7	2.10	-0.04	56.7	20.7	58.5
180	336.1	1.009	53.5	-1.8	7.14	14.002	48.788	41.170	77.1	36.0	78.9	37.7	2.09	-0.04	56.6	20.6	58.3
181	334.5	1.014	53.5	-1.8	7.14	14.078	48.525	40.907	76.9	36.0	78.7	37.7	2.08	-0.04	56.4	20.5	58.2
182	332.4	1.019	53.4	-1.8	7.15	14.154	48.187	40.579	76.6	36.0	78.4	37.8	2.07	-0.04	56.3	20.3	58.1

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	330.2	1.023	53.4	-1.8	7.16	14.231	47.830	40.236	76.2	36.0	78.0	37.8	2.06	-0.05	56.1	20.1	57.9
184	328.4	1.028	53.4	-1.9	7.16	14.316	47.529	39.938	75.9	36.0	77.8	37.8	2.06	-0.05	55.9	20.0	57.8
185	326.1	1.033	53.3	-1.9	7.17	14.393	47.153	39.580	75.6	36.0	77.4	37.9	2.05	-0.05	55.8	19.8	57.7
186	324.1	1.037	53.3	-1.9	7.18	14.469	46.834	39.271	75.2	36.0	77.1	37.9	2.04	-0.05	55.6	19.6	57.5
187	322.1	1.042	53.3	-1.9	7.18	14.545	46.515	38.962	74.9	36.0	76.8	37.9	2.03	-0.05	55.5	19.5	57.3
188	320.5	1.047	53.3	-1.9	7.19	14.631	46.252	38.698	74.7	36.0	76.6	37.9	2.02	-0.05	55.3	19.3	57.3
189	318.4	1.052	53.3	-1.9	7.20	14.707	45.914	38.374	74.3	36.0	76.3	37.9	2.01	-0.05	55.2	19.2	57.1
190	316.9	1.056	53.3	-1.9	7.20	14.784	45.669	38.131	74.1	36.0	76.0	37.9	2.01	-0.05	55.0	19.1	57.0
191	315.8	1.061	53.3	-1.9	7.21	14.860	45.481	37.936	73.9	36.0	75.8	37.9	2.00	-0.05	54.9	19.0	56.9
192	314.2	1.065	53.3	-1.9	7.21	14.936	45.218	37.677	73.7	36.0	75.6	37.9	1.99	-0.05	54.8	18.8	56.7
193	312.4	1.070	53.3	-1.9	7.22	15.013	44.937	37.403	73.4	36.0	75.3	37.9	1.99	-0.05	54.7	18.7	56.6
194	311.1	1.075	53.3	-2.0	7.23	15.089	44.711	37.178	73.2	36.0	75.1	37.9	1.98	-0.05	54.6	18.6	56.5
195	308.9	1.079	53.3	-2.0	7.23	15.165	44.354	36.841	72.8	36.0	74.8	37.9	1.97	-0.05	54.4	18.4	56.4
196	307.1	1.084	53.3	-2.0	7.24	15.242	44.072	36.568	72.5	36.0	74.5	37.9	1.96	-0.05	54.3	18.3	56.2
197	305.5	1.088	53.3	-2.0	7.25	15.318	43.809	36.312	72.3	36.0	74.3	37.9	1.96	-0.05	54.1	18.2	56.1
198	303.7	1.093	53.3	-2.0	7.25	15.394	43.509	36.024	72.0	36.0	74.0	37.9	1.95	-0.05	54.0	18.0	56.0
199	301.7	1.097	53.3	-2.0	7.26	15.470	43.190	35.721	71.7	36.0	73.7	37.9	1.94	-0.06	53.8	17.9	55.8
200	300.0	1.102	53.3	-2.0	7.27	15.547	42.908	35.450	71.4	36.0	73.4	37.9	1.93	-0.06	53.7	17.7	55.7
201	298.8	1.106	53.3	-2.0	7.27	15.623	42.720	35.259	71.2	36.0	73.2	37.9	1.93	-0.06	53.6	17.6	55.6
202	297.0	1.111	53.3	-2.0	7.28	15.699	42.419	34.973	70.9	36.0	72.9	37.9	1.92	-0.06	53.5	17.5	55.4
203	295.5	1.116	53.3	-2.0	7.29	15.776	42.175	34.735	70.7	36.0	72.7	37.9	1.92	-0.06	53.3	17.4	55.3
204	294.1	1.120	53.3	-2.0	7.29	15.852	41.950	34.513	70.5	36.0	72.5	37.9	1.91	-0.06	53.2	17.3	55.2
205	292.4	1.125	53.3	-2.0	7.30	15.928	41.668	34.244	70.2	36.0	72.2	37.9	1.90	-0.06	53.1	17.1	55.1
206	290.1	1.129	53.3	-1.9	7.31	16.005	41.292	33.896	69.9	36.0	71.8	37.9	1.89	-0.06	52.9	16.9	54.9
207	288.5	1.134	53.3	-1.9	7.31	16.081	41.029	33.644	69.6	36.0	71.6	37.9	1.89	-0.06	52.8	16.8	54.7
208	287.0	1.138	53.3	-1.9	7.32	16.157	40.785	33.408	69.4	36.0	71.3	37.9	1.88	-0.06	52.7	16.7	54.6
209	285.5	1.143	53.3	-1.9	7.33	16.234	40.541	33.172	69.1	36.0	71.0	37.9	1.88	-0.06	52.6	16.6	54.5
210	284.2	1.148	53.3	-1.9	7.33	16.310	40.334	32.969	68.9	36.0	70.8	37.9	1.87	-0.06	52.5	16.5	54.4
211	282.2	1.153	53.4	-1.9	7.34	16.396	40.015	32.667	68.6	36.0	70.5	37.8	1.86	-0.06	52.3	16.3	54.2
212	280.3	1.157	53.4	-1.9	7.35	16.472	39.695	32.370	68.3	36.0	70.2	37.8	1.86	-0.06	52.2	16.2	54.0
213	278.9	1.162	53.4	-1.8	7.35	16.548	39.470	32.151	68.1	36.0	69.9	37.8	1.85	-0.06	52.0	16.1	53.9
214	276.9	1.166	53.4	-1.8	7.36	16.625	39.150	31.855	67.8	36.0	69.6	37.8	1.84	-0.06	51.9	15.9	53.7
215	275.8	1.171	53.5	-1.8	7.37	16.701	38.963	31.669	67.6	36.0	69.4	37.7	1.84	-0.06	51.8	15.8	53.6
216	274.1	1.176	53.5	-1.7	7.37	16.777	38.681	31.404	67.4	36.0	69.1	37.7	1.83	-0.06	51.7	15.7	53.4
217	273.0	1.181	53.5	-1.7	7.38	16.863	38.512	31.230	67.2	36.0	68.9	37.7	1.83	-0.06	51.6	15.6	53.3
218	272.0	1.185	53.5	-1.7	7.39	16.930	38.343	31.064	67.0	36.0	68.7	37.7	1.82	-0.05	51.5	15.5	53.2
219	270.6	1.190	53.6	-1.7	7.40	17.016	38.117	30.844	66.8	36.0	68.5	37.6	1.82	-0.05	51.4	15.4	53.0
220	269.4	1.194	53.6	-1.7	7.40	17.092	37.929	30.660	66.6	36.0	68.3	37.6	1.81	-0.05	51.3	15.3	53.0
221	267.9	1.199	53.6	-1.6	7.41	17.168	37.685	30.428	66.4	36.0	68.0	37.6	1.81	-0.05	51.2	15.2	52.8
222	266.4	1.204	53.6	-1.6	7.42	17.245	37.441	30.197	66.2	36.0	67.8	37.6	1.80	-0.05	51.1	15.1	52.7
223	265.2	1.208	53.6	-1.6	7.42	17.321	37.234	29.998	66.0	36.0	67.6	37.6	1.80	-0.05	51.0	15.0	52.6

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	263.8	1.213	53.7	-1.6	7.43	17.407	37.009	29.780	65.8	36.0	67.3	37.5	1.79	-0.05	50.9	14.9	52.4
225	262.6	1.218	53.7	-1.6	7.44	17.483	36.821	29.597	65.6	36.0	67.1	37.5	1.79	-0.05	50.8	14.8	52.3
226	261.4	1.222	53.7	-1.5	7.44	17.559	36.614	29.398	65.4	36.0	66.9	37.5	1.78	-0.05	50.7	14.7	52.2
227	264.1	1.227	53.9	-1.4	7.45	17.636	37.065	29.742	65.7	36.0	67.1	37.3	1.80	-0.05	50.8	14.9	52.2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. U-2412B

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project 39406.1.1 **County** GUILFORD **Owner**

Date: Sampled 3/22/13 **Received** 4/30/13 **Reported** 5/2/13

Sampled from **By** NEIL ROBERSON

Submitted by SURIYATI B S 1995 **Standard Specifications**

785169 TO 785170
5/20/13

TEST RESULTS

Proj. Sample No.		ST-7#1	ST-7#2				
Lab. Sample No.		785169	785170				
Retained #4 Sieve	%	-	-				
Passing #10 Sieve	%	99	100				
Passing #40 Sieve	%	92	99				
Passing #200 Sieve	%	80	89				

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	10.6	1.2				
Fine Sand Ret - #270	%	15.4	16.5				
Silt 0.05 - 0.005 mm	%	61.8	55.9				
Clay < 0.005 mm	%	12.2	26.4				
T-#		T-5672	T-5672				
Specific Gravity		2.759	2.762				

L. L.		41	36				
P. I.		5	13				
AASHTO Classification		A-5(6)	A-6(12)				
Station		405+70	405+70				
Offset		3' RT	3' RT				
Alignment		L	L				
Location							
Depth (Ft)		50.00	50.00				
	to	51.50	51.50				
Moisture Content	%	22.83	8.84				
		bottom	top				

cc: NEIL ROBERSON
SURIYATI B S

Soils Engineer

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	22.14	23.02	**Plastic Limits:**	0	
Dry Density (pcf):	103.75	107.41	**Plasticity Index (%):**	0	
Saturation (%):	92.84	105.62			
Void Ratio:	0.6528	0.5964	**Specific Gravity:**	2.753	Measured

Soil Description: Yellowish tan colored dry clayey silt

Project Number: 39406.1.1 **Depth:** 50.0 - 51.5 ft **Remarks:**

Sample Number: ST-7 **Boring Number:** Solid Height 0.60698 inches ; Est. Blows/Ft= NA

Project: U-2412B

Client: T-5672

Location: Guilford County (Sta. 405+70)

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	22.14	23.02	**Plastic Limits:**	0	
Dry Density (pcf):	103.75	107.41	**Plasticity Index (%):**	0	
Saturation (%):	92.84	105.62			
Void Ratio:	0.6528	0.5964	**Specific Gravity:**	2.753	Measured

Soil Description: Yellowish tan colored dry clayey silt

Project Number: 39406.1.1 **Depth:** 50.0 - 51.5 ft

Sample Number: ST-7 **Boring Number:**

Project: U-2412B

Client: T-5672

Location: Guilford County (Sta. 405+70)

Remarks:
Solid Height 0.60698 inches ; Est. Blows/Ft= NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	22.14	23.02	**Plastic Limits:**	0	
Dry Density (pcf):	103.75	107.41	**Plasticity Index (%):**	0	
Saturation (%):	92.84	105.62			
Void Ratio:	0.6528	0.5964	**Specific Gravity:**	2.753	Measured

Soil Description: Yellowish tan colored dry clayey silt

Project Number: 39406.1.1 **Depth:** 50.0 - 51.5 ft

Sample Number: ST-7 **Boring Number:**

Project: U-2412B

Client: T-5672

Location: Guilford County (Sta. 405+70)

Remarks:
Solid Height 0.60698 inches ; Est. Blows/Ft= NA

Consolidation Test Results
Summary

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County (Sta. 405+70)
Job Number: T-5672

Sample Number: ST-7 **Soil Description:**
Boring Number: Yellowish tan colored dry clayey silt
Depth: 50.0 - 51.5 ft **Remarks:** **Test Number:**
Sample Type: Undisturbed Solid Height 0.60698 inches ; Est. Blows/Ft= NA **Test Date:**

Index	Load Sequence (tsf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	1.0028	0.3961	0.00	0.6528	0.000		0.000	
1	0.063	0.0006	1.0022	0.3955	0.06	0.6518	19.847		39.160	
2	0.125	0.0016	1.0012	0.3945	0.16	0.6502	1.563		496.262	
3	0.250	0.0033	0.9995	0.3928	0.33	0.6474	1.000		773.026	
4	0.500	0.0064	0.9964	0.3897	0.64	0.6423	0.134		5716.062	
5	1.000	0.0117	0.9911	0.3844	1.17	0.6335	0.130		5864.874	
6	2.000	0.0191	0.9837	0.3770	1.90	0.6213	0.212		3538.657	
7	4.000	0.0310	0.9718	0.3651	3.09	0.6017	0.106		6920.200	
8	2.000	0.0285	0.9743	0.3676	2.84	0.6058	0.000		0.000	
9	1.000	0.0250	0.9778	0.3711	2.49	0.6116	0.000		0.000	
10	0.500	0.0215	0.9813	0.3746	2.14	0.6174	0.000		0.000	
11	1.000	0.0235	0.9793	0.3726	2.34	0.6141	0.000		0.000	
12	2.000	0.0270	0.9758	0.3691	2.69	0.6083	0.000		0.000	
13	4.000	0.0326	0.9702	0.3635	3.25	0.5991	0.000		0.000	
14	8.000	0.0479	0.9549	0.3482	4.78	0.5739	0.144		4886.269	
15	16.000	0.0715	0.9313	0.3246	7.13	0.5350	0.879		763.605	
16	4.000	0.0664	0.9364	0.3297	6.62	0.5434	0.000		0.000	
17	0.016	0.0342	0.9686	0.3619	3.41	0.5964	0.000		0.000	

Tested By: **Checked By:**

Consolidation Test
Consolidation Specimen Information

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County (Sta. 405+70)
Job Number: T-5672 **Test Date:**

Sample Number: ST-7 **Soil Description:**
Boring Number: Yellowish tan colored dry clayey silt
Depth: 50.0 - 51.5 ft **Remarks:**
Sample Type: Undisturbed Solid Height 0.60698 inches ; Est. Blows/Ft= NA

Test Number:
Liquid Limit: 0.0000 **Initial Void Ratio:** 0.6528 **Initial Height (in):** 1.0028
Plastic Limit: 0.0000 **Plasticity Index (%):** 0.0000 **Initial Diameter (in):** 2.5000
Specific Gravity: 2.7530 Measured **Weight of Ring (g):** 110.9800

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	163.74	164.92
Dry Soil + Container (g)	134.06	134.06
Weight of Container (g)	0.00	0.00
Moisture Content (%)	22.14	23.02
Void Ratio	0.6528	0.5964
Saturation (%)	92.84	105.62
Dry Density (pcf)	103.75	107.41

Tested By: **Checked By:**

Sample # 1 (Bottom)

Soil expanded and broke all around when extracted. Soil was dry and brittle.

Sample #2 (Top)

Soil was dry and brittle at the end of cap where it broke.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. U-2412B

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project 39406.1.1 **County** GUILFORD **Owner**

Date: Sampled 3/1/13 **Received** 8/5/13 **Reported** 8/9/13

Sampled from RDWY **By** N. ROBERSON

Submitted by M HURT 1995 **Standard Specifications**

787038 TO 787040
9/11/13

TEST RESULTS

Proj. Sample No.		ST 8 # 1	ST-8 #2	ST-8 #3			
Lab. Sample No.		787038	787039	787040			
Retained #4 Sieve	%	-	-	-			
Passing #10 Sieve	%	100	100	100			
Passing #40 Sieve	%	100	100	100			
Passing #200 Sieve	%	88	90	89			

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	2.0	1.6	1.4			
Fine Sand Ret - #270	%	14.8	13.8	13.8			
Silt 0.05 - 0.005 mm	%	42.8	44.2	46.4			
Clay < 0.005 mm	%	40.4	40.4	38.4			
T-#		T-5718	T-5718	T-5718			
Specific Gravity		2.775	2.746	2.78			

L. L.		62	60	61			
P. I.		21	21	20			
AASHTO Classification		A-7-5(24)	A-7-5(25)	A-7-5(24)			
Station		404+50	404+50	404+50			
Offset		3 RT	3 RT	3 RT			
Alignment		L	L	L			
Location							
Depth (Ft)		5.5 FT	5.5 FT	5.5 FT			
	to	7.5 FT	7.5 FT	7.5 FT			
Final Moisture	%	54.45	53.35	54.11			

cc: N. ROBERSON
SURIYATI BS

Soils Engineer

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	39.03	42.22	**Plastic Limits:**	0	
Dry Density (pcf):	66.54	81.98	**Plasticity Index (%):**	0	
Saturation (%):	67.79	105.80			
Void Ratio:	1.5866	1.0996	**Specific Gravity:**	2.759	Measured

Soil Description: Red-orange colored clay

Project Number: 39406.1.1 **Depth:** 5.5 - 7.5 ft

Sample Number: ST-8 **Boring Number:**

Project: U-2412B

Client: T-5718

Location: Guilford County (Sta. 404 + 50)

Remarks:
Solid Height 0.38889 inches; Blows/Ft. = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	39.03	42.22	**Plastic Limits:**	0	
Dry Density (pcf):	66.54	81.98	**Plasticity Index (%):**	0	
Saturation (%):	67.79	105.80			
Void Ratio:	1.5866	1.0996	**Specific Gravity:**	2.759	Measured

Soil Description: Red-orange colored clay

Project Number: 39406.1.1 **Depth:** 5.5 - 7.5 ft

Sample Number: ST-8 **Boring Number:**

Project: U-2412B

Client: T-5718

Location: Guilford County (Sta. 404 + 50)

Remarks:
Solid Height 0.38889 inches; Blows/Ft. = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	39.03	42.22	**Plastic Limits:**	0	
Dry Density (pcf):	66.54	81.98	**Plasticity Index (%):**	0	
Saturation (%):	67.79	105.80			
Void Ratio:	1.5866	1.0996	**Specific Gravity:**	2.759	Measured

Soil Description:	Red-orange colored clay		
Project Number:	39406.1.1	**Depth:** 5.5 - 7.5 ft	**Remarks:**
Sample Number:	ST-8	**Boring Number:**	Solid Height 0.38889 inches; Blows/Ft. = NA
Project:	U-2412B		
Client:	T-5718		
Location:	Guilford County (Sta. 404 + 50)		

Consolidation Test Results
Summary

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County (Sta. 404 + 50)
Job Number: T-5718

Sample Number: ST-8 **Soil Description:**
Boring Number: Red-orange colored clay
Depth: 5.5 - 7.5 ft **Remarks:** **Test Number:**
Sample Type: Undisturbed Solid Height 0.38889 inches; Blows/Ft. = NA **Test Date:**

Index	Load Sequence (tsf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	1.0039	0.6158	0.00	1.5866	0.000		0.000	
1	0.063	0.0015	1.0024	0.6143	0.15	1.5827	0.157		4952.349	
2	0.125	0.0041	0.9998	0.6117	0.41	1.5760	0.153		5055.494	
3	0.250	0.0069	0.9970	0.6089	0.69	1.5688	0.141		5470.585	
4	0.500	0.0123	0.9916	0.6035	1.23	1.5549	0.129		5898.100	
5	1.000	0.0203	0.9836	0.5955	2.02	1.5342	0.160		4678.922	
6	2.000	0.0402	0.9637	0.5756	4.00	1.4830	0.220		3266.554	
7	4.000	0.0991	0.9048	0.5167	9.87	1.3312	0.250		2533.926	
8	2.000	0.0954	0.9085	0.5204	9.50	1.3408	0.000		0.000	
9	1.000	0.0894	0.9145	0.5264	8.91	1.3562	0.000		0.000	
10	0.500	0.0834	0.9205	0.5324	8.31	1.3717	0.000		0.000	
11	1.000	0.0857	0.9182	0.5301	8.54	1.3657	0.000		0.000	
12	2.000	0.0907	0.9132	0.5251	9.03	1.3529	0.000		0.000	
13	4.000	0.1041	0.8998	0.5117	10.37	1.3183	0.000		0.000	
14	8.000	0.1745	0.8294	0.4413	17.38	1.1370	0.233		2284.551	
15	16.000	0.2572	0.7467	0.3586	25.62	0.9239	0.360		1198.446	
16	4.000	0.2440	0.7599	0.3718	24.31	0.9579	0.000		0.000	
17	0.016	0.1890	0.8149	0.4268	18.83	1.0996	0.000		0.000	

Tested By: **Checked By:**

Consolidation Test
Consolidation Specimen Information

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County (Sta. 404 + 50)
Job Number: T-5718 **Test Date:**

Sample Number: ST-8 **Soil Description:**
Boring Number: Red-orange colored clay
Depth: 5.5 - 7.5 ft **Remarks:**
Sample Type: Undisturbed Solid Height 0.38889 inches; Blows/Ft. = NA

Test Number:
Liquid Limit: 0.0000 **Initial Void Ratio:** 1.5866 **Initial Height (in):** 1.0039
Plastic Limit: 0.0000 **Plasticity Index (%):** 0.0000 **Initial Diameter (in):** 2.4999
Specific Gravity: 2.7590 Measured **Weight of Ring (g):** 109.8400

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	119.66	122.41
Dry Soil + Container (g)	86.07	86.07
Weight of Container (g)	0.00	0.00
Moisture Content (%)	39.03	42.22
Void Ratio	1.5866	1.0996
Saturation (%)	67.79	105.80
Dry Density (pcf)	66.54	81.98

Tested By: **Checked By:**

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Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date

Tested By:

Effective Stress at Maximum Deviator Stress Criterion

Deviator Stress Vs. Axial Strain

Initial	Specimen A	B	C	D
Water Content (%)	41.0	40.5	40.3	
Dry Density (pcf)	69.0	69.5	68.6	
Saturation (%)	75.24	75.81	73.17	
Void Ratio	1.504	1.461	1.523	
Diameter (in)	2.857	2.853	2.855	
Height (in)	5.995	6.013	6.010	
Specific Gravity	2.78	2.75	2.78	
Liquid Limit	0	0	0	
Plastic Limit	0	0	0	
After Consolidation	**A**	**B**	**C**	**D**
B-Value	0.00	0.00	0.00	
Water Content (%)	41.0	40.9	41.5	
Dry Density (pcf)	69.60	70.12	69.77	
Saturation (%)	100.00	100.00	100.00	
Void Ratio	1.489	1.445	1.487	
Effective Stress (psi)	3.0	6.0	12.0	
Back Press. (psi)	80.3	80.6	80.8	
Rate of Strain	0.009	0.009	0.009	

Maximium Deviator Stress Criterion		After Shear	A	B	C	D
C (psi)	0.0	σ'1 at Failure (psi)	12.76	15.93	20.19	
C' (psi)	0.0	σ'3 at Failure (psi)	4.08	5.56	5.69	
Ø (deg)	0.0					
Ø' (deg)	0.0					

Project:	U-2412B	N/A	N/A	N/A	N/A
Location:	Guilford County (Sta. 404+50)				
Project Number:	39406.1.1				
Boring Number:					
Sample Number:	ST-8				
Depth:	5.5 - 7.5 ft.				
Sample Type:	Undisturbed	Failure Photographs			
Description:					
Test Type	Consolidated Undrained				
Remarks	Research				

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Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date:

Tested By:

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)

Change in Pore Pressure vs. Axial Strain

Deviator Stress vs. Axial Strain

Principal Stress Ratio vs. Axial Strain

Change in Pore Pressure vs. Axial Strain
Change in Pore Pressure (psi)
9.0
7.0
5.0
3.0
1.0
-1.0
-3.0
0.000
5.000
10.000
15.000
20.000
25.000
Axial Strain (%)
Specimen A
Specimen B
Specimen C
Specimen D

Mohr Stress Circles at Maximum Deviator Stress Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at Maximum Principal Stress Ratio Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at 15% Axial Strain Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)
15.0
10.0
5.0
0.0
Q (psi)
0.0
5.0
10.0
15.0
P' (psi)
Specimen A
Specimen B
Specimen C
Specimen D
Tangent Line

Stress Paths (Total)
(C' = 0.0 Ø' = 0.0)
25.0
20.0
15.0
10.0
5.0
0.0
Q (psi)
0.0
5.0
10.0
15.0
20.0
25.0
P (psi)

Specimen A Shear Data

CU Triaxial Test

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File Location
T-5718.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5718
Sample Location: Guilford County (Sta. 404+50)
Sample Description: Red-orange colored clay
Remarks: 32° shear plane.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.7750001
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.857	2.850	
Height (in)	5.995	5.972	
Weight (grams)	981.00		1075.00
Moisture (%)	40.95		54.45
Dry Density (pcf)	69.01	69.60	
Saturation (%)	75.24	100.00	
Void Ratio	1.504	1.489	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 83.300
Effective Confining Stress (psi): 3.0
Corrected Peak Deviator Stress (psi): 8.681 at reading number: 158

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	50.2	0.075	80.3	0.0	6.38	0.000	0.000	0.000	3.0	3.0	3.0	3.0	1.00	0.00	3.0	0.0	3.0
1	68.8	0.079	81.0	0.7	6.38	0.069	2.920	2.891	5.9	3.0	5.2	2.3	2.26	0.23	4.4	1.4	3.7
2	73.7	0.084	81.2	0.9	6.39	0.146	3.686	3.624	6.6	3.0	5.7	2.1	2.71	0.23	4.8	1.8	3.9
3	78.6	0.088	81.2	0.9	6.39	0.216	4.452	4.359	7.3	3.0	6.4	2.1	3.12	0.21	5.1	2.2	4.2
4	82.5	0.092	81.3	0.9	6.40	0.285	5.073	4.948	7.9	3.0	7.0	2.0	3.44	0.19	5.4	2.5	4.5
5	84.3	0.097	81.3	0.9	6.40	0.362	5.346	5.187	8.2	3.0	7.2	2.0	3.56	0.18	5.6	2.6	4.6
6	87.1	0.101	81.2	0.9	6.41	0.431	5.784	5.593	8.6	3.0	7.7	2.1	3.72	0.16	5.8	2.8	4.9
7	89.5	0.105	81.2	0.9	6.41	0.508	6.168	5.940	8.9	3.0	8.0	2.1	3.85	0.15	5.9	3.0	5.1
8	91.3	0.109	81.2	0.8	6.42	0.577	6.441	6.181	9.1	3.0	8.3	2.1	3.88	0.13	6.1	3.1	5.2
9	93.8	0.114	81.1	0.8	6.42	0.654	6.843	6.545	9.5	3.0	8.7	2.2	4.01	0.12	6.2	3.3	5.4
10	94.8	0.118	81.1	0.8	6.43	0.724	6.989	6.659	9.6	3.0	8.9	2.2	4.02	0.11	6.3	3.3	5.5
11	95.6	0.123	81.1	0.7	6.43	0.801	7.116	6.750	9.7	3.0	9.0	2.2	4.02	0.11	6.3	3.4	5.6
12	96.0	0.127	81.0	0.7	6.44	0.878	7.189	6.788	9.8	3.0	9.1	2.3	4.00	0.10	6.4	3.4	5.7
13	97.6	0.132	81.0	0.6	6.44	0.955	7.427	6.987	10.0	3.0	9.3	2.3	4.01	0.09	6.5	3.5	5.8
14	97.6	0.136	80.9	0.6	6.45	1.024	7.427	6.955	9.9	3.0	9.3	2.4	3.92	0.08	6.4	3.5	5.9
15	97.4	0.141	80.9	0.6	6.45	1.101	7.408	6.902	9.9	3.0	9.3	2.4	3.86	0.08	6.4	3.5	5.9
16	98.1	0.145	80.9	0.5	6.46	1.178	7.518	6.975	9.9	3.0	9.4	2.4	3.86	0.08	6.5	3.5	5.9
17	97.9	0.149	80.8	0.5	6.46	1.247	7.481	6.907	9.9	3.0	9.4	2.5	3.80	0.07	6.4	3.5	5.9
18	97.3	0.154	80.8	0.5	6.47	1.324	7.390	6.781	9.7	3.0	9.2	2.5	3.75	0.07	6.4	3.4	5.9

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	99.2	0.159	80.8	0.5	6.47	1.401	7.682	7.034	10.0	3.0	9.5	2.5	3.82	0.07	6.5	3.5	6.0
20	98.0	0.163	80.8	0.4	6.48	1.478	7.500	6.818	9.8	3.0	9.3	2.5	3.70	0.06	6.4	3.4	5.9
21	100.5	0.168	80.7	0.4	6.48	1.555	7.883	7.160	10.1	3.0	9.7	2.6	3.80	0.06	6.5	3.6	6.1
22	100.3	0.172	80.7	0.4	6.49	1.625	7.864	7.110	10.1	3.0	9.7	2.6	3.75	0.05	6.5	3.6	6.1
23	100.7	0.177	80.7	0.4	6.49	1.709	7.919	7.124	10.1	3.0	9.7	2.6	3.72	0.05	6.5	3.6	6.2
24	100.5	0.182	80.7	0.4	6.50	1.786	7.883	7.053	10.0	3.0	9.7	2.6	3.70	0.05	6.5	3.5	6.1
25	101.4	0.186	80.7	0.3	6.50	1.863	8.029	7.160	10.1	3.0	9.8	2.6	3.71	0.05	6.5	3.6	6.2
26	101.5	0.191	80.6	0.3	6.51	1.940	8.047	7.142	10.1	3.0	9.8	2.7	3.67	0.04	6.5	3.6	6.2
27	101.6	0.195	80.6	0.3	6.51	2.017	8.065	7.131	10.1	3.0	9.8	2.7	3.67	0.04	6.5	3.6	6.2
28	101.9	0.200	80.6	0.3	6.52	2.086	8.102	7.161	10.1	3.0	9.9	2.7	3.65	0.04	6.5	3.6	6.3
29	102.1	0.204	80.6	0.2	6.52	2.163	8.138	7.190	10.2	3.0	9.9	2.7	3.63	0.03	6.6	3.6	6.3
30	102.0	0.208	80.5	0.2	6.53	2.233	8.120	7.167	10.1	3.0	9.9	2.8	3.59	0.03	6.6	3.6	6.3
31	102.4	0.213	80.5	0.2	6.53	2.310	8.193	7.232	10.2	3.0	10.0	2.8	3.62	0.03	6.6	3.6	6.4
32	102.8	0.217	80.5	0.2	6.54	2.379	8.248	7.280	10.2	3.0	10.1	2.8	3.61	0.02	6.6	3.6	6.4
33	103.6	0.222	80.5	0.2	6.54	2.456	8.375	7.398	10.4	3.0	10.2	2.8	3.65	0.02	6.7	3.7	6.5
34	103.3	0.226	80.5	0.1	6.55	2.525	8.321	7.339	10.3	3.0	10.2	2.8	3.60	0.02	6.6	3.7	6.5
35	103.5	0.230	80.4	0.1	6.55	2.602	8.357	7.368	10.3	3.0	10.2	2.9	3.59	0.02	6.7	3.7	6.5
36	104.0	0.235	80.4	0.1	6.56	2.679	8.430	7.432	10.4	3.0	10.3	2.9	3.58	0.01	6.7	3.7	6.6
37	104.7	0.239	80.4	0.1	6.56	2.749	8.540	7.533	10.5	3.0	10.4	2.9	3.62	0.01	6.7	3.8	6.6
38	104.5	0.244	80.4	0.1	6.57	2.826	8.521	7.509	10.5	3.0	10.4	2.9	3.61	0.01	6.7	3.8	6.6
39	104.8	0.248	80.4	0.1	6.57	2.895	8.558	7.538	10.5	3.0	10.4	2.9	3.59	0.01	6.7	3.8	6.7
40	105.1	0.252	80.4	0.1	6.58	2.972	8.613	7.585	10.6	3.0	10.5	2.9	3.61	0.01	6.8	3.8	6.7
41	105.0	0.257	80.4	0.0	6.58	3.041	8.594	7.561	10.5	3.0	10.5	2.9	3.57	0.00	6.7	3.8	6.7
42	105.7	0.261	80.3	0.0	6.59	3.118	8.704	7.661	10.6	3.0	10.6	3.0	3.58	0.00	6.8	3.8	6.8
43	105.7	0.265	80.3	0.0	6.59	3.187	8.704	7.655	10.6	3.0	10.7	3.0	3.55	0.00	6.8	3.8	6.8
44	105.7	0.270	80.3	0.0	6.60	3.264	8.704	7.648	10.6	3.0	10.6	3.0	3.55	0.00	6.8	3.8	6.8
45	105.9	0.274	80.3	-0.1	6.60	3.334	8.740	7.677	10.6	3.0	10.7	3.0	3.54	-0.01	6.8	3.8	6.9
46	105.8	0.279	80.3	-0.1	6.61	3.411	8.722	7.653	10.6	3.0	10.7	3.0	3.53	-0.01	6.8	3.8	6.9
47	106.2	0.283	80.3	-0.1	6.61	3.488	8.777	7.699	10.7	3.0	10.7	3.0	3.54	-0.01	6.8	3.8	6.9
48	105.5	0.288	80.2	-0.1	6.62	3.565	8.667	7.587	10.6	3.0	10.6	3.1	3.48	-0.01	6.8	3.8	6.8
49	105.7	0.292	80.2	-0.1	6.62	3.634	8.704	7.616	10.6	3.0	10.7	3.1	3.47	-0.02	6.8	3.8	6.9
50	105.9	0.297	80.2	-0.1	6.63	3.711	8.740	7.644	10.6	3.0	10.8	3.1	3.45	-0.02	6.8	3.8	6.9
51	106.6	0.301	80.2	-0.1	6.63	3.788	8.850	7.743	10.7	3.0	10.9	3.1	3.49	-0.02	6.8	3.9	7.0
52	106.8	0.305	80.2	-0.1	6.64	3.857	8.868	7.754	10.7	3.0	10.9	3.1	3.49	-0.02	6.8	3.9	7.0
53	106.5	0.310	80.2	-0.2	6.64	3.934	8.832	7.712	10.7	3.0	10.9	3.1	3.45	-0.02	6.8	3.9	7.0
54	106.8	0.314	80.2	-0.2	6.65	4.011	8.868	7.740	10.7	3.0	10.9	3.1	3.46	-0.02	6.8	3.9	7.0
55	106.9	0.319	80.2	-0.2	6.65	4.081	8.886	7.752	10.7	3.0	10.9	3.1	3.47	-0.02	6.8	3.9	7.0
56	106.8	0.323	80.1	-0.2	6.66	4.158	8.868	7.727	10.7	3.0	10.9	3.2	3.44	-0.03	6.8	3.9	7.0
57	107.0	0.328	80.1	-0.2	6.66	4.235	8.905	7.756	10.7	3.0	11.0	3.2	3.42	-0.03	6.8	3.9	7.1
58	107.0	0.332	80.1	-0.2	6.67	4.304	8.905	7.749	10.7	3.0	11.0	3.2	3.42	-0.03	6.8	3.9	7.1
59	107.1	0.337	80.1	-0.3	6.67	4.381	8.923	7.760	10.7	3.0	11.0	3.2	3.40	-0.03	6.8	3.9	7.1

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	107.0	0.341	80.1	-0.3	6.68	4.458	8.905	7.736	10.7	3.0	11.0	3.2	3.39	-0.03	6.8	3.9	7.1
61	107.5	0.346	80.1	-0.3	6.68	4.535	8.978	7.799	10.8	3.0	11.0	3.2	3.41	-0.03	6.9	3.9	7.1
62	107.8	0.350	80.0	-0.3	6.69	4.604	9.032	7.845	10.8	3.0	11.1	3.3	3.41	-0.04	6.9	3.9	7.2
63	108.0	0.354	80.0	-0.3	6.69	4.673	9.069	7.873	10.8	3.0	11.2	3.3	3.39	-0.04	6.9	3.9	7.2
64	108.4	0.359	80.0	-0.3	6.70	4.750	9.124	7.918	10.9	3.0	11.2	3.3	3.41	-0.04	6.9	4.0	7.2
65	108.8	0.363	80.0	-0.3	6.70	4.820	9.197	7.981	10.9	3.0	11.3	3.3	3.43	-0.04	7.0	4.0	7.3
66	108.8	0.367	80.0	-0.4	6.71	4.897	9.197	7.974	10.9	3.0	11.3	3.3	3.40	-0.04	7.0	4.0	7.3
67	109.2	0.372	80.0	-0.4	6.71	4.974	9.251	8.019	11.0	3.0	11.3	3.3	3.42	-0.04	7.0	4.0	7.3
68	108.7	0.377	80.0	-0.4	6.72	5.051	9.178	7.943	10.9	3.0	11.3	3.3	3.39	-0.04	6.9	4.0	7.3
69	109.5	0.381	80.0	-0.4	6.72	5.128	9.306	8.057	11.0	3.0	11.4	3.3	3.41	-0.05	7.0	4.0	7.4
70	110.0	0.386	79.9	-0.4	6.73	5.205	9.379	8.119	11.1	3.0	11.5	3.4	3.40	-0.05	7.0	4.1	7.4
71	109.5	0.390	79.9	-0.4	6.74	5.274	9.306	8.043	11.0	3.0	11.4	3.4	3.38	-0.05	7.0	4.0	7.4
72	109.9	0.394	79.9	-0.4	6.74	5.351	9.361	8.088	11.1	3.0	11.5	3.4	3.39	-0.05	7.0	4.0	7.4
73	109.9	0.399	79.9	-0.4	6.75	5.428	9.361	8.081	11.0	3.0	11.5	3.4	3.39	-0.05	7.0	4.0	7.4
74	109.3	0.404	79.9	-0.4	6.75	5.505	9.270	7.987	11.0	3.0	11.4	3.4	3.34	-0.06	7.0	4.0	7.4
75	110.0	0.408	79.9	-0.4	6.76	5.582	9.379	8.084	11.1	3.0	11.5	3.4	3.37	-0.05	7.0	4.0	7.4
76	110.0	0.412	79.9	-0.4	6.76	5.651	9.379	8.077	11.0	3.0	11.5	3.4	3.37	-0.05	7.0	4.0	7.4
77	109.3	0.417	79.9	-0.5	6.77	5.728	9.270	7.967	10.9	3.0	11.4	3.4	3.32	-0.06	7.0	4.0	7.4
78	110.7	0.422	79.8	-0.5	6.77	5.805	9.488	8.166	11.1	3.0	11.6	3.5	3.36	-0.06	7.1	4.1	7.5
79	111.1	0.426	79.8	-0.5	6.78	5.874	9.543	8.211	11.2	3.0	11.7	3.5	3.37	-0.06	7.1	4.1	7.6
80	111.2	0.430	79.8	-0.5	6.78	5.951	9.561	8.221	11.2	3.0	11.7	3.5	3.37	-0.06	7.1	4.1	7.6
81	112.0	0.435	79.8	-0.5	6.79	6.028	9.689	8.333	11.3	3.0	11.8	3.5	3.40	-0.06	7.1	4.2	7.6
82	111.9	0.440	79.8	-0.5	6.79	6.105	9.671	8.309	11.3	3.0	11.8	3.5	3.40	-0.06	7.1	4.2	7.6
83	111.5	0.444	79.8	-0.5	6.80	6.175	9.616	8.251	11.2	3.0	11.7	3.5	3.36	-0.06	7.1	4.1	7.6
84	111.6	0.448	79.8	-0.6	6.81	6.252	9.634	8.260	11.2	3.0	11.8	3.5	3.34	-0.07	7.1	4.1	7.7
85	111.8	0.452	79.7	-0.6	6.81	6.321	9.653	8.271	11.2	3.0	11.8	3.6	3.33	-0.07	7.1	4.1	7.7
86	112.0	0.457	79.8	-0.6	6.82	6.398	9.689	8.297	11.3	3.0	11.8	3.5	3.35	-0.07	7.1	4.1	7.7
87	112.0	0.461	79.7	-0.6	6.82	6.467	9.689	8.291	11.3	3.0	11.8	3.6	3.33	-0.07	7.1	4.1	7.7
88	112.2	0.466	79.7	-0.6	6.83	6.544	9.726	8.317	11.3	3.0	11.9	3.6	3.34	-0.07	7.1	4.2	7.7
89	112.5	0.470	79.7	-0.6	6.83	6.621	9.762	8.344	11.3	3.0	11.9	3.6	3.35	-0.07	7.1	4.2	7.7
90	112.2	0.474	79.7	-0.6	6.84	6.691	9.726	8.303	11.3	3.0	11.9	3.6	3.32	-0.07	7.1	4.2	7.7
91	112.1	0.479	79.7	-0.6	6.84	6.768	9.707	8.279	11.2	3.0	11.9	3.6	3.31	-0.07	7.1	4.1	7.7
92	112.5	0.484	79.7	-0.6	6.85	6.845	9.762	8.322	11.3	3.0	11.9	3.6	3.30	-0.08	7.1	4.2	7.8
93	111.9	0.488	79.7	-0.6	6.85	6.922	9.671	8.230	11.2	3.0	11.8	3.6	3.28	-0.08	7.1	4.1	7.7
94	112.0	0.492	79.7	-0.6	6.86	6.991	9.689	8.240	11.2	3.0	11.9	3.6	3.28	-0.08	7.1	4.1	7.7
95	111.9	0.497	79.7	-0.6	6.87	7.068	9.671	8.216	11.2	3.0	11.8	3.6	3.27	-0.08	7.1	4.1	7.7
96	112.3	0.502	79.7	-0.6	6.87	7.145	9.744	8.276	11.2	3.0	11.9	3.6	3.29	-0.08	7.1	4.1	7.8
97	112.5	0.506	79.7	-0.7	6.88	7.214	9.762	8.286	11.3	3.0	11.9	3.6	3.27	-0.08	7.1	4.1	7.8
98	112.3	0.510	79.6	-0.7	6.88	7.291	9.744	8.262	11.2	3.0	11.9	3.7	3.25	-0.09	7.1	4.1	7.8
99	112.6	0.514	79.6	-0.7	6.89	7.360	9.780	8.289	11.3	3.0	12.0	3.7	3.26	-0.08	7.1	4.1	7.8
100	112.3	0.519	79.6	-0.7	6.89	7.437	9.744	8.247	11.2	3.0	11.9	3.7	3.25	-0.09	7.1	4.1	7.8

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	113.0	0.524	79.6	-0.7	6.90	7.514	9.853	8.341	11.3	3.0	12.0	3.7	3.27	-0.08	7.1	4.2	7.8
102	113.4	0.528	79.6	-0.7	6.90	7.584	9.908	8.385	11.4	3.0	12.1	3.7	3.28	-0.08	7.2	4.2	7.9
103	113.3	0.532	79.6	-0.7	6.91	7.661	9.890	8.360	11.3	3.0	12.1	3.7	3.26	-0.09	7.1	4.2	7.9
104	113.5	0.537	79.6	-0.7	6.91	7.738	9.926	8.386	11.4	3.0	12.1	3.7	3.27	-0.09	7.2	4.2	7.9
105	113.3	0.541	79.6	-0.8	6.92	7.807	9.890	8.346	11.3	3.0	12.1	3.7	3.24	-0.09	7.1	4.2	7.9
106	113.7	0.546	79.6	-0.8	6.93	7.892	9.963	8.405	11.4	3.0	12.1	3.7	3.25	-0.09	7.2	4.2	7.9
107	113.3	0.550	79.6	-0.8	6.93	7.961	9.890	8.331	11.3	3.0	12.1	3.7	3.23	-0.09	7.1	4.2	7.9
108	113.9	0.555	79.6	-0.8	6.94	8.038	9.981	8.407	11.4	3.0	12.1	3.7	3.25	-0.09	7.2	4.2	7.9
109	113.6	0.560	79.6	-0.8	6.94	8.115	9.945	8.366	11.3	3.0	12.1	3.7	3.24	-0.09	7.2	4.2	7.9
110	114.3	0.564	79.5	-0.8	6.95	8.192	10.054	8.459	11.4	3.0	12.2	3.8	3.25	-0.09	7.2	4.2	8.0
111	114.1	0.568	79.5	-0.8	6.95	8.261	10.018	8.418	11.4	3.0	12.2	3.8	3.24	-0.09	7.2	4.2	8.0
112	114.4	0.573	79.5	-0.8	6.96	8.338	10.072	8.461	11.4	3.0	12.2	3.8	3.23	-0.10	7.2	4.2	8.0
113	114.9	0.577	79.5	-0.8	6.97	8.415	10.145	8.520	11.5	3.0	12.3	3.8	3.25	-0.10	7.2	4.3	8.0
114	114.7	0.582	79.5	-0.8	6.97	8.492	10.109	8.479	11.4	3.0	12.3	3.8	3.24	-0.10	7.2	4.2	8.0
115	114.9	0.586	79.5	-0.8	6.98	8.561	10.145	8.505	11.5	3.0	12.3	3.8	3.24	-0.10	7.2	4.3	8.0
116	114.9	0.591	79.5	-0.8	6.98	8.638	10.145	8.497	11.5	3.0	12.3	3.8	3.24	-0.10	7.2	4.2	8.0
117	114.7	0.595	79.5	-0.9	6.99	8.715	10.109	8.456	11.4	3.0	12.3	3.8	3.21	-0.10	7.2	4.2	8.0
118	114.6	0.600	79.5	-0.9	6.99	8.785	10.091	8.432	11.4	3.0	12.3	3.8	3.19	-0.10	7.2	4.2	8.1
119	115.0	0.604	79.5	-0.9	7.00	8.862	10.164	8.491	11.5	3.0	12.3	3.8	3.21	-0.10	7.2	4.2	8.1
120	114.0	0.608	79.5	-0.9	7.01	8.931	9.999	8.334	11.3	3.0	12.2	3.8	3.17	-0.11	7.1	4.2	8.0
121	114.3	0.612	79.5	-0.9	7.01	9.000	10.054	8.377	11.3	3.0	12.2	3.8	3.18	-0.11	7.2	4.2	8.0
122	115.3	0.617	79.5	-0.9	7.02	9.077	10.200	8.502	11.5	3.0	12.4	3.8	3.21	-0.10	7.2	4.3	8.1
123	114.8	0.621	79.5	-0.9	7.02	9.147	10.127	8.429	11.4	3.0	12.3	3.8	3.19	-0.10	7.2	4.2	8.1
124	115.4	0.626	79.4	-0.9	7.03	9.224	10.218	8.504	11.5	3.0	12.4	3.9	3.19	-0.11	7.2	4.3	8.1
125	115.0	0.630	79.4	-0.9	7.03	9.301	10.164	8.446	11.4	3.0	12.3	3.9	3.18	-0.11	7.2	4.2	8.1
126	115.0	0.635	79.4	-0.9	7.04	9.378	10.164	8.439	11.4	3.0	12.3	3.9	3.16	-0.11	7.2	4.2	8.1
127	115.5	0.639	79.4	-0.9	7.05	9.447	10.237	8.498	11.5	3.0	12.4	3.9	3.18	-0.11	7.2	4.2	8.2
128	115.7	0.644	79.4	-0.9	7.05	9.524	10.273	8.523	11.5	3.0	12.4	3.9	3.18	-0.11	7.2	4.3	8.2
129	115.7	0.648	79.4	-0.9	7.06	9.593	10.273	8.516	11.5	3.0	12.4	3.9	3.18	-0.11	7.2	4.3	8.2
130	115.5	0.652	79.4	-0.9	7.06	9.670	10.237	8.475	11.4	3.0	12.4	3.9	3.17	-0.11	7.2	4.2	8.1
131	115.5	0.657	79.4	-0.9	7.07	9.747	10.237	8.467	11.4	3.0	12.4	3.9	3.17	-0.11	7.2	4.2	8.1
132	115.8	0.662	79.4	-1.0	7.07	9.824	10.291	8.508	11.5	3.0	12.4	3.9	3.16	-0.11	7.2	4.3	8.2
133	116.9	0.666	79.4	-1.0	7.08	9.901	10.456	8.648	11.6	3.0	12.6	3.9	3.20	-0.11	7.3	4.3	8.3
134	116.4	0.671	79.4	-1.0	7.09	9.978	10.383	8.575	11.5	3.0	12.5	3.9	3.18	-0.11	7.3	4.3	8.2
135	116.4	0.675	79.4	-1.0	7.09	10.055	10.383	8.567	11.5	3.0	12.5	3.9	3.18	-0.11	7.3	4.3	8.2
136	116.3	0.680	79.4	-1.0	7.10	10.124	10.364	8.543	11.5	3.0	12.5	3.9	3.17	-0.11	7.2	4.3	8.2
137	116.2	0.684	79.4	-1.0	7.10	10.201	10.346	8.519	11.5	3.0	12.5	3.9	3.16	-0.11	7.2	4.3	8.2
138	116.3	0.688	79.3	-1.0	7.11	10.271	10.364	8.528	11.5	3.0	12.5	4.0	3.15	-0.12	7.2	4.3	8.2
139	115.9	0.693	79.3	-1.0	7.12	10.348	10.310	8.471	11.4	3.0	12.5	4.0	3.12	-0.12	7.2	4.2	8.2
140	115.9	0.697	79.3	-1.0	7.12	10.417	10.310	8.464	11.4	3.0	12.5	4.0	3.12	-0.12	7.2	4.2	8.2
141	116.2	0.702	79.3	-1.0	7.13	10.494	10.346	8.488	11.5	3.0	12.5	4.0	3.13	-0.12	7.2	4.2	8.2

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	116.1	0.706	79.3	-1.0	7.13	10.571	10.328	8.464	11.4	3.0	12.5	4.0	3.12	-0.12	7.2	4.2	8.2
143	116.1	0.710	79.3	-1.0	7.14	10.640	10.328	8.457	11.4	3.0	12.5	4.0	3.12	-0.12	7.2	4.2	8.2
144	116.9	0.714	79.3	-1.0	7.15	10.710	10.456	8.564	11.5	3.0	12.6	4.0	3.14	-0.12	7.2	4.3	8.3
145	115.5	0.719	79.3	-1.1	7.15	10.787	10.237	8.361	11.3	3.0	12.4	4.0	3.08	-0.13	7.1	4.2	8.2
146	115.8	0.723	79.3	-1.1	7.16	10.856	10.291	8.402	11.4	3.0	12.4	4.0	3.09	-0.13	7.2	4.2	8.2
147	116.4	0.728	79.2	-1.1	7.16	10.933	10.383	8.476	11.4	3.0	12.5	4.1	3.09	-0.13	7.2	4.2	8.3
148	115.6	0.732	79.2	-1.1	7.17	11.002	10.255	8.355	11.3	3.0	12.4	4.1	3.06	-0.13	7.1	4.2	8.2
149	117.0	0.737	79.2	-1.1	7.17	11.079	10.474	8.542	11.5	3.0	12.6	4.1	3.11	-0.13	7.2	4.3	8.3
150	117.6	0.741	79.2	-1.1	7.18	11.148	10.565	8.615	11.6	3.0	12.7	4.1	3.13	-0.13	7.3	4.3	8.4
151	117.2	0.745	79.2	-1.1	7.19	11.225	10.510	8.559	11.5	3.0	12.6	4.1	3.11	-0.13	7.2	4.3	8.3
152	116.8	0.750	79.2	-1.1	7.19	11.302	10.437	8.486	11.5	3.0	12.5	4.1	3.09	-0.13	7.2	4.2	8.3
153	117.2	0.754	79.2	-1.1	7.20	11.379	10.510	8.542	11.5	3.0	12.6	4.1	3.09	-0.13	7.2	4.3	8.4
154	117.6	0.759	79.2	-1.1	7.20	11.449	10.565	8.584	11.6	3.0	12.7	4.1	3.10	-0.13	7.3	4.3	8.4
155	117.5	0.763	79.2	-1.1	7.21	11.526	10.547	8.559	11.5	3.0	12.6	4.1	3.10	-0.13	7.2	4.3	8.4
156	117.7	0.768	79.2	-1.1	7.22	11.603	10.583	8.583	11.6	3.0	12.7	4.1	3.10	-0.13	7.3	4.3	8.4
157	118.4	0.772	79.2	-1.1	7.22	11.680	10.693	8.672	11.6	3.0	12.8	4.1	3.12	-0.13	7.3	4.3	8.4
158	118.5	0.777	79.2	-1.1	7.23	11.749	10.711	8.681	11.6	3.0	12.8	4.1	3.13	-0.13	7.3	4.3	8.4
159	117.7	0.781	79.2	-1.1	7.24	11.826	10.583	8.560	11.5	3.0	12.7	4.1	3.08	-0.13	7.2	4.3	8.4
160	117.7	0.786	79.2	-1.1	7.24	11.903	10.583	8.552	11.5	3.0	12.7	4.1	3.08	-0.13	7.2	4.3	8.4
161	118.3	0.790	79.2	-1.2	7.25	11.980	10.675	8.624	11.6	3.0	12.8	4.1	3.08	-0.14	7.3	4.3	8.5
162	117.7	0.795	79.2	-1.1	7.25	12.057	10.583	8.535	11.5	3.0	12.6	4.1	3.08	-0.13	7.2	4.3	8.4
163	117.6	0.800	79.2	-1.1	7.26	12.134	10.565	8.511	11.5	3.0	12.6	4.1	3.07	-0.13	7.2	4.3	8.4
164	117.8	0.804	79.2	-1.1	7.27	12.203	10.602	8.536	11.5	3.0	12.6	4.1	3.08	-0.13	7.2	4.3	8.4
165	118.7	0.808	79.2	-1.1	7.27	12.280	10.748	8.656	11.6	3.0	12.8	4.1	3.11	-0.13	7.3	4.3	8.4
166	117.5	0.812	79.2	-1.2	7.28	12.349	10.547	8.472	11.4	3.0	12.6	4.1	3.05	-0.14	7.2	4.2	8.4
167	118.0	0.817	79.2	-1.2	7.29	12.426	10.638	8.544	11.5	3.0	12.7	4.1	3.06	-0.14	7.2	4.3	8.4
168	117.3	0.822	79.2	-1.2	7.29	12.503	10.529	8.440	11.4	3.0	12.6	4.1	3.04	-0.14	7.2	4.2	8.4
169	118.4	0.826	79.2	-1.2	7.30	12.573	10.693	8.577	11.5	3.0	12.7	4.1	3.07	-0.14	7.3	4.3	8.4
170	117.8	0.830	79.2	-1.2	7.30	12.650	10.602	8.063	11.0	3.0	12.2	4.1	2.95	-0.15	7.0	4.0	8.2
171	118.5	0.834	79.2	-1.2	7.31	12.719	10.711	8.577	11.5	3.0	12.7	4.1	3.07	-0.14	7.3	4.3	8.4
172	118.6	0.839	79.2	-1.2	7.32	12.796	10.729	8.153	11.1	3.0	12.3	4.1	2.97	-0.14	7.0	4.1	8.2
173	118.5	0.843	79.1	-1.2	7.32	12.865	10.711	8.128	11.1	3.0	12.3	4.2	2.95	-0.15	7.0	4.1	8.2
174	118.9	0.847	79.1	-1.2	7.33	12.935	10.766	8.166	11.1	3.0	12.3	4.2	2.96	-0.15	7.1	4.1	8.3
175	118.7	0.852	79.1	-1.2	7.33	13.012	10.748	8.139	11.1	3.0	12.3	4.2	2.95	-0.15	7.0	4.1	8.2
176	118.9	0.857	79.1	-1.2	7.34	13.089	10.766	8.144	11.1	3.0	12.3	4.2	2.95	-0.15	7.0	4.1	8.2
177	118.7	0.861	79.1	-1.2	7.35	13.158	10.748	8.118	11.1	3.0	12.3	4.2	2.95	-0.15	7.0	4.1	8.2
178	118.9	0.865	79.1	-1.2	7.35	13.235	10.766	8.123	11.1	3.0	12.3	4.2	2.95	-0.15	7.0	4.1	8.2
179	118.7	0.870	79.1	-1.2	7.36	13.312	10.748	8.097	11.1	3.0	12.3	4.2	2.94	-0.15	7.0	4.0	8.2
180	118.6	0.874	79.1	-1.2	7.37	13.381	10.729	8.071	11.0	3.0	12.3	4.2	2.92	-0.15	7.0	4.0	8.2
181	119.3	0.879	79.1	-1.2	7.37	13.458	10.839	8.155	11.1	3.0	12.4	4.2	2.94	-0.15	7.0	4.1	8.3
182	118.9	0.883	79.1	-1.2	7.38	13.535	10.766	8.081	11.0	3.0	12.3	4.2	2.92	-0.15	7.0	4.0	8.2

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	118.4	0.887	79.1	-1.2	7.38	13.604	10.693	8.008	11.0	3.0	12.2	4.2	2.91	-0.15	7.0	4.0	8.2
184	118.5	0.892	79.1	-1.2	7.39	13.681	10.711	8.013	11.0	3.0	12.2	4.2	2.91	-0.15	7.0	4.0	8.2
185	118.7	0.897	79.1	-1.2	7.40	13.758	10.748	8.034	11.0	3.0	12.2	4.2	2.91	-0.15	7.0	4.0	8.2
186	119.2	0.901	79.1	-1.2	7.40	13.835	10.821	8.086	11.1	3.0	12.3	4.2	2.93	-0.15	7.0	4.0	8.2
187	119.1	0.905	79.1	-1.3	7.41	13.905	10.802	8.060	11.0	3.0	12.3	4.2	2.91	-0.16	7.0	4.0	8.3
188	119.2	0.910	79.1	-1.3	7.42	13.989	10.821	8.064	11.0	3.0	12.3	4.2	2.91	-0.16	7.0	4.0	8.3
189	118.3	0.914	79.1	-1.3	7.42	14.059	10.675	7.928	10.9	3.0	12.2	4.2	2.87	-0.16	6.9	4.0	8.2
190	119.4	0.919	79.1	-1.3	7.43	14.136	10.857	8.074	11.0	3.0	12.3	4.2	2.91	-0.16	7.0	4.0	8.3
191	118.5	0.924	79.1	-1.3	7.44	14.213	10.711	7.938	10.9	3.0	12.2	4.2	2.88	-0.16	6.9	4.0	8.2
192	119.1	0.928	79.1	-1.3	7.44	14.290	10.802	8.005	11.0	3.0	12.2	4.2	2.89	-0.16	7.0	4.0	8.2
193	119.3	0.933	79.1	-1.3	7.45	14.367	10.839	8.026	11.0	3.0	12.3	4.2	2.90	-0.16	7.0	4.0	8.2
194	119.1	0.937	79.0	-1.3	7.46	14.436	10.802	7.985	11.0	3.0	12.2	4.3	2.88	-0.16	7.0	4.0	8.3
195	119.2	0.941	79.0	-1.3	7.46	14.505	10.821	7.991	11.0	3.0	12.2	4.3	2.88	-0.16	7.0	4.0	8.3
196	120.3	0.946	79.0	-1.3	7.47	14.582	10.985	8.120	11.1	3.0	12.4	4.3	2.89	-0.16	7.0	4.1	8.3
197	119.6	0.950	79.0	-1.3	7.48	14.651	10.875	8.016	11.0	3.0	12.3	4.3	2.88	-0.16	7.0	4.0	8.3
198	119.6	0.954	79.0	-1.3	7.48	14.728	10.875	8.006	11.0	3.0	12.3	4.3	2.88	-0.16	7.0	4.0	8.3
199	119.7	0.959	79.0	-1.3	7.49	14.798	10.894	8.011	11.0	3.0	12.3	4.3	2.88	-0.16	7.0	4.0	8.3
200	119.6	0.963	79.0	-1.3	7.49	14.875	10.875	7.985	11.0	3.0	12.3	4.3	2.86	-0.17	7.0	4.0	8.3
201	120.0	0.967	79.0	-1.3	7.50	14.944	10.948	8.037	11.0	3.0	12.3	4.3	2.87	-0.16	7.0	4.0	8.3
202	120.3	0.972	79.0	-1.3	7.51	15.021	10.985	8.057	11.0	3.0	12.4	4.3	2.87	-0.17	7.0	4.0	8.3
203	119.4	0.976	79.0	-1.3	7.51	15.090	10.857	7.938	10.9	3.0	12.3	4.3	2.84	-0.17	6.9	4.0	8.3
204	120.0	0.981	79.0	-1.3	7.52	15.167	10.948	8.005	11.0	3.0	12.3	4.3	2.85	-0.17	7.0	4.0	8.3
205	119.8	0.985	79.0	-1.3	7.53	15.244	10.912	7.963	10.9	3.0	12.3	4.3	2.86	-0.17	6.9	4.0	8.3
206	119.7	0.989	79.0	-1.3	7.53	15.314	10.894	7.938	10.9	3.0	12.3	4.3	2.84	-0.17	6.9	4.0	8.3
207	119.6	0.994	79.0	-1.3	7.54	15.391	10.875	7.911	10.9	3.0	12.2	4.3	2.83	-0.17	6.9	4.0	8.3
208	119.8	0.998	79.0	-1.3	7.55	15.460	10.912	7.932	10.9	3.0	12.2	4.3	2.84	-0.17	6.9	4.0	8.3
209	119.2	1.003	79.0	-1.4	7.55	15.545	10.821	7.843	10.8	3.0	12.2	4.3	2.80	-0.18	6.9	3.9	8.3
210	120.5	1.007	79.0	-1.4	7.56	15.614	11.021	8.003	11.0	3.0	12.3	4.3	2.84	-0.17	7.0	4.0	8.3
211	120.4	1.011	79.0	-1.3	7.57	15.683	11.003	7.977	10.9	3.0	12.3	4.3	2.85	-0.17	7.0	4.0	8.3
212	119.8	1.016	79.0	-1.4	7.57	15.760	10.912	7.889	10.9	3.0	12.2	4.3	2.82	-0.17	6.9	3.9	8.3
213	119.8	1.021	79.0	-1.3	7.58	15.837	10.912	7.878	10.8	3.0	12.2	4.3	2.82	-0.17	6.9	3.9	8.3
214	119.3	1.025	79.0	-1.3	7.59	15.914	10.839	7.806	10.8	3.0	12.1	4.3	2.81	-0.17	6.9	3.9	8.2
215	120.3	1.030	79.0	-1.4	7.59	15.991	10.985	7.918	10.9	3.0	12.3	4.3	2.82	-0.17	6.9	4.0	8.3
216	120.4	1.034	78.9	-1.4	7.60	16.060	11.003	7.923	10.9	3.0	12.3	4.4	2.81	-0.18	6.9	4.0	8.3
217	120.3	1.039	78.9	-1.4	7.61	16.137	10.985	7.897	10.9	3.0	12.3	4.4	2.80	-0.18	6.9	3.9	8.3
218	119.0	1.043	78.9	-1.4	7.61	16.214	10.784	7.717	10.7	3.0	12.1	4.4	2.76	-0.18	6.8	3.9	8.2
219	119.9	1.047	79.0	-1.4	7.62	16.284	10.930	7.830	10.8	3.0	12.2	4.3	2.80	-0.18	6.9	3.9	8.3
220	120.7	1.052	79.0	-1.4	7.63	16.361	11.058	7.926	10.9	3.0	12.3	4.3	2.82	-0.17	6.9	4.0	8.3
221	120.6	1.057	78.9	-1.4	7.63	16.438	11.039	7.899	10.9	3.0	12.3	4.4	2.81	-0.18	6.9	3.9	8.3
222	120.6	1.061	78.9	-1.4	7.64	16.515	11.039	7.888	10.9	3.0	12.3	4.4	2.80	-0.18	6.9	3.9	8.3
223	121.1	1.065	78.9	-1.4	7.65	16.584	11.112	7.939	10.9	3.0	12.3	4.4	2.80	-0.18	6.9	4.0	8.4

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	120.3	1.070	78.9	-1.4	7.66	16.661	10.985	7.821	10.8	3.0	12.2	4.4	2.78	-0.18	6.9	3.9	8.3
225	120.5	1.074	78.9	-1.4	7.66	16.738	11.021	7.841	10.8	3.0	12.2	4.4	2.79	-0.18	6.9	3.9	8.3
226	121.3	1.079	78.9	-1.4	7.67	16.807	11.149	7.937	10.9	3.0	12.3	4.4	2.81	-0.18	6.9	4.0	8.3
227	120.7	1.083	78.9	-1.4	7.68	16.884	11.058	7.850	10.8	3.0	12.2	4.4	2.79	-0.18	6.9	3.9	8.3
228	120.3	1.087	78.9	-1.4	7.68	16.954	10.985	7.780	10.7	3.0	12.2	4.4	2.78	-0.18	6.9	3.9	8.3
229	120.7	1.092	78.9	-1.4	7.69	17.031	11.058	7.829	10.8	3.0	12.2	4.4	2.78	-0.18	6.9	3.9	8.3
230	120.7	1.096	78.9	-1.4	7.70	17.100	11.058	7.819	10.8	3.0	12.2	4.4	2.77	-0.18	6.9	3.9	8.3
231	121.0	1.100	78.9	-1.4	7.70	17.169	11.094	7.839	10.8	3.0	12.2	4.4	2.78	-0.18	6.9	3.9	8.3
232	120.5	1.105	78.9	-1.4	7.71	17.246	11.021	7.768	10.7	3.0	12.2	4.4	2.76	-0.19	6.9	3.9	8.3
233	121.0	1.109	78.9	-1.4	7.72	17.315	11.094	7.818	10.8	3.0	12.2	4.4	2.77	-0.18	6.9	3.9	8.3
234	120.6	1.114	78.9	-1.4	7.72	17.392	11.039	7.762	10.7	3.0	12.2	4.4	2.76	-0.19	6.8	3.9	8.3
235	119.8	1.118	78.9	-1.4	7.73	17.462	10.912	7.646	10.6	3.0	12.1	4.4	2.74	-0.19	6.8	3.8	8.2
236	120.0	1.122	78.9	-1.5	7.74	17.539	10.948	7.665	10.6	3.0	12.1	4.4	2.73	-0.19	6.8	3.8	8.3
237	120.3	1.127	78.9	-1.5	7.74	17.616	10.985	7.684	10.7	3.0	12.1	4.4	2.73	-0.19	6.8	3.8	8.3
238	121.3	1.131	78.9	-1.5	7.75	17.685	11.149	7.810	10.8	3.0	12.2	4.4	2.76	-0.19	6.9	3.9	8.3
239	121.1	1.136	78.9	-1.5	7.76	17.762	11.112	7.769	10.7	3.0	12.2	4.4	2.75	-0.19	6.9	3.9	8.3
240	120.7	1.140	78.9	-1.5	7.76	17.831	11.058	7.713	10.7	3.0	12.1	4.4	2.74	-0.19	6.8	3.9	8.3
241	121.5	1.144	78.9	-1.5	7.77	17.908	11.185	7.807	10.8	3.0	12.2	4.4	2.76	-0.19	6.9	3.9	8.3
242	121.4	1.149	78.9	-1.5	7.78	17.985	11.167	7.781	10.7	3.0	12.2	4.4	2.75	-0.19	6.9	3.9	8.3
243	121.1	1.154	78.8	-1.5	7.79	18.062	11.112	7.725	10.7	3.0	12.2	4.5	2.73	-0.19	6.8	3.9	8.3
244	121.0	1.158	78.8	-1.5	7.79	18.139	11.094	7.699	10.7	3.0	12.2	4.5	2.72	-0.19	6.8	3.8	8.3
245	121.3	1.162	78.8	-1.5	7.80	18.208	11.149	7.734	10.7	3.0	12.2	4.5	2.73	-0.19	6.8	3.9	8.3
246	121.2	1.167	78.8	-1.5	7.81	18.285	11.131	7.708	10.7	3.0	12.2	4.5	2.73	-0.19	6.8	3.9	8.3
247	121.8	1.171	78.8	-1.5	7.81	18.362	11.222	7.771	10.7	3.0	12.2	4.5	2.74	-0.19	6.9	3.9	8.3
248	121.5	1.176	78.8	-1.5	7.82	18.439	11.185	7.730	10.7	3.0	12.2	4.5	2.73	-0.19	6.8	3.9	8.3
249	121.3	1.181	78.8	-1.5	7.83	18.516	11.149	7.689	10.7	3.0	12.2	4.5	2.72	-0.19	6.8	3.8	8.3
250	121.5	1.185	78.8	-1.5	7.84	18.593	11.185	7.708	10.7	3.0	12.2	4.5	2.73	-0.19	6.8	3.9	8.3
251	121.3	1.190	78.8	-1.5	7.84	18.670	11.149	7.667	10.6	3.0	12.2	4.5	2.71	-0.20	6.8	3.8	8.3
252	122.8	1.194	78.8	-1.5	7.85	18.740	11.386	7.849	10.8	3.0	12.3	4.5	2.75	-0.19	6.9	3.9	8.4
253	121.7	1.198	78.8	-1.5	7.86	18.809	11.204	7.691	10.7	3.0	12.2	4.5	2.71	-0.20	6.8	3.8	8.3
254	121.4	1.203	78.8	-1.5	7.87	18.886	11.167	7.650	10.6	3.0	12.1	4.5	2.70	-0.20	6.8	3.8	8.3
255	121.1	1.207	78.8	-1.5	7.87	18.955	11.112	7.596	10.6	3.0	12.1	4.5	2.69	-0.20	6.8	3.8	8.3
256	121.9	1.211	78.8	-1.5	7.88	19.025	11.240	7.689	10.7	3.0	12.2	4.5	2.71	-0.20	6.8	3.8	8.3
257	121.8	1.216	78.8	-1.5	7.89	19.102	11.222	7.663	10.6	3.0	12.2	4.5	2.71	-0.20	6.8	3.8	8.3
258	121.9	1.220	78.8	-1.6	7.89	19.171	11.240	7.668	10.6	3.0	12.2	4.5	2.70	-0.20	6.8	3.8	8.4
259	122.5	1.224	78.8	-1.6	7.90	19.248	11.331	7.730	10.7	3.0	12.3	4.5	2.71	-0.20	6.8	3.9	8.4
260	122.1	1.229	78.8	-1.6	7.91	19.317	11.277	7.676	10.6	3.0	12.2	4.5	2.70	-0.20	6.8	3.8	8.4
261	122.1	1.233	78.8	-1.6	7.91	19.394	11.277	7.665	10.6	3.0	12.2	4.5	2.69	-0.20	6.8	3.8	8.4
262	121.2	1.237	78.8	-1.6	7.92	19.463	11.131	7.537	10.5	3.0	12.1	4.5	2.67	-0.21	6.7	3.8	8.3
263	123.1	1.242	78.8	-1.6	7.93	19.540	11.423	7.761	10.7	3.0	12.3	4.5	2.72	-0.20	6.8	3.9	8.4
264	122.5	1.246	78.8	-1.6	7.94	19.617	11.331	7.676	10.6	3.0	12.2	4.5	2.70	-0.20	6.8	3.8	8.4

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
265	122.4	1.251	78.7	-1.6	7.94	19.687	11.313	7.651	10.6	3.0	12.2	4.6	2.68	-0.21	6.8	3.8	8.4
266	122.5	1.255	78.7	-1.6	7.95	19.764	11.331	7.654	10.6	3.0	12.2	4.6	2.68	-0.21	6.8	3.8	8.4
267	121.7	1.260	78.7	-1.6	7.96	19.841	11.204	7.541	10.5	3.0	12.1	4.6	2.66	-0.21	6.7	3.8	8.3
268	122.4	1.264	78.7	-1.6	7.97	19.918	11.313	7.617	10.6	3.0	12.2	4.6	2.67	-0.21	6.8	3.8	8.4
269	122.8	1.269	78.8	-1.6	7.97	19.987	11.386	7.665	10.6	3.0	12.2	4.5	2.69	-0.20	6.8	3.8	8.4
270	122.6	1.270	78.8	-1.6	7.98	20.018	11.350	7.632	10.6	3.0	12.2	4.5	2.69	-0.20	6.8	3.8	8.3

Specimen B Shear Data

CU Triaxial Test

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File Location
T-5718.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5718
Sample Location: Guilford County (Sta. 404+50)
Sample Description: Red-orange colored clay
Remarks: 28° shear plane.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.7460001
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.853	2.846	
Height (in)	6.013	5.986	
Weight (grams)	985.00		1075.00
Moisture (%)	40.51		53.35
Dry Density (pcf)	69.48	70.12	
Saturation (%)	75.81	100.00	
Void Ratio	1.461	1.445	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 86.600
Effective Confining Stress (psi): 6.0
Corrected Peak Deviator Stress (psi): 10.372 at reading number: 206

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	61.3	0.080	80.6	0.0	6.36	0.000	0.000	0.000	6.0	6.0	6.0	6.0	1.00	0.00	6.0	0.0	6.0
1	89.6	0.083	81.4	0.8	6.37	0.048	4.447	4.427	10.5	6.0	9.6	5.2	1.85	0.19	8.2	2.2	7.4
2	94.8	0.087	81.7	1.1	6.37	0.115	5.261	5.211	11.2	6.0	10.1	4.9	2.07	0.22	8.6	2.6	7.5
3	98.2	0.091	81.9	1.4	6.37	0.182	5.803	5.722	11.8	6.0	10.4	4.7	2.22	0.24	8.9	2.9	7.5
4	101.4	0.095	82.0	1.5	6.38	0.259	6.310	6.193	12.2	6.0	10.8	4.6	2.36	0.24	9.1	3.1	7.7
5	103.5	0.100	82.1	1.6	6.38	0.336	6.635	6.483	12.5	6.0	11.0	4.5	2.45	0.24	9.3	3.2	7.7
6	105.5	0.104	82.2	1.6	6.39	0.412	6.942	6.754	12.8	6.0	11.1	4.4	2.54	0.24	9.4	3.4	7.8
7	106.9	0.110	82.3	1.7	6.39	0.499	7.159	6.931	13.0	6.0	11.3	4.3	2.60	0.25	9.5	3.5	7.8
8	108.0	0.115	82.3	1.7	6.40	0.585	7.340	7.071	13.1	6.0	11.4	4.3	2.65	0.25	9.6	3.5	7.8
9	109.0	0.119	82.3	1.8	6.40	0.652	7.503	7.202	13.2	6.0	11.5	4.3	2.69	0.25	9.6	3.6	7.9
10	110.4	0.123	82.4	1.8	6.41	0.729	7.720	7.382	13.4	6.0	11.6	4.2	2.74	0.24	9.7	3.7	7.9
11	111.2	0.127	82.4	1.8	6.41	0.796	7.846	7.476	13.5	6.0	11.7	4.2	2.77	0.24	9.8	3.7	8.0
12	112.1	0.131	82.4	1.8	6.42	0.863	7.991	7.589	13.6	6.0	11.8	4.2	2.79	0.24	9.8	3.8	8.0
13	113.0	0.136	82.4	1.8	6.42	0.939	8.118	7.678	13.7	6.0	11.9	4.2	2.81	0.23	9.9	3.8	8.1
14	113.3	0.140	82.4	1.8	6.43	1.007	8.172	7.700	13.7	6.0	11.9	4.2	2.82	0.23	9.9	3.9	8.1
15	113.9	0.144	82.4	1.8	6.43	1.074	8.262	7.758	13.8	6.0	12.0	4.2	2.83	0.23	9.9	3.9	8.1
16	114.8	0.148	82.4	1.8	6.44	1.141	8.407	7.870	13.9	6.0	12.1	4.2	2.86	0.23	10.0	3.9	8.2
17	115.0	0.153	82.4	1.8	6.44	1.218	8.443	7.870	13.9	6.0	12.1	4.2	2.86	0.23	10.0	3.9	8.2
18	115.4	0.157	82.3	1.8	6.44	1.285	8.497	7.892	13.9	6.0	12.2	4.3	2.85	0.22	10.0	3.9	8.2

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	115.8	0.161	82.3	1.8	6.45	1.361	8.570	7.927	14.0	6.0	12.2	4.3	2.86	0.22	10.0	4.0	8.2
20	115.8	0.165	82.3	1.8	6.45	1.428	8.570	7.895	13.9	6.0	12.2	4.3	2.85	0.22	10.0	3.9	8.2
21	116.6	0.170	82.3	1.8	6.46	1.505	8.696	7.983	14.0	6.0	12.2	4.3	2.87	0.22	10.0	4.0	8.3
22	116.6	0.174	82.3	1.8	6.46	1.582	8.696	7.947	14.0	6.0	12.2	4.3	2.86	0.22	10.0	4.0	8.2
23	117.0	0.178	82.3	1.7	6.47	1.649	8.750	7.969	14.0	6.0	12.3	4.3	2.86	0.22	10.0	4.0	8.3
24	117.2	0.182	82.3	1.7	6.47	1.716	8.786	7.972	14.0	6.0	12.3	4.3	2.86	0.22	10.0	4.0	8.3
25	117.4	0.187	82.3	1.7	6.48	1.793	8.823	7.972	14.0	6.0	12.3	4.3	2.84	0.21	10.0	4.0	8.3
26	117.8	0.191	82.3	1.7	6.48	1.860	8.877	7.993	14.0	6.0	12.3	4.3	2.85	0.21	10.0	4.0	8.3
27	118.2	0.196	82.3	1.7	6.49	1.937	8.949	8.027	14.1	6.0	12.4	4.3	2.86	0.21	10.0	4.0	8.3
28	118.4	0.200	82.2	1.7	6.49	2.013	8.967	8.014	14.0	6.0	12.4	4.4	2.84	0.21	10.0	4.0	8.4
29	118.5	0.205	82.2	1.7	6.50	2.090	8.985	8.025	14.1	6.0	12.4	4.4	2.84	0.21	10.0	4.0	8.4
30	118.7	0.209	82.2	1.7	6.50	2.167	9.022	8.053	14.1	6.0	12.4	4.4	2.85	0.21	10.1	4.0	8.4
31	118.8	0.214	82.2	1.7	6.51	2.243	9.040	8.064	14.1	6.0	12.4	4.4	2.85	0.21	10.1	4.0	8.4
32	118.9	0.219	82.2	1.6	6.51	2.320	9.058	8.075	14.1	6.0	12.5	4.4	2.84	0.20	10.1	4.0	8.4
33	119.3	0.223	82.2	1.6	6.52	2.397	9.112	8.121	14.2	6.0	12.5	4.4	2.85	0.20	10.1	4.1	8.4
34	119.5	0.228	82.2	1.6	6.52	2.473	9.148	8.149	14.2	6.0	12.5	4.4	2.86	0.20	10.1	4.1	8.5
35	119.2	0.232	82.2	1.6	6.53	2.550	9.094	8.089	14.1	6.0	12.5	4.4	2.85	0.20	10.1	4.0	8.4
36	119.4	0.237	82.2	1.6	6.53	2.627	9.130	8.117	14.1	6.0	12.5	4.4	2.85	0.20	10.1	4.1	8.4
37	119.3	0.242	82.2	1.6	6.54	2.713	9.112	8.092	14.1	6.0	12.5	4.4	2.85	0.20	10.1	4.0	8.4
38	119.4	0.247	82.2	1.6	6.54	2.790	9.130	8.102	14.1	6.0	12.5	4.4	2.85	0.20	10.1	4.1	8.4
39	119.3	0.251	82.2	1.6	6.55	2.866	9.112	8.078	14.1	6.0	12.5	4.4	2.83	0.20	10.1	4.0	8.4
40	119.3	0.256	82.2	1.6	6.56	2.943	9.112	8.071	14.1	6.0	12.5	4.4	2.83	0.20	10.1	4.0	8.4
41	119.5	0.261	82.2	1.6	6.56	3.020	9.148	8.099	14.1	6.0	12.5	4.4	2.84	0.20	10.1	4.0	8.5
42	119.5	0.265	82.2	1.6	6.57	3.097	9.148	8.092	14.1	6.0	12.5	4.4	2.83	0.20	10.1	4.0	8.5
43	119.6	0.269	82.2	1.6	6.57	3.164	9.166	8.103	14.1	6.0	12.5	4.4	2.84	0.20	10.1	4.1	8.5
44	119.6	0.274	82.2	1.6	6.58	3.240	9.166	8.096	14.1	6.0	12.5	4.4	2.84	0.20	10.1	4.0	8.5
45	120.1	0.278	82.2	1.6	6.58	3.317	9.238	8.159	14.2	6.0	12.6	4.4	2.84	0.19	10.1	4.1	8.5
46	120.0	0.283	82.2	1.6	6.59	3.394	9.220	8.134	14.2	6.0	12.6	4.4	2.83	0.20	10.1	4.1	8.5
47	120.3	0.287	82.2	1.6	6.59	3.461	9.275	8.181	14.2	6.0	12.6	4.4	2.84	0.19	10.1	4.1	8.5
48	120.4	0.292	82.2	1.6	6.60	3.537	9.293	8.191	14.2	6.0	12.6	4.4	2.84	0.19	10.1	4.1	8.5
49	120.7	0.296	82.2	1.6	6.60	3.614	9.329	8.219	14.2	6.0	12.7	4.4	2.85	0.19	10.1	4.1	8.5
50	120.8	0.301	82.1	1.6	6.61	3.700	9.347	8.228	14.3	6.0	12.7	4.5	2.84	0.19	10.1	4.1	8.6
51	120.5	0.306	82.1	1.6	6.61	3.777	9.311	8.186	14.2	6.0	12.7	4.5	2.83	0.19	10.1	4.1	8.6
52	120.5	0.312	82.1	1.6	6.62	3.873	9.311	8.177	14.2	6.0	12.6	4.5	2.83	0.19	10.1	4.1	8.6
53	120.4	0.316	82.1	1.6	6.62	3.950	9.293	8.153	14.2	6.0	12.6	4.5	2.82	0.19	10.1	4.1	8.5
54	120.4	0.320	82.1	1.5	6.63	4.017	9.293	8.146	14.2	6.0	12.6	4.5	2.81	0.19	10.1	4.1	8.6
55	120.7	0.325	82.1	1.5	6.63	4.094	9.329	8.174	14.2	6.0	12.7	4.5	2.82	0.19	10.1	4.1	8.6
56	121.1	0.329	82.1	1.5	6.64	4.161	9.401	8.237	14.3	6.0	12.7	4.5	2.83	0.19	10.1	4.1	8.6
57	121.5	0.333	82.1	1.5	6.64	4.228	9.455	8.283	14.3	6.0	12.8	4.5	2.84	0.18	10.2	4.1	8.6
58	121.5	0.337	82.1	1.5	6.65	4.295	9.455	8.276	14.3	6.0	12.8	4.5	2.84	0.19	10.2	4.1	8.6
59	121.9	0.341	82.1	1.5	6.65	4.362	9.528	8.339	14.4	6.0	12.8	4.5	2.85	0.18	10.2	4.2	8.7

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	122.3	0.345	82.1	1.5	6.66	4.439	9.582	8.384	14.4	6.0	12.9	4.5	2.85	0.18	10.2	4.2	8.7
61	122.8	0.350	82.1	1.5	6.66	4.515	9.672	8.463	14.5	6.0	13.0	4.5	2.87	0.18	10.3	4.2	8.8
62	122.8	0.354	82.1	1.5	6.67	4.582	9.672	8.456	14.5	6.0	13.0	4.5	2.87	0.18	10.3	4.2	8.8
63	123.1	0.359	82.1	1.5	6.67	4.659	9.709	8.483	14.5	6.0	13.0	4.5	2.87	0.18	10.3	4.2	8.8
64	123.5	0.363	82.1	1.5	6.68	4.726	9.781	8.546	14.6	6.0	13.1	4.5	2.89	0.18	10.3	4.3	8.8
65	124.0	0.367	82.1	1.5	6.68	4.803	9.853	8.607	14.6	6.0	13.1	4.5	2.90	0.17	10.3	4.3	8.8
66	124.0	0.371	82.0	1.5	6.69	4.870	9.853	8.600	14.6	6.0	13.2	4.6	2.89	0.17	10.3	4.3	8.9
67	124.7	0.376	82.0	1.5	6.69	4.947	9.962	8.696	14.7	6.0	13.3	4.6	2.91	0.17	10.4	4.3	8.9
68	124.5	0.380	82.0	1.4	6.70	5.014	9.925	8.655	14.7	6.0	13.2	4.6	2.89	0.17	10.4	4.3	8.9
69	125.0	0.385	82.0	1.4	6.70	5.091	10.016	8.733	14.8	6.0	13.3	4.6	2.90	0.17	10.4	4.4	9.0
70	124.9	0.389	82.0	1.4	6.71	5.167	9.998	8.708	14.7	6.0	13.3	4.6	2.90	0.17	10.4	4.4	8.9
71	125.0	0.394	82.0	1.4	6.71	5.244	10.016	8.718	14.7	6.0	13.3	4.6	2.90	0.17	10.4	4.4	8.9
72	125.5	0.398	82.0	1.4	6.72	5.311	10.088	8.779	14.8	6.0	13.4	4.6	2.91	0.16	10.4	4.4	9.0
73	125.8	0.402	82.0	1.4	6.72	5.388	10.142	8.823	14.9	6.0	13.4	4.6	2.92	0.16	10.4	4.4	9.0
74	125.8	0.407	82.0	1.4	6.73	5.464	10.142	8.815	14.8	6.0	13.4	4.6	2.91	0.16	10.4	4.4	9.0
75	125.9	0.411	82.0	1.4	6.74	5.541	10.160	8.825	14.9	6.0	13.4	4.6	2.91	0.16	10.4	4.4	9.0
76	126.3	0.416	82.0	1.4	6.74	5.618	10.215	8.868	14.9	6.0	13.5	4.6	2.92	0.16	10.5	4.4	9.1
77	126.4	0.421	82.0	1.4	6.75	5.694	10.233	8.877	14.9	6.0	13.5	4.6	2.92	0.16	10.5	4.4	9.1
78	126.3	0.425	82.0	1.4	6.75	5.771	10.215	8.852	14.9	6.0	13.5	4.6	2.92	0.16	10.5	4.4	9.0
79	126.3	0.430	82.0	1.4	6.76	5.857	10.215	8.843	14.9	6.0	13.5	4.6	2.90	0.16	10.5	4.4	9.1
80	126.3	0.435	82.0	1.4	6.76	5.934	10.215	8.836	14.9	6.0	13.5	4.6	2.90	0.16	10.4	4.4	9.1
81	126.5	0.440	81.9	1.4	6.77	6.011	10.251	8.862	14.9	6.0	13.5	4.7	2.90	0.15	10.5	4.4	9.1
82	126.4	0.444	81.9	1.4	6.77	6.088	10.233	8.837	14.9	6.0	13.5	4.7	2.89	0.15	10.4	4.4	9.1
83	126.2	0.449	81.9	1.4	6.78	6.164	10.197	8.795	14.8	6.0	13.5	4.7	2.88	0.15	10.4	4.4	9.1
84	126.3	0.453	81.9	1.4	6.78	6.231	10.215	8.805	14.8	6.0	13.5	4.7	2.88	0.15	10.4	4.4	9.1
85	126.6	0.457	81.9	1.4	6.79	6.308	10.269	8.848	14.9	6.0	13.5	4.7	2.89	0.15	10.5	4.4	9.1
86	126.8	0.462	81.9	1.3	6.80	6.385	10.287	8.857	14.9	6.0	13.6	4.7	2.88	0.15	10.5	4.4	9.1
87	127.0	0.467	81.9	1.3	6.80	6.461	10.323	8.883	14.9	6.0	13.6	4.7	2.89	0.15	10.5	4.4	9.1
88	127.3	0.471	81.9	1.3	6.81	6.529	10.377	8.927	15.0	6.0	13.7	4.7	2.89	0.15	10.5	4.5	9.2
89	127.4	0.475	81.9	1.3	6.81	6.605	10.396	8.936	15.0	6.0	13.7	4.7	2.89	0.15	10.5	4.5	9.2
90	127.3	0.480	81.9	1.3	6.82	6.682	10.377	8.911	14.9	6.0	13.6	4.7	2.88	0.15	10.5	4.5	9.2
91	127.6	0.484	81.9	1.3	6.82	6.759	10.414	8.937	15.0	6.0	13.7	4.7	2.89	0.14	10.5	4.5	9.2
92	127.7	0.489	81.9	1.3	6.83	6.835	10.432	8.946	15.0	6.0	13.7	4.7	2.89	0.14	10.5	4.5	9.2
93	127.7	0.494	81.8	1.3	6.83	6.912	10.432	8.938	15.0	6.0	13.7	4.8	2.88	0.14	10.5	4.5	9.2
94	127.8	0.498	81.8	1.3	6.84	6.989	10.450	8.946	15.0	6.0	13.7	4.8	2.88	0.14	10.5	4.5	9.2
95	127.9	0.503	81.8	1.2	6.85	7.065	10.468	8.955	15.0	6.0	13.7	4.8	2.87	0.14	10.5	4.5	9.3
96	127.8	0.508	81.8	1.2	6.85	7.152	10.450	8.929	15.0	6.0	13.7	4.8	2.86	0.14	10.5	4.5	9.3
97	127.4	0.513	81.8	1.2	6.86	7.238	10.396	8.870	14.9	6.0	13.7	4.8	2.85	0.14	10.5	4.4	9.2
98	127.7	0.518	81.8	1.2	6.86	7.315	10.432	8.896	14.9	6.0	13.7	4.8	2.86	0.14	10.5	4.4	9.2
99	128.2	0.522	81.8	1.2	6.87	7.382	10.522	8.972	15.0	6.0	13.8	4.8	2.87	0.14	10.5	4.5	9.3
100	128.7	0.526	81.8	1.2	6.87	7.449	10.594	9.032	15.1	6.0	13.8	4.8	2.88	0.14	10.5	4.5	9.3

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	128.7	0.530	81.8	1.2	6.88	7.516	10.594	9.025	15.1	6.0	13.8	4.8	2.87	0.13	10.5	4.5	9.3
102	129.3	0.534	81.8	1.2	6.88	7.583	10.685	9.102	15.1	6.0	13.9	4.8	2.89	0.13	10.6	4.6	9.4
103	129.5	0.538	81.8	1.2	6.89	7.660	10.721	9.127	15.2	6.0	14.0	4.8	2.89	0.13	10.6	4.6	9.4
104	130.0	0.542	81.7	1.2	6.89	7.727	10.793	9.186	15.2	6.0	14.0	4.9	2.89	0.13	10.6	4.6	9.4
105	130.1	0.546	81.7	1.2	6.90	7.794	10.811	9.196	15.2	6.0	14.0	4.9	2.89	0.13	10.6	4.6	9.5
106	130.3	0.551	81.7	1.2	6.91	7.871	10.847	9.221	15.3	6.0	14.1	4.9	2.90	0.13	10.6	4.6	9.5
107	130.8	0.555	81.7	1.2	6.91	7.938	10.920	9.280	15.3	6.0	14.1	4.9	2.91	0.13	10.7	4.6	9.5
108	131.0	0.560	81.7	1.1	6.92	8.014	10.956	9.305	15.3	6.0	14.2	4.9	2.91	0.12	10.7	4.7	9.5
109	131.2	0.564	81.7	1.1	6.92	8.082	10.992	9.331	15.4	6.0	14.2	4.9	2.91	0.12	10.7	4.7	9.5
110	131.6	0.568	81.7	1.1	6.93	8.158	11.046	9.372	15.4	6.0	14.3	4.9	2.92	0.12	10.7	4.7	9.6
111	132.3	0.572	81.7	1.1	6.93	8.225	11.155	9.464	15.5	6.0	14.3	4.9	2.94	0.12	10.8	4.7	9.6
112	132.3	0.577	81.7	1.1	6.94	8.302	11.155	9.456	15.5	6.0	14.4	4.9	2.93	0.12	10.8	4.7	9.6
113	132.6	0.581	81.7	1.1	6.94	8.379	11.209	9.497	15.5	6.0	14.4	4.9	2.93	0.12	10.8	4.7	9.7
114	133.0	0.586	81.7	1.1	6.95	8.455	11.263	9.538	15.6	6.0	14.4	4.9	2.94	0.12	10.8	4.8	9.7
115	133.1	0.590	81.7	1.1	6.95	8.523	11.281	9.547	15.6	6.0	14.5	4.9	2.93	0.11	10.8	4.8	9.7
116	133.1	0.595	81.7	1.1	6.96	8.599	11.281	9.538	15.6	6.0	14.5	4.9	2.93	0.11	10.8	4.8	9.7
117	132.9	0.599	81.7	1.1	6.97	8.676	11.245	9.497	15.5	6.0	14.4	4.9	2.92	0.11	10.8	4.7	9.7
118	133.7	0.604	81.7	1.1	6.97	8.753	11.372	9.603	15.6	6.0	14.5	4.9	2.94	0.11	10.8	4.8	9.7
119	133.7	0.608	81.7	1.1	6.98	8.820	11.372	9.596	15.6	6.0	14.5	4.9	2.94	0.11	10.8	4.8	9.7
120	133.4	0.612	81.7	1.1	6.98	8.896	11.336	9.554	15.6	6.0	14.5	4.9	2.93	0.11	10.8	4.8	9.7
121	133.8	0.618	81.6	1.1	6.99	8.983	11.390	9.594	15.6	6.0	14.6	5.0	2.93	0.11	10.8	4.8	9.8
122	133.7	0.622	81.6	1.1	7.00	9.059	11.372	9.569	15.6	6.0	14.5	5.0	2.93	0.11	10.8	4.8	9.8
123	133.4	0.627	81.6	1.0	7.00	9.136	11.336	9.527	15.6	6.0	14.5	5.0	2.91	0.11	10.8	4.8	9.8
124	133.2	0.631	81.6	1.0	7.01	9.213	11.299	9.486	15.5	6.0	14.5	5.0	2.90	0.11	10.8	4.7	9.7
125	133.5	0.636	81.6	1.0	7.01	9.299	11.354	9.525	15.6	6.0	14.5	5.0	2.90	0.11	10.8	4.8	9.8
126	133.8	0.640	81.6	1.0	7.02	9.366	11.390	9.550	15.6	6.0	14.6	5.0	2.91	0.11	10.8	4.8	9.8
127	133.8	0.645	81.6	1.0	7.03	9.443	11.390	9.541	15.6	6.0	14.5	5.0	2.91	0.11	10.8	4.8	9.8
128	133.7	0.650	81.6	1.0	7.03	9.520	11.372	9.516	15.5	6.0	14.5	5.0	2.89	0.11	10.8	4.8	9.8
129	133.7	0.654	81.6	1.0	7.04	9.596	11.372	9.508	15.5	6.0	14.5	5.0	2.89	0.11	10.8	4.8	9.8
130	134.0	0.658	81.5	1.0	7.04	9.663	11.426	9.549	15.6	6.0	14.6	5.1	2.89	0.10	10.8	4.8	9.8
131	133.8	0.663	81.5	1.0	7.05	9.740	11.390	9.508	15.5	6.0	14.6	5.1	2.88	0.10	10.8	4.8	9.8
132	134.1	0.667	81.5	1.0	7.05	9.817	11.444	9.548	15.6	6.0	14.6	5.1	2.89	0.10	10.8	4.8	9.8
133	134.1	0.672	81.5	1.0	7.06	9.893	11.444	9.539	15.6	6.0	14.6	5.1	2.89	0.10	10.8	4.8	9.8
134	134.2	0.676	81.5	1.0	7.07	9.961	11.462	9.548	15.6	6.0	14.6	5.1	2.89	0.10	10.8	4.8	9.8
135	134.3	0.681	81.5	0.9	7.07	10.047	11.480	9.554	15.6	6.0	14.6	5.1	2.88	0.10	10.8	4.8	9.9
136	134.1	0.685	81.5	0.9	7.08	10.114	11.444	9.514	15.5	6.0	14.6	5.1	2.87	0.10	10.8	4.8	9.8
137	134.5	0.690	81.5	0.9	7.08	10.191	11.498	9.554	15.6	6.0	14.7	5.1	2.87	0.10	10.8	4.8	9.9
138	134.7	0.694	81.5	0.9	7.09	10.267	11.535	9.577	15.6	6.0	14.7	5.1	2.88	0.10	10.8	4.8	9.9
139	134.6	0.699	81.5	0.9	7.10	10.344	11.516	9.552	15.6	6.0	14.7	5.1	2.87	0.10	10.8	4.8	9.9
140	134.5	0.705	81.5	0.9	7.10	10.440	11.498	9.525	15.6	6.0	14.6	5.1	2.86	0.10	10.8	4.8	9.9
141	134.2	0.710	81.5	0.9	7.11	10.526	11.462	9.483	15.5	6.0	14.6	5.1	2.85	0.10	10.8	4.7	9.9

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	134.7	0.714	81.5	0.9	7.12	10.603	11.535	9.539	15.6	6.0	14.7	5.1	2.86	0.10	10.8	4.8	9.9
143	134.6	0.719	81.5	0.9	7.12	10.670	11.516	9.515	15.5	6.0	14.7	5.1	2.85	0.09	10.8	4.8	9.9
144	134.9	0.723	81.5	0.9	7.13	10.747	11.571	9.554	15.6	6.0	14.7	5.1	2.86	0.09	10.8	4.8	9.9
145	135.5	0.727	81.5	0.9	7.13	10.814	11.661	9.627	15.7	6.0	14.8	5.1	2.87	0.09	10.8	4.8	10.0
146	135.8	0.731	81.5	0.9	7.14	10.881	11.715	9.668	15.7	6.0	14.8	5.1	2.88	0.09	10.9	4.8	10.0
147	136.0	0.735	81.5	0.9	7.14	10.948	11.733	9.676	15.7	6.0	14.8	5.1	2.88	0.09	10.9	4.8	10.0
148	136.4	0.740	81.5	0.9	7.15	11.025	11.806	9.731	15.8	6.0	14.9	5.1	2.89	0.09	10.9	4.9	10.0
149	136.9	0.744	81.4	0.9	7.16	11.092	11.878	9.788	15.8	6.0	15.0	5.2	2.89	0.09	10.9	4.9	10.1
150	136.9	0.748	81.4	0.8	7.16	11.159	11.878	9.780	15.8	6.0	15.0	5.2	2.88	0.08	10.9	4.9	10.1
151	137.0	0.752	81.4	0.8	7.17	11.236	11.896	9.787	15.8	6.0	15.0	5.2	2.88	0.08	10.9	4.9	10.1
152	137.3	0.756	81.4	0.8	7.17	11.303	11.950	9.827	15.9	6.0	15.0	5.2	2.89	0.08	10.9	4.9	10.1
153	137.7	0.760	81.4	0.8	7.18	11.360	12.005	9.868	15.9	6.0	15.1	5.2	2.90	0.08	11.0	4.9	10.1
154	137.8	0.764	81.4	0.8	7.18	11.427	12.023	9.876	15.9	6.0	15.1	5.2	2.90	0.08	11.0	4.9	10.1
155	137.8	0.768	81.4	0.8	7.19	11.504	12.023	9.867	15.9	6.0	15.1	5.2	2.90	0.08	11.0	4.9	10.1
156	138.4	0.772	81.4	0.8	7.19	11.571	12.113	9.938	16.0	6.0	15.2	5.2	2.90	0.08	11.0	5.0	10.2
157	138.7	0.777	81.4	0.8	7.20	11.648	12.167	9.977	16.0	6.0	15.2	5.2	2.91	0.08	11.0	5.0	10.2
158	138.9	0.781	81.3	0.8	7.21	11.715	12.203	10.001	16.0	6.0	15.3	5.3	2.90	0.08	11.0	5.0	10.3
159	138.9	0.786	81.3	0.8	7.21	11.792	12.203	9.991	16.0	6.0	15.3	5.3	2.90	0.08	11.0	5.0	10.3
160	139.1	0.790	81.3	0.8	7.22	11.868	12.222	9.998	16.0	6.0	15.3	5.3	2.90	0.08	11.0	5.0	10.3
161	139.6	0.795	81.3	0.8	7.23	11.945	12.312	10.068	16.1	6.0	15.3	5.3	2.91	0.08	11.1	5.0	10.3
162	138.4	0.799	81.3	0.7	7.23	12.012	12.113	9.885	15.9	6.0	15.2	5.3	2.87	0.07	11.0	4.9	10.2
163	139.2	0.803	81.3	0.7	7.24	12.089	12.240	9.987	16.0	6.0	15.3	5.3	2.89	0.07	11.0	5.0	10.3
164	139.5	0.808	81.3	0.7	7.24	12.166	12.294	10.025	16.1	6.0	15.3	5.3	2.89	0.07	11.0	5.0	10.3
165	139.3	0.813	81.3	0.7	7.25	12.252	12.258	9.983	16.0	6.0	15.3	5.3	2.89	0.07	11.0	5.0	10.3
166	139.3	0.818	81.3	0.7	7.26	12.328	12.258	9.974	16.0	6.0	15.3	5.3	2.87	0.07	11.0	5.0	10.3
167	139.4	0.822	81.3	0.7	7.26	12.405	12.276	9.980	16.0	6.0	15.3	5.3	2.87	0.07	11.0	5.0	10.3
168	139.6	0.827	81.3	0.7	7.27	12.482	12.312	10.002	16.0	6.0	15.3	5.3	2.88	0.07	11.0	5.0	10.3
169	139.5	0.832	81.3	0.7	7.28	12.559	12.294	9.977	16.0	6.0	15.3	5.3	2.87	0.07	11.0	5.0	10.3
170	139.6	0.836	81.3	0.7	7.28	12.635	12.312	9.983	16.0	6.0	15.3	5.3	2.88	0.07	11.0	5.0	10.3
171	139.6	0.841	81.2	0.7	7.29	12.722	12.312	9.973	16.0	6.0	15.3	5.4	2.86	0.07	11.0	5.0	10.3
172	139.8	0.845	81.2	0.7	7.30	12.789	12.330	9.980	16.0	6.0	15.3	5.4	2.86	0.07	11.0	5.0	10.3
173	139.9	0.850	81.2	0.7	7.30	12.865	12.348	9.986	16.0	6.0	15.3	5.4	2.87	0.07	11.0	5.0	10.3
174	139.5	0.855	81.2	0.7	7.31	12.942	12.294	9.930	16.0	6.0	15.3	5.4	2.85	0.07	11.0	5.0	10.3
175	139.8	0.859	81.2	0.7	7.31	13.009	12.330	9.953	16.0	6.0	15.3	5.4	2.86	0.07	11.0	5.0	10.3
176	140.1	0.863	81.2	0.7	7.32	13.086	12.384	9.991	16.0	6.0	15.3	5.4	2.87	0.07	11.0	5.0	10.3
177	140.1	0.868	81.2	0.6	7.33	13.163	12.384	9.981	16.0	6.0	15.4	5.4	2.85	0.06	11.0	5.0	10.4
178	140.1	0.872	81.2	0.6	7.33	13.239	12.384	9.972	16.0	6.0	15.4	5.4	2.85	0.06	11.0	5.0	10.4
179	140.3	0.876	81.2	0.6	7.34	13.306	12.420	9.995	16.0	6.0	15.4	5.4	2.86	0.06	11.0	5.0	10.4
180	140.6	0.881	81.2	0.6	7.35	13.383	12.457	10.017	16.0	6.0	15.4	5.4	2.86	0.06	11.0	5.0	10.4
181	140.6	0.886	81.2	0.6	7.35	13.460	12.457	10.007	16.0	6.0	15.4	5.4	2.85	0.06	11.0	5.0	10.4
182	140.6	0.890	81.2	0.6	7.36	13.536	12.457	9.997	16.0	6.0	15.4	5.4	2.85	0.06	11.0	5.0	10.4

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	140.7	0.895	81.2	0.6	7.36	13.613	12.475	10.003	16.0	6.0	15.4	5.4	2.85	0.06	11.0	5.0	10.4
184	140.7	0.900	81.2	0.6	7.37	13.699	12.475	9.993	16.0	6.0	15.4	5.4	2.85	0.06	11.0	5.0	10.4
185	140.4	0.904	81.2	0.6	7.38	13.776	12.438	9.952	16.0	6.0	15.4	5.4	2.83	0.06	11.0	5.0	10.4
186	140.3	0.910	81.2	0.6	7.39	13.862	12.420	9.926	16.0	6.0	15.4	5.4	2.82	0.06	11.0	5.0	10.4
187	140.8	0.914	81.2	0.6	7.39	13.939	12.493	9.978	16.0	6.0	15.4	5.4	2.83	0.06	11.0	5.0	10.4
188	141.0	0.918	81.2	0.6	7.40	14.006	12.529	10.001	16.0	6.0	15.4	5.4	2.84	0.06	11.0	5.0	10.4
189	141.2	0.922	81.2	0.6	7.40	14.073	12.565	10.024	16.1	6.0	15.5	5.4	2.84	0.06	11.0	5.0	10.5
190	141.5	0.927	81.2	0.6	7.41	14.150	12.601	10.045	16.1	6.0	15.5	5.4	2.85	0.06	11.1	5.0	10.5
191	141.7	0.931	81.1	0.6	7.42	14.217	12.637	10.068	16.1	6.0	15.5	5.5	2.84	0.06	11.1	5.0	10.5
192	141.9	0.935	81.1	0.6	7.42	14.284	12.673	10.090	16.1	6.0	15.6	5.5	2.84	0.06	11.1	5.0	10.5
193	141.9	0.939	81.1	0.5	7.43	14.361	12.673	10.080	16.1	6.0	15.6	5.5	2.83	0.05	11.1	5.0	10.5
194	142.1	0.943	81.1	0.6	7.43	14.428	12.692	10.087	16.1	6.0	15.6	5.5	2.84	0.06	11.1	5.0	10.5
195	142.4	0.947	81.1	0.5	7.44	14.495	12.746	10.125	16.2	6.0	15.6	5.5	2.84	0.05	11.1	5.1	10.6
196	143.0	0.952	81.1	0.5	7.45	14.572	12.836	10.193	16.2	6.0	15.7	5.5	2.85	0.05	11.1	5.1	10.6
197	143.1	0.956	81.1	0.5	7.45	14.639	12.854	10.200	16.2	6.0	15.7	5.5	2.85	0.05	11.1	5.1	10.6
198	143.3	0.961	81.1	0.5	7.46	14.716	12.890	10.221	16.3	6.0	15.7	5.5	2.86	0.05	11.1	5.1	10.6
199	143.8	0.965	81.1	0.5	7.47	14.792	12.963	10.272	16.3	6.0	15.8	5.5	2.86	0.05	11.2	5.1	10.7
200	143.9	0.969	81.1	0.5	7.47	14.859	12.981	10.279	16.3	6.0	15.8	5.5	2.86	0.05	11.2	5.1	10.7
201	144.0	0.974	81.1	0.5	7.48	14.936	12.999	10.284	16.3	6.0	15.8	5.5	2.86	0.05	11.2	5.1	10.7
202	144.2	0.978	81.1	0.5	7.49	15.003	13.035	10.306	16.3	6.0	15.8	5.5	2.86	0.05	11.2	5.2	10.7
203	144.6	0.982	81.1	0.5	7.49	15.080	13.089	10.342	16.4	6.0	15.9	5.5	2.87	0.05	11.2	5.2	10.7
204	144.7	0.988	81.1	0.5	7.50	15.166	13.107	10.347	16.4	6.0	15.9	5.5	2.87	0.05	11.2	5.2	10.7
205	144.9	0.992	81.0	0.5	7.51	15.233	13.144	10.368	16.4	6.0	15.9	5.6	2.86	0.05	11.2	5.2	10.7
206	145.0	0.997	81.0	0.5	7.51	15.320	13.162	10.372	16.4	6.0	15.9	5.6	2.87	0.05	11.2	5.2	10.7
207	145.0	1.001	81.0	0.5	7.52	15.396	13.162	9.843	15.9	6.0	15.4	5.6	2.77	0.05	11.0	4.9	10.5
208	144.9	1.006	81.0	0.5	7.53	15.473	13.144	9.815	15.8	6.0	15.4	5.6	2.77	0.05	10.9	4.9	10.5
209	144.9	1.011	81.0	0.5	7.53	15.550	13.144	9.802	15.8	6.0	15.4	5.6	2.76	0.05	10.9	4.9	10.5
210	145.3	1.016	81.0	0.5	7.54	15.636	13.198	9.834	15.9	6.0	15.4	5.6	2.77	0.05	10.9	4.9	10.5
211	145.2	1.020	81.0	0.5	7.55	15.713	13.180	9.806	15.8	6.0	15.4	5.6	2.76	0.05	10.9	4.9	10.5
212	145.0	1.025	81.0	0.4	7.56	15.789	13.162	9.778	15.8	6.0	15.4	5.6	2.75	0.05	10.9	4.9	10.5
213	144.9	1.030	81.0	0.4	7.56	15.866	13.144	9.750	15.8	6.0	15.4	5.6	2.74	0.04	10.9	4.9	10.5
214	145.0	1.034	81.0	0.4	7.57	15.943	13.162	9.753	15.8	6.0	15.3	5.6	2.74	0.05	10.9	4.9	10.5
215	145.2	1.039	81.0	0.4	7.58	16.019	13.180	9.755	15.8	6.0	15.4	5.6	2.74	0.04	10.9	4.9	10.5
216	144.9	1.043	81.0	0.4	7.58	16.086	13.144	9.714	15.7	6.0	15.3	5.6	2.73	0.04	10.9	4.9	10.5
217	145.2	1.047	81.0	0.4	7.59	16.163	13.180	9.731	15.8	6.0	15.3	5.6	2.73	0.04	10.9	4.9	10.5
218	145.4	1.052	81.0	0.4	7.60	16.240	13.216	9.749	15.8	6.0	15.4	5.6	2.74	0.04	10.9	4.9	10.5
219	145.4	1.057	81.0	0.4	7.60	16.317	13.216	9.736	15.8	6.0	15.4	5.6	2.72	0.04	10.9	4.9	10.5
220	145.4	1.061	81.0	0.4	7.61	16.384	13.216	9.725	15.8	6.0	15.4	5.6	2.72	0.04	10.9	4.9	10.5
221	145.5	1.065	81.0	0.4	7.62	16.460	13.234	9.727	15.8	6.0	15.4	5.6	2.72	0.04	10.9	4.9	10.5
222	145.7	1.070	81.0	0.4	7.62	16.537	13.270	9.745	15.8	6.0	15.4	5.6	2.73	0.04	10.9	4.9	10.5
223	145.8	1.074	81.0	0.4	7.63	16.614	13.288	9.747	15.8	6.0	15.4	5.6	2.73	0.04	10.9	4.9	10.5

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	145.8	1.078	81.0	0.4	7.64	16.681	13.288	9.736	15.8	6.0	15.4	5.6	2.72	0.04	10.9	4.9	10.5
225	145.7	1.083	80.9	0.4	7.64	16.758	13.270	9.708	15.7	6.0	15.4	5.7	2.71	0.04	10.9	4.9	10.5
226	146.1	1.088	80.9	0.4	7.65	16.844	13.324	9.739	15.8	6.0	15.4	5.7	2.72	0.04	10.9	4.9	10.5
227	146.1	1.092	80.9	0.4	7.66	16.911	13.324	9.728	15.8	6.0	15.4	5.7	2.71	0.04	10.9	4.9	10.5
228	146.1	1.097	80.9	0.4	7.66	16.997	13.324	9.713	15.7	6.0	15.4	5.7	2.71	0.04	10.9	4.9	10.5
229	146.3	1.102	80.9	0.4	7.67	17.074	13.361	9.730	15.8	6.0	15.4	5.7	2.71	0.04	10.9	4.9	10.5
230	146.2	1.106	80.9	0.4	7.68	17.151	13.342	9.703	15.7	6.0	15.4	5.7	2.71	0.04	10.9	4.9	10.5
231	146.0	1.111	80.9	0.3	7.69	17.227	13.306	9.660	15.7	6.0	15.4	5.7	2.69	0.03	10.9	4.8	10.5
232	146.3	1.116	80.9	0.3	7.69	17.304	13.361	9.692	15.7	6.0	15.4	5.7	2.70	0.03	10.9	4.8	10.6
233	146.3	1.120	80.9	0.3	7.70	17.381	13.361	9.679	15.7	6.0	15.4	5.7	2.70	0.03	10.9	4.8	10.5
234	146.5	1.124	80.9	0.3	7.71	17.448	13.397	9.698	15.7	6.0	15.4	5.7	2.69	0.03	10.9	4.8	10.6
235	146.5	1.129	80.9	0.3	7.71	17.524	13.397	9.685	15.7	6.0	15.4	5.7	2.69	0.03	10.9	4.8	10.6
236	147.0	1.133	80.9	0.3	7.72	17.592	13.469	9.733	15.8	6.0	15.5	5.7	2.70	0.03	10.9	4.9	10.6
237	147.2	1.137	80.9	0.3	7.73	17.659	13.505	9.752	15.8	6.0	15.5	5.7	2.70	0.03	10.9	4.9	10.6
238	147.5	1.141	80.9	0.3	7.73	17.735	13.541	9.769	15.8	6.0	15.5	5.7	2.70	0.03	10.9	4.9	10.6
239	147.6	1.145	80.8	0.3	7.74	17.802	13.559	9.772	15.8	6.0	15.5	5.8	2.69	0.03	10.9	4.9	10.7
240	147.7	1.149	80.8	0.3	7.75	17.870	13.577	9.776	15.8	6.0	15.5	5.8	2.70	0.03	10.9	4.9	10.7
241	148.0	1.154	80.8	0.2	7.75	17.946	13.632	9.807	15.8	6.0	15.6	5.8	2.69	0.02	10.9	4.9	10.7
242	148.3	1.159	80.8	0.2	7.76	18.023	13.668	9.824	15.9	6.0	15.6	5.8	2.70	0.02	10.9	4.9	10.7
243	148.4	1.163	80.8	0.2	7.77	18.090	13.686	9.827	15.9	6.0	15.6	5.8	2.70	0.02	10.9	4.9	10.7
244	148.7	1.167	80.8	0.2	7.77	18.167	13.740	9.858	15.9	6.0	15.7	5.8	2.70	0.02	11.0	4.9	10.7
245	149.0	1.172	80.8	0.2	7.78	18.243	13.776	9.875	15.9	6.0	15.7	5.8	2.70	0.02	11.0	4.9	10.7
246	149.2	1.176	80.8	0.2	7.79	18.311	13.812	9.893	15.9	6.0	15.7	5.8	2.71	0.02	11.0	4.9	10.7
247	149.0	1.180	80.8	0.2	7.80	18.387	13.776	9.850	15.9	6.0	15.7	5.8	2.69	0.02	11.0	4.9	10.7
248	149.1	1.185	80.8	0.2	7.80	18.464	13.794	9.852	15.9	6.0	15.7	5.8	2.69	0.02	11.0	4.9	10.8
249	149.4	1.190	80.8	0.2	7.81	18.541	13.849	9.883	15.9	6.0	15.7	5.8	2.70	0.02	11.0	4.9	10.8
250	149.4	1.194	80.8	0.2	7.82	18.617	13.849	9.869	15.9	6.0	15.7	5.8	2.69	0.02	11.0	4.9	10.8
251	149.4	1.199	80.8	0.2	7.82	18.694	13.849	9.856	15.9	6.0	15.7	5.8	2.69	0.02	11.0	4.9	10.8
252	149.6	1.204	80.8	0.2	7.83	18.780	13.885	9.871	15.9	6.0	15.7	5.8	2.69	0.02	11.0	4.9	10.8
253	149.8	1.209	80.7	0.2	7.84	18.857	13.903	9.872	15.9	6.0	15.7	5.9	2.69	0.02	11.0	4.9	10.8
254	149.6	1.213	80.7	0.2	7.85	18.934	13.885	9.844	15.9	6.0	15.7	5.9	2.68	0.02	11.0	4.9	10.8
255	149.6	1.218	80.7	0.2	7.86	19.010	13.885	9.831	15.9	6.0	15.7	5.9	2.68	0.02	10.9	4.9	10.8
256	149.8	1.222	80.7	0.2	7.86	19.087	13.903	9.832	15.9	6.0	15.7	5.9	2.68	0.02	10.9	4.9	10.8
257	149.9	1.227	80.7	0.2	7.87	19.164	13.921	9.834	15.9	6.0	15.7	5.9	2.68	0.02	10.9	4.9	10.8
258	149.6	1.232	80.7	0.2	7.88	19.240	13.885	9.791	15.8	6.0	15.6	5.9	2.67	0.02	10.9	4.9	10.7
259	149.8	1.236	80.7	0.1	7.88	19.308	13.903	9.794	15.8	6.0	15.7	5.9	2.66	0.02	10.9	4.9	10.8
260	149.9	1.240	80.7	0.1	7.89	19.384	13.921	9.796	15.8	6.0	15.7	5.9	2.66	0.02	10.9	4.9	10.8
261	150.2	1.245	80.7	0.1	7.90	19.461	13.975	9.826	15.9	6.0	15.7	5.9	2.67	0.01	10.9	4.9	10.8
262	150.0	1.249	80.7	0.1	7.91	19.538	13.939	9.784	15.8	6.0	15.7	5.9	2.66	0.02	10.9	4.9	10.8
263	150.0	1.253	80.7	0.1	7.91	19.605	13.939	9.772	15.8	6.0	15.7	5.9	2.66	0.02	10.9	4.9	10.8
264	150.7	1.259	80.7	0.1	7.92	19.691	14.048	9.844	15.9	6.0	15.7	5.9	2.67	0.01	11.0	4.9	10.8

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
265	150.6	1.263	80.7	0.1	7.93	19.758	14.029	9.818	15.8	6.0	15.7	5.9	2.67	0.01	10.9	4.9	10.8
266	150.7	1.267	80.7	0.1	7.94	19.835	14.048	9.819	15.8	6.0	15.7	5.9	2.67	0.01	10.9	4.9	10.8
267	150.7	1.272	80.7	0.1	7.94	19.912	14.048	9.806	15.8	6.0	15.7	5.9	2.67	0.02	10.9	4.9	10.8
268	150.8	1.276	80.7	0.1	7.95	19.988	14.066	9.807	15.8	6.0	15.7	5.9	2.66	0.01	10.9	4.9	10.8
269	150.8	1.278	80.7	0.1	7.95	20.017	14.066	9.802	15.8	6.0	15.7	5.9	2.66	0.01	10.9	4.9	10.8

Specimen C Shear Data

CU Triaxial Test

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File Location
T-5718.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5718
Sample Location: Guilford County (Sta. 404+50)
Sample Description: Red-orange colored clay
Remarks: No shear plane, but sample buldged out.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.78
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.855	2.839	
Height (in)	6.010	5.979	
Weight (grams)	972.00		1068.00
Moisture (%)	40.26		54.11
Dry Density (pcf)	68.60	69.77	
Saturation (%)	73.17	100.00	
Void Ratio	1.523	1.487	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 92.800
Effective Confining Stress (psi): 12.0
Corrected Peak Deviator Stress (psi): 14.501 at reading number: 217

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	36.4	0.083	80.8	0.0	6.33	0.000	0.000	0.000	12.0	12.0	12.0	12.0	1.00	0.00	12.0	0.0	12.0
1	61.7	0.088	82.0	1.2	6.33	0.086	3.990	3.953	16.0	12.0	14.7	10.8	1.37	0.31	14.0	2.0	12.7
2	71.0	0.092	82.8	2.0	6.34	0.162	5.466	5.394	17.4	12.0	15.4	10.0	1.54	0.38	14.7	2.7	12.7
3	77.9	0.098	83.4	2.6	6.34	0.248	6.559	6.446	18.5	12.0	15.8	9.4	1.69	0.41	15.2	3.2	12.6
4	84.0	0.103	83.9	3.1	6.35	0.334	7.525	7.370	19.4	12.0	16.3	8.9	1.83	0.42	15.7	3.7	12.6
5	89.5	0.107	84.3	3.5	6.35	0.411	8.381	8.187	20.2	12.0	16.7	8.5	1.96	0.43	16.1	4.1	12.6
6	94.3	0.112	84.6	3.8	6.36	0.497	9.146	8.908	20.9	12.0	17.1	8.2	2.09	0.43	16.5	4.5	12.6
7	98.7	0.117	84.9	4.2	6.36	0.573	9.838	9.560	21.6	12.0	17.4	7.9	2.22	0.44	16.8	4.8	12.6
8	102.6	0.122	85.2	4.4	6.37	0.659	10.458	10.134	22.1	12.0	17.7	7.6	2.34	0.44	17.1	5.1	12.6
9	106.1	0.127	85.5	4.7	6.38	0.735	11.004	10.639	22.7	12.0	18.0	7.3	2.45	0.44	17.3	5.3	12.7
10	109.1	0.131	85.6	4.8	6.38	0.812	11.478	11.070	23.1	12.0	18.2	7.2	2.54	0.44	17.5	5.5	12.7
11	111.7	0.136	85.8	5.0	6.38	0.888	11.897	11.447	23.5	12.0	18.4	7.0	2.64	0.44	17.7	5.7	12.7
12	114.1	0.141	86.0	5.2	6.39	0.974	12.280	11.783	23.8	12.0	18.6	6.8	2.73	0.44	17.9	5.9	12.7
13	116.2	0.146	86.2	5.4	6.40	1.050	12.608	12.068	24.1	12.0	18.7	6.6	2.83	0.45	18.0	6.0	12.6
14	118.1	0.150	86.3	5.5	6.40	1.127	12.899	12.317	24.3	12.0	18.8	6.5	2.90	0.45	18.2	6.2	12.6
15	119.1	0.155	86.5	5.7	6.41	1.203	13.063	12.440	24.5	12.0	18.8	6.3	2.96	0.46	18.2	6.2	12.6
16	120.6	0.160	86.5	5.8	6.41	1.289	13.300	12.629	24.6	12.0	18.9	6.3	3.02	0.46	18.3	6.3	12.6
17	121.6	0.164	86.6	5.8	6.42	1.365	13.464	12.751	24.8	12.0	18.9	6.2	3.07	0.46	18.4	6.4	12.5
18	122.4	0.169	86.7	5.9	6.42	1.442	13.591	12.837	24.8	12.0	19.0	6.1	3.09	0.46	18.4	6.4	12.5

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	123.2	0.174	86.8	6.0	6.43	1.518	13.719	12.922	24.9	12.0	18.9	6.0	3.15	0.46	18.5	6.5	12.5
20	123.9	0.178	86.9	6.1	6.43	1.595	13.828	12.990	25.0	12.0	18.9	5.9	3.19	0.47	18.5	6.5	12.4
21	124.2	0.183	86.9	6.2	6.44	1.671	13.865	12.986	25.0	12.0	18.8	5.9	3.22	0.47	18.5	6.5	12.3
22	124.6	0.188	87.0	6.2	6.44	1.757	13.938	13.012	25.0	12.0	18.8	5.8	3.25	0.48	18.5	6.5	12.3
23	125.0	0.192	87.1	6.3	6.45	1.833	13.992	13.025	25.0	12.0	18.8	5.7	3.27	0.48	18.5	6.5	12.2
24	125.3	0.197	87.1	6.3	6.45	1.910	14.047	13.039	25.1	12.0	18.7	5.7	3.29	0.48	18.5	6.5	12.2
25	126.1	0.202	87.1	6.4	6.46	1.986	14.174	13.123	25.1	12.0	18.8	5.7	3.32	0.48	18.6	6.6	12.2
26	126.7	0.207	87.2	6.4	6.46	2.072	14.266	13.195	25.2	12.0	18.8	5.6	3.37	0.49	18.6	6.6	12.2
27	127.3	0.211	87.2	6.4	6.47	2.148	14.357	13.273	25.3	12.0	18.8	5.6	3.38	0.49	18.6	6.6	12.2
28	127.6	0.216	87.3	6.5	6.47	2.225	14.411	13.316	25.3	12.0	18.8	5.5	3.41	0.49	18.7	6.7	12.2
29	127.9	0.220	87.3	6.6	6.48	2.301	14.448	13.340	25.4	12.0	18.8	5.5	3.45	0.49	18.7	6.7	12.1
30	128.1	0.225	87.3	6.6	6.48	2.378	14.484	13.365	25.4	12.0	18.8	5.5	3.45	0.49	18.7	6.7	12.1
31	128.2	0.230	87.4	6.6	6.49	2.454	14.502	13.371	25.4	12.0	18.8	5.4	3.47	0.49	18.7	6.7	12.1
32	128.2	0.234	87.4	6.6	6.49	2.530	14.502	13.360	25.4	12.0	18.8	5.4	3.47	0.49	18.7	6.7	12.1
33	128.3	0.239	87.4	6.6	6.50	2.616	14.521	13.366	25.4	12.0	18.7	5.4	3.49	0.50	18.7	6.7	12.1
34	128.4	0.244	87.4	6.6	6.50	2.693	14.539	13.372	25.4	12.0	18.7	5.4	3.49	0.50	18.7	6.7	12.1
35	128.6	0.248	87.5	6.7	6.51	2.769	14.557	13.379	25.4	12.0	18.7	5.3	3.53	0.50	18.7	6.7	12.0
36	128.9	0.253	87.5	6.7	6.51	2.855	14.612	13.420	25.4	12.0	18.7	5.3	3.54	0.50	18.7	6.7	12.0
37	128.8	0.258	87.5	6.8	6.52	2.931	14.594	13.391	25.4	12.0	18.6	5.3	3.55	0.50	18.7	6.7	11.9
38	128.9	0.263	87.5	6.8	6.52	3.008	14.612	13.397	25.4	12.0	18.6	5.3	3.55	0.50	18.7	6.7	11.9
39	129.0	0.267	87.5	6.8	6.53	3.084	14.630	13.404	25.4	12.0	18.7	5.3	3.55	0.50	18.7	6.7	12.0
40	129.4	0.272	87.5	6.8	6.53	3.161	14.685	13.445	25.5	12.0	18.7	5.3	3.56	0.50	18.7	6.7	12.0
41	129.6	0.276	87.6	6.8	6.54	3.237	14.721	13.469	25.5	12.0	18.7	5.2	3.58	0.51	18.7	6.7	11.9
42	129.6	0.281	87.6	6.8	6.55	3.313	14.721	13.458	25.5	12.0	18.6	5.2	3.60	0.51	18.7	6.7	11.9
43	129.8	0.285	87.6	6.8	6.55	3.390	14.757	13.482	25.5	12.0	18.7	5.2	3.61	0.51	18.8	6.7	11.9
44	130.1	0.291	87.6	6.8	6.56	3.476	14.794	13.505	25.5	12.0	18.7	5.2	3.61	0.51	18.8	6.8	11.9
45	130.1	0.295	87.6	6.8	6.56	3.552	14.794	13.493	25.5	12.0	18.7	5.2	3.61	0.51	18.8	6.7	11.9
46	130.1	0.300	87.6	6.8	6.57	3.628	14.794	13.482	25.5	12.0	18.7	5.2	3.59	0.50	18.8	6.7	12.0
47	130.2	0.304	87.6	6.8	6.57	3.705	14.812	13.488	25.5	12.0	18.7	5.2	3.61	0.51	18.8	6.7	11.9
48	130.4	0.309	87.7	6.9	6.58	3.781	14.849	13.512	25.5	12.0	18.6	5.1	3.63	0.51	18.8	6.8	11.9
49	130.4	0.313	87.7	6.9	6.58	3.858	14.849	13.501	25.5	12.0	18.6	5.1	3.63	0.51	18.8	6.8	11.9
50	130.5	0.319	87.7	6.9	6.59	3.944	14.867	13.505	25.5	12.0	18.6	5.1	3.63	0.51	18.8	6.8	11.9
51	130.5	0.323	87.7	6.9	6.59	4.010	14.867	13.496	25.5	12.0	18.6	5.1	3.63	0.51	18.8	6.7	11.9
52	130.7	0.328	87.7	6.9	6.60	4.096	14.903	13.518	25.5	12.0	18.6	5.1	3.63	0.51	18.8	6.8	11.9
53	131.0	0.332	87.7	6.9	6.60	4.173	14.940	13.541	25.6	12.0	18.7	5.1	3.64	0.51	18.8	6.8	11.9
54	131.1	0.337	87.7	6.9	6.61	4.249	14.958	13.547	25.6	12.0	18.7	5.1	3.64	0.51	18.8	6.8	11.9
55	131.2	0.341	87.7	6.9	6.61	4.326	14.976	13.553	25.6	12.0	18.6	5.1	3.66	0.51	18.8	6.8	11.9
56	131.0	0.346	87.7	6.9	6.62	4.402	14.940	13.507	25.5	12.0	18.6	5.1	3.65	0.51	18.8	6.8	11.8
57	131.2	0.351	87.7	6.9	6.63	4.488	14.976	13.529	25.5	12.0	18.6	5.1	3.66	0.51	18.8	6.8	11.9
58	131.4	0.356	87.7	6.9	6.63	4.564	15.013	13.552	25.6	12.0	18.6	5.1	3.66	0.51	18.8	6.8	11.9
59	131.4	0.360	87.7	6.9	6.64	4.641	15.013	13.541	25.6	12.0	18.6	5.1	3.66	0.51	18.8	6.8	11.9

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	131.7	0.365	87.7	6.9	6.64	4.717	15.049	13.564	25.6	12.0	18.7	5.1	3.64	0.51	18.8	6.8	11.9
61	131.7	0.369	87.7	6.9	6.65	4.793	15.049	13.553	25.6	12.0	18.6	5.1	3.66	0.51	18.8	6.8	11.9
62	131.7	0.375	87.7	6.9	6.65	4.879	15.049	13.540	25.6	12.0	18.6	5.1	3.66	0.51	18.8	6.8	11.9
63	131.7	0.379	87.8	7.0	6.66	4.956	15.049	13.528	25.5	12.0	18.5	5.0	3.70	0.52	18.8	6.8	11.8
64	131.9	0.384	87.7	7.0	6.66	5.032	15.085	13.551	25.6	12.0	18.6	5.1	3.68	0.51	18.8	6.8	11.8
65	132.0	0.388	87.7	7.0	6.67	5.108	15.104	13.557	25.6	12.0	18.6	5.1	3.68	0.51	18.8	6.8	11.8
66	132.1	0.393	87.7	7.0	6.67	5.194	15.122	13.561	25.6	12.0	18.6	5.1	3.69	0.51	18.8	6.8	11.8
67	132.5	0.398	87.7	6.9	6.68	5.271	15.177	13.602	25.6	12.0	18.7	5.1	3.67	0.51	18.8	6.8	11.9
68	133.2	0.403	87.7	6.9	6.69	5.347	15.286	13.693	25.7	12.0	18.8	5.1	3.69	0.51	18.9	6.8	11.9
69	133.0	0.407	87.7	7.0	6.69	5.424	15.268	13.665	25.7	12.0	18.7	5.1	3.71	0.51	18.8	6.8	11.9
70	133.2	0.412	87.7	7.0	6.70	5.510	15.286	13.669	25.7	12.0	18.7	5.1	3.71	0.51	18.8	6.8	11.9
71	133.4	0.417	87.7	7.0	6.70	5.586	15.322	13.691	25.7	12.0	18.7	5.1	3.71	0.51	18.9	6.8	11.9
72	133.3	0.421	87.7	7.0	6.71	5.653	15.304	13.664	25.7	12.0	18.7	5.1	3.71	0.51	18.8	6.8	11.9
73	133.6	0.426	87.7	7.0	6.71	5.739	15.359	13.702	25.7	12.0	18.8	5.1	3.71	0.51	18.9	6.9	11.9
74	133.6	0.430	87.7	6.9	6.72	5.815	15.359	13.691	25.7	12.0	18.8	5.1	3.69	0.51	18.9	6.8	11.9
75	133.5	0.435	87.7	7.0	6.72	5.891	15.341	13.662	25.7	12.0	18.7	5.1	3.70	0.51	18.8	6.8	11.9
76	133.5	0.440	87.7	7.0	6.73	5.968	15.341	13.650	25.7	12.0	18.7	5.1	3.70	0.51	18.8	6.8	11.9
77	133.5	0.444	87.7	7.0	6.74	6.044	15.341	13.638	25.7	12.0	18.7	5.1	3.70	0.51	18.8	6.8	11.9
78	133.6	0.449	87.7	7.0	6.74	6.121	15.359	13.644	25.7	12.0	18.7	5.1	3.70	0.51	18.8	6.8	11.9
79	133.6	0.454	87.7	6.9	6.75	6.207	15.359	13.630	25.6	12.0	18.7	5.1	3.68	0.51	18.8	6.8	11.9
80	134.0	0.458	87.7	6.9	6.75	6.283	15.413	13.670	25.7	12.0	18.8	5.1	3.69	0.51	18.8	6.8	11.9
81	134.4	0.463	87.7	7.0	6.76	6.359	15.486	13.726	25.7	12.0	18.8	5.1	3.72	0.51	18.9	6.9	11.9
82	134.9	0.468	87.7	7.0	6.76	6.436	15.559	13.783	25.8	12.0	18.8	5.1	3.73	0.51	18.9	6.9	11.9
83	135.0	0.472	87.7	7.0	6.77	6.512	15.577	13.788	25.8	12.0	18.8	5.1	3.73	0.50	18.9	6.9	11.9
84	135.0	0.477	87.7	7.0	6.77	6.589	15.577	13.776	25.8	12.0	18.8	5.1	3.73	0.51	18.9	6.9	11.9
85	135.1	0.482	87.7	7.0	6.78	6.674	15.596	13.780	25.8	12.0	18.8	5.1	3.73	0.51	18.9	6.9	11.9
86	135.1	0.486	87.7	7.0	6.79	6.741	15.596	13.769	25.8	12.0	18.8	5.1	3.73	0.51	18.9	6.9	11.9
87	135.2	0.491	87.7	6.9	6.79	6.827	15.614	13.773	25.8	12.0	18.9	5.1	3.71	0.50	18.9	6.9	12.0
88	135.6	0.496	87.7	6.9	6.80	6.904	15.668	13.812	25.8	12.0	18.9	5.1	3.71	0.50	18.9	6.9	12.0
89	135.9	0.500	87.7	6.9	6.80	6.980	15.723	13.851	25.9	12.0	18.9	5.1	3.72	0.50	18.9	6.9	12.0
90	135.8	0.505	87.7	7.0	6.81	7.056	15.705	13.822	25.8	12.0	18.9	5.1	3.74	0.50	18.9	6.9	12.0
91	135.8	0.509	87.7	7.0	6.81	7.133	15.705	13.810	25.8	12.0	18.9	5.1	3.73	0.50	18.9	6.9	12.0
92	136.0	0.514	87.7	6.9	6.82	7.219	15.741	13.830	25.8	12.0	18.9	5.1	3.72	0.50	18.9	6.9	12.0
93	136.2	0.519	87.7	6.9	6.83	7.295	15.760	13.835	25.8	12.0	18.9	5.1	3.72	0.50	18.9	6.9	12.0
94	136.3	0.524	87.7	6.9	6.83	7.372	15.778	13.840	25.9	12.0	19.0	5.1	3.70	0.50	18.9	6.9	12.1
95	136.6	0.528	87.7	6.9	6.84	7.448	15.832	13.878	25.9	12.0	19.0	5.1	3.70	0.50	19.0	6.9	12.1
96	136.7	0.533	87.7	6.9	6.84	7.524	15.851	13.883	25.9	12.0	19.0	5.1	3.73	0.50	19.0	6.9	12.0
97	136.9	0.538	87.7	6.9	6.85	7.610	15.869	13.886	25.9	12.0	19.0	5.1	3.73	0.50	19.0	6.9	12.0
98	136.7	0.542	87.7	6.9	6.85	7.677	15.851	13.859	25.9	12.0	18.9	5.1	3.72	0.50	18.9	6.9	12.0
99	136.7	0.547	87.7	6.9	6.86	7.763	15.851	13.845	25.9	12.0	18.9	5.1	3.72	0.50	18.9	6.9	12.0
100	137.1	0.552	87.7	6.9	6.87	7.839	15.905	13.883	25.9	12.0	19.0	5.1	3.71	0.50	19.0	6.9	12.1

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	137.3	0.556	87.7	6.9	6.87	7.916	15.942	13.905	25.9	12.0	19.0	5.1	3.71	0.49	19.0	7.0	12.1
102	137.4	0.561	87.7	6.9	6.88	7.992	15.960	13.909	25.9	12.0	19.0	5.1	3.71	0.49	19.0	7.0	12.1
103	137.4	0.565	87.7	6.9	6.88	8.069	15.960	13.897	25.9	12.0	19.0	5.1	3.73	0.50	19.0	6.9	12.0
104	137.7	0.570	87.7	6.9	6.89	8.155	15.996	13.917	25.9	12.0	19.0	5.1	3.73	0.50	19.0	7.0	12.0
105	137.9	0.575	87.7	6.9	6.90	8.231	16.033	13.938	26.0	12.0	19.1	5.1	3.72	0.49	19.0	7.0	12.1
106	138.0	0.580	87.7	6.9	6.90	8.307	16.051	13.943	26.0	12.0	19.1	5.1	3.72	0.49	19.0	7.0	12.1
107	138.2	0.584	87.7	6.9	6.91	8.384	16.087	13.964	26.0	12.0	19.1	5.1	3.72	0.49	19.0	7.0	12.1
108	138.1	0.589	87.7	6.9	6.91	8.460	16.069	13.935	25.9	12.0	19.1	5.1	3.72	0.49	19.0	7.0	12.1
109	138.2	0.593	87.7	6.9	6.92	8.536	16.087	13.939	26.0	12.0	19.1	5.1	3.72	0.49	19.0	7.0	12.1
110	138.4	0.598	87.7	6.9	6.92	8.613	16.106	13.944	26.0	12.0	19.1	5.1	3.72	0.49	19.0	7.0	12.1
111	138.5	0.602	87.7	6.9	6.93	8.689	16.124	13.948	26.0	12.0	19.1	5.1	3.72	0.49	19.0	7.0	12.1
112	138.6	0.607	87.7	6.9	6.94	8.766	16.142	13.952	26.0	12.0	19.1	5.1	3.72	0.49	19.0	7.0	12.1
113	138.7	0.611	87.7	6.9	6.94	8.842	16.160	13.956	26.0	12.0	19.1	5.1	3.72	0.49	19.0	7.0	12.1
114	139.2	0.616	87.6	6.8	6.95	8.918	16.233	14.010	26.0	12.0	19.2	5.2	3.71	0.49	19.0	7.0	12.2
115	139.2	0.621	87.6	6.8	6.95	8.995	16.233	13.998	26.0	12.0	19.2	5.2	3.71	0.49	19.0	7.0	12.2
116	139.2	0.625	87.6	6.8	6.96	9.071	16.233	13.986	26.0	12.0	19.2	5.2	3.70	0.49	19.0	7.0	12.2
117	139.0	0.630	87.6	6.8	6.97	9.157	16.215	13.955	26.0	12.0	19.1	5.2	3.70	0.49	19.0	7.0	12.1
118	139.3	0.635	87.7	6.9	6.97	9.233	16.251	13.976	26.0	12.0	19.1	5.1	3.72	0.49	19.0	7.0	12.1
119	139.5	0.639	87.7	6.9	6.98	9.310	16.288	13.996	26.0	12.0	19.1	5.1	3.73	0.49	19.0	7.0	12.1
120	139.6	0.644	87.6	6.8	6.98	9.386	16.306	14.001	26.0	12.0	19.2	5.2	3.71	0.49	19.0	7.0	12.2
121	139.9	0.649	87.6	6.8	6.99	9.463	16.343	14.021	26.0	12.0	19.2	5.2	3.71	0.49	19.0	7.0	12.2
122	140.1	0.653	87.6	6.8	7.00	9.539	16.379	14.042	26.1	12.0	19.2	5.2	3.72	0.49	19.0	7.0	12.2
123	140.1	0.658	87.6	6.8	7.00	9.625	16.379	14.027	26.0	12.0	19.2	5.2	3.71	0.49	19.0	7.0	12.2
124	140.2	0.663	87.6	6.8	7.01	9.701	16.397	14.031	26.0	12.0	19.2	5.2	3.71	0.49	19.0	7.0	12.2
125	140.3	0.667	87.6	6.8	7.01	9.778	16.415	14.035	26.0	12.0	19.2	5.2	3.71	0.49	19.0	7.0	12.2
126	140.7	0.672	87.6	6.8	7.02	9.854	16.470	14.072	26.1	12.0	19.2	5.2	3.72	0.49	19.0	7.0	12.2
127	141.0	0.677	87.6	6.8	7.03	9.931	16.525	14.109	26.1	12.0	19.3	5.2	3.71	0.48	19.1	7.1	12.3
128	141.0	0.682	87.6	6.8	7.03	10.016	16.525	14.095	26.1	12.0	19.3	5.2	3.70	0.48	19.1	7.0	12.3
129	141.1	0.686	87.5	6.8	7.04	10.093	16.543	14.098	26.1	12.0	19.3	5.3	3.68	0.48	19.1	7.0	12.3
130	141.1	0.691	87.6	6.8	7.04	10.169	16.543	14.086	26.1	12.0	19.3	5.2	3.70	0.48	19.1	7.0	12.3
131	141.2	0.695	87.6	6.8	7.05	10.246	16.561	14.089	26.1	12.0	19.3	5.2	3.70	0.48	19.1	7.0	12.3
132	140.9	0.700	87.6	6.8	7.06	10.322	16.507	14.028	26.0	12.0	19.2	5.2	3.69	0.48	19.0	7.0	12.2
133	141.0	0.705	87.6	6.8	7.06	10.408	16.525	14.030	26.0	12.0	19.2	5.2	3.69	0.48	19.0	7.0	12.2
134	141.2	0.710	87.6	6.8	7.07	10.484	16.561	14.050	26.1	12.0	19.3	5.2	3.70	0.48	19.0	7.0	12.2
135	141.4	0.714	87.5	6.8	7.08	10.561	16.579	14.053	26.1	12.0	19.3	5.3	3.68	0.48	19.0	7.0	12.3
136	142.3	0.719	87.5	6.8	7.08	10.637	16.725	14.171	26.2	12.0	19.4	5.3	3.70	0.48	19.1	7.1	12.3
137	142.4	0.723	87.5	6.8	7.09	10.714	16.743	14.175	26.2	12.0	19.4	5.3	3.70	0.48	19.1	7.1	12.3
138	142.5	0.728	87.6	6.8	7.09	10.790	16.762	14.178	26.2	12.0	19.4	5.2	3.72	0.48	19.1	7.1	12.3
139	142.5	0.733	87.6	6.8	7.10	10.876	16.762	14.164	26.2	12.0	19.4	5.2	3.72	0.48	19.1	7.1	12.3
140	142.4	0.738	87.6	6.8	7.11	10.952	16.743	14.135	26.1	12.0	19.3	5.2	3.71	0.48	19.1	7.1	12.3
141	142.5	0.742	87.5	6.8	7.11	11.029	16.762	14.138	26.2	12.0	19.4	5.3	3.69	0.48	19.1	7.1	12.3

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	142.7	0.747	87.5	6.8	7.12	11.105	16.798	14.158	26.2	12.0	19.4	5.3	3.70	0.48	19.1	7.1	12.3
143	142.8	0.751	87.5	6.7	7.12	11.181	16.816	14.161	26.2	12.0	19.5	5.3	3.68	0.47	19.1	7.1	12.4
144	143.1	0.756	87.5	6.8	7.13	11.258	16.853	14.180	26.2	12.0	19.4	5.3	3.70	0.48	19.1	7.1	12.3
145	143.5	0.760	87.5	6.8	7.14	11.334	16.926	14.232	26.2	12.0	19.5	5.3	3.71	0.48	19.1	7.1	12.4
146	143.3	0.765	87.6	6.8	7.14	11.411	16.889	14.187	26.2	12.0	19.4	5.2	3.72	0.48	19.1	7.1	12.3
147	143.4	0.770	87.5	6.8	7.15	11.487	16.907	14.190	26.2	12.0	19.4	5.3	3.70	0.48	19.1	7.1	12.3
148	143.8	0.774	87.5	6.7	7.16	11.563	16.962	14.226	26.2	12.0	19.5	5.3	3.69	0.47	19.1	7.1	12.4
149	144.0	0.779	87.5	6.7	7.16	11.640	16.998	14.245	26.3	12.0	19.5	5.3	3.69	0.47	19.1	7.1	12.4
150	144.0	0.783	87.5	6.7	7.17	11.716	16.998	14.232	26.2	12.0	19.5	5.3	3.69	0.47	19.1	7.1	12.4
151	144.2	0.788	87.5	6.7	7.17	11.793	17.035	14.251	26.3	12.0	19.5	5.3	3.69	0.47	19.1	7.1	12.4
152	144.5	0.793	87.5	6.7	7.18	11.878	17.071	14.268	26.3	12.0	19.6	5.3	3.70	0.47	19.1	7.1	12.4
153	144.6	0.798	87.5	6.7	7.19	11.955	17.090	14.271	26.3	12.0	19.6	5.3	3.70	0.47	19.1	7.1	12.4
154	144.7	0.802	87.5	6.7	7.19	12.031	17.108	14.274	26.3	12.0	19.6	5.3	3.70	0.47	19.2	7.1	12.4
155	144.7	0.807	87.5	6.7	7.20	12.108	17.108	14.261	26.3	12.0	19.6	5.3	3.68	0.47	19.1	7.1	12.5
156	144.9	0.811	87.5	6.7	7.21	12.184	17.144	14.280	26.3	12.0	19.6	5.3	3.68	0.47	19.2	7.1	12.5
157	145.0	0.816	87.5	6.7	7.21	12.260	17.162	14.283	26.3	12.0	19.6	5.3	3.68	0.47	19.2	7.1	12.5
158	145.0	0.820	87.5	6.7	7.22	12.337	17.162	14.270	26.3	12.0	19.6	5.3	3.68	0.47	19.1	7.1	12.5
159	145.2	0.826	87.5	6.7	7.23	12.423	17.181	14.271	26.3	12.0	19.6	5.3	3.68	0.47	19.1	7.1	12.5
160	145.4	0.830	87.5	6.7	7.23	12.499	17.217	14.290	26.3	12.0	19.6	5.3	3.68	0.47	19.2	7.1	12.5
161	145.5	0.835	87.5	6.7	7.24	12.576	17.235	14.293	26.3	12.0	19.6	5.3	3.68	0.47	19.2	7.1	12.5
162	145.6	0.839	87.5	6.7	7.24	12.652	17.254	14.296	26.3	12.0	19.6	5.3	3.68	0.47	19.2	7.1	12.5
163	146.0	0.844	87.4	6.6	7.25	12.728	17.308	14.330	26.3	12.0	19.7	5.4	3.67	0.46	19.2	7.2	12.5
164	146.1	0.848	87.4	6.6	7.26	12.805	17.326	14.333	26.3	12.0	19.7	5.4	3.67	0.46	19.2	7.2	12.5
165	146.1	0.854	87.4	6.6	7.26	12.891	17.326	14.318	26.3	12.0	19.7	5.4	3.67	0.46	19.2	7.2	12.5
166	146.2	0.858	87.4	6.6	7.27	12.957	17.345	14.322	26.3	12.0	19.7	5.4	3.67	0.46	19.2	7.2	12.5
167	146.4	0.863	87.5	6.7	7.28	13.043	17.381	14.339	26.4	12.0	19.7	5.3	3.69	0.47	19.2	7.2	12.5
168	146.5	0.867	87.4	6.6	7.28	13.120	17.399	14.341	26.4	12.0	19.7	5.4	3.67	0.46	19.2	7.2	12.5
169	146.7	0.872	87.4	6.6	7.29	13.196	17.417	14.344	26.4	12.0	19.7	5.4	3.67	0.46	19.2	7.2	12.5
170	146.8	0.876	87.4	6.6	7.30	13.273	17.436	14.346	26.4	12.0	19.7	5.4	3.67	0.46	19.2	7.2	12.5
171	146.9	0.881	87.4	6.6	7.30	13.349	17.454	14.349	26.4	12.0	19.7	5.4	3.67	0.46	19.2	7.2	12.5
172	147.0	0.886	87.4	6.6	7.31	13.425	17.472	14.351	26.4	12.0	19.8	5.4	3.65	0.46	19.2	7.2	12.6
173	147.0	0.890	87.4	6.6	7.32	13.502	17.472	14.338	26.4	12.0	19.7	5.4	3.67	0.46	19.2	7.2	12.5
174	147.1	0.895	87.4	6.6	7.32	13.578	17.490	14.340	26.4	12.0	19.7	5.4	3.67	0.46	19.2	7.2	12.5
175	147.2	0.899	87.4	6.6	7.33	13.654	17.509	14.343	26.4	12.0	19.8	5.4	3.65	0.46	19.2	7.2	12.6
176	147.3	0.904	87.4	6.6	7.34	13.731	17.527	14.345	26.4	12.0	19.8	5.4	3.65	0.46	19.2	7.2	12.6
177	147.7	0.908	87.4	6.6	7.34	13.807	17.581	14.379	26.4	12.0	19.8	5.4	3.66	0.46	19.2	7.2	12.6
178	147.8	0.914	87.4	6.6	7.35	13.893	17.600	14.379	26.4	12.0	19.8	5.4	3.66	0.46	19.2	7.2	12.6
179	148.0	0.918	87.3	6.6	7.36	13.970	17.636	14.397	26.4	12.0	19.8	5.5	3.64	0.46	19.2	7.2	12.6
180	148.3	0.923	87.4	6.6	7.36	14.046	17.673	14.415	26.4	12.0	19.8	5.4	3.66	0.46	19.2	7.2	12.6
181	147.9	0.927	87.4	6.6	7.37	14.122	17.618	14.355	26.4	12.0	19.7	5.4	3.67	0.46	19.2	7.2	12.5
182	148.2	0.932	87.4	6.6	7.38	14.199	17.654	14.373	26.4	12.0	19.8	5.4	3.66	0.46	19.2	7.2	12.6

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	148.3	0.936	87.3	6.6	7.38	14.275	17.673	14.375	26.4	12.0	19.8	5.5	3.64	0.46	19.2	7.2	12.6
184	148.3	0.941	87.3	6.5	7.39	14.352	17.673	14.361	26.4	12.0	19.9	5.5	3.62	0.45	19.2	7.2	12.7
185	148.4	0.945	87.3	6.5	7.40	14.428	17.691	14.363	26.4	12.0	19.9	5.5	3.62	0.45	19.2	7.2	12.7
186	148.4	0.951	87.3	6.5	7.40	14.514	17.691	14.348	26.4	12.0	19.8	5.5	3.61	0.45	19.2	7.2	12.7
187	148.5	0.955	87.3	6.5	7.41	14.590	17.709	14.350	26.4	12.0	19.8	5.5	3.61	0.45	19.2	7.2	12.7
188	148.7	0.960	87.3	6.6	7.42	14.667	17.745	14.368	26.4	12.0	19.8	5.5	3.64	0.46	19.2	7.2	12.6
189	148.8	0.964	87.3	6.5	7.42	14.743	17.764	14.370	26.4	12.0	19.9	5.5	3.62	0.45	19.2	7.2	12.7
190	149.2	0.969	87.3	6.5	7.43	14.819	17.818	14.403	26.4	12.0	19.9	5.5	3.62	0.45	19.2	7.2	12.7
191	149.8	0.973	87.3	6.5	7.44	14.896	17.909	14.467	26.5	12.0	20.0	5.5	3.62	0.45	19.2	7.2	12.8
192	149.9	0.978	87.3	6.5	7.44	14.972	17.928	14.468	26.5	12.0	20.0	5.5	3.63	0.45	19.2	7.2	12.7
193	150.0	0.983	87.3	6.5	7.45	15.049	17.946	14.470	26.5	12.0	20.0	5.5	3.64	0.45	19.2	7.2	12.7
194	150.1	0.988	87.3	6.5	7.46	15.135	17.964	14.470	26.5	12.0	20.0	5.5	3.64	0.45	19.2	7.2	12.7
195	150.1	0.992	87.3	6.5	7.46	15.211	17.964	14.457	26.5	12.0	19.9	5.5	3.63	0.45	19.2	7.2	12.7
196	150.1	0.997	87.3	6.5	7.47	15.287	17.964	14.443	26.5	12.0	20.0	5.5	3.61	0.45	19.2	7.2	12.8
197	150.1	1.001	87.3	6.5	7.48	15.364	17.964	14.429	26.4	12.0	20.0	5.5	3.61	0.45	19.2	7.2	12.7
198	150.2	1.006	87.2	6.4	7.48	15.440	17.982	14.431	26.4	12.0	20.0	5.6	3.57	0.44	19.2	7.2	12.8
199	150.5	1.011	87.2	6.4	7.49	15.516	18.019	14.448	26.5	12.0	20.1	5.6	3.57	0.44	19.2	7.2	12.8
200	150.7	1.015	87.2	6.4	7.50	15.593	18.055	14.465	26.5	12.0	20.1	5.6	3.58	0.44	19.2	7.2	12.8
201	150.8	1.020	87.2	6.4	7.50	15.669	18.073	14.466	26.5	12.0	20.1	5.6	3.58	0.44	19.2	7.2	12.8
202	150.9	1.025	87.2	6.4	7.51	15.755	18.092	14.466	26.5	12.0	20.1	5.6	3.58	0.44	19.2	7.2	12.8
203	151.3	1.029	87.2	6.4	7.52	15.832	18.146	14.498	26.5	12.0	20.1	5.6	3.60	0.44	19.3	7.2	12.8
204	151.3	1.034	87.2	6.4	7.53	15.908	18.146	14.485	26.5	12.0	20.1	5.6	3.58	0.44	19.3	7.2	12.9
205	151.2	1.038	87.2	6.4	7.53	15.975	18.128	14.457	26.5	12.0	20.1	5.6	3.58	0.44	19.2	7.2	12.8
206	151.0	1.043	87.1	6.4	7.54	16.061	18.110	14.426	26.4	12.0	20.1	5.7	3.55	0.44	19.2	7.2	12.9
207	151.3	1.048	87.1	6.4	7.55	16.137	18.146	14.443	26.5	12.0	20.1	5.7	3.56	0.44	19.2	7.2	12.9
208	151.3	1.052	87.1	6.4	7.55	16.214	18.146	14.429	26.4	12.0	20.1	5.7	3.55	0.44	19.2	7.2	12.9
209	151.3	1.057	87.1	6.4	7.56	16.290	18.146	14.415	26.4	12.0	20.1	5.7	3.55	0.44	19.2	7.2	12.9
210	151.6	1.061	87.1	6.4	7.57	16.366	18.201	14.447	26.5	12.0	20.1	5.7	3.56	0.44	19.2	7.2	12.9
211	151.6	1.066	87.1	6.3	7.57	16.443	18.201	14.433	26.4	12.0	20.1	5.7	3.54	0.44	19.2	7.2	12.9
212	152.0	1.071	87.1	6.3	7.58	16.519	18.256	14.465	26.5	12.0	20.2	5.7	3.54	0.44	19.2	7.2	12.9
213	152.3	1.075	87.1	6.3	7.59	16.595	18.310	14.497	26.5	12.0	20.2	5.7	3.55	0.44	19.3	7.2	12.9
214	152.1	1.080	87.1	6.4	7.59	16.672	18.274	14.452	26.5	12.0	20.1	5.7	3.56	0.44	19.2	7.2	12.9
215	152.3	1.084	87.1	6.3	7.60	16.748	18.310	14.469	26.5	12.0	20.2	5.7	3.54	0.44	19.2	7.2	12.9
216	152.5	1.089	87.1	6.3	7.61	16.825	18.347	14.485	26.5	12.0	20.2	5.7	3.55	0.44	19.3	7.2	12.9
217	152.8	1.093	87.1	6.3	7.62	16.901	18.383	14.501	26.5	12.0	20.2	5.7	3.55	0.44	19.3	7.3	12.9
218	152.5	1.098	87.1	6.3	7.62	16.977	18.347	14.457	26.5	12.0	20.2	5.7	3.52	0.43	19.2	7.2	13.0
219	152.8	1.102	87.1	6.3	7.63	17.054	18.383	14.473	26.5	12.0	20.2	5.7	3.53	0.43	19.2	7.2	13.0
220	152.8	1.108	87.1	6.3	7.64	17.140	18.383	14.457	26.5	12.0	20.2	5.7	3.52	0.43	19.2	7.2	13.0
221	152.9	1.112	87.1	6.3	7.64	17.216	18.401	14.458	26.5	12.0	20.2	5.7	3.52	0.43	19.2	7.2	13.0
222	153.2	1.117	87.1	6.3	7.65	17.293	18.456	14.489	26.5	12.0	20.2	5.7	3.53	0.43	19.3	7.2	13.0
223	153.1	1.121	87.1	6.3	7.66	17.369	18.438	14.460	26.5	12.0	20.2	5.7	3.54	0.44	19.2	7.2	12.9

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	153.3	1.126	87.1	6.3	7.67	17.445	18.474	14.476	26.5	12.0	20.2	5.7	3.53	0.43	19.3	7.2	13.0
225	153.3	1.131	87.0	6.2	7.67	17.531	18.474	14.460	26.5	12.0	20.2	5.8	3.51	0.43	19.2	7.2	13.0
226	153.5	1.135	87.0	6.2	7.68	17.598	18.492	14.463	26.5	12.0	20.2	5.8	3.51	0.43	19.2	7.2	13.0
227	153.6	1.140	87.0	6.2	7.69	17.684	18.511	14.462	26.5	12.0	20.2	5.8	3.51	0.43	19.2	7.2	13.0
228	153.6	1.145	87.0	6.2	7.69	17.760	18.511	14.448	26.5	12.0	20.2	5.8	3.50	0.43	19.2	7.2	13.0
229	153.8	1.149	87.1	6.3	7.70	17.837	18.547	14.464	26.5	12.0	20.2	5.7	3.52	0.43	19.2	7.2	13.0
230	153.8	1.154	87.1	6.3	7.71	17.913	18.547	14.450	26.5	12.0	20.2	5.7	3.52	0.43	19.2	7.2	13.0
231	154.3	1.158	87.0	6.2	7.72	17.990	18.620	14.495	26.5	12.0	20.3	5.8	3.51	0.43	19.3	7.2	13.0
232	154.1	1.163	87.0	6.2	7.72	18.066	18.602	14.466	26.5	12.0	20.3	5.8	3.49	0.43	19.2	7.2	13.0
233	154.4	1.168	87.0	6.2	7.73	18.142	18.638	14.482	26.5	12.0	20.3	5.8	3.49	0.43	19.3	7.2	13.1
234	154.5	1.172	87.0	6.2	7.74	18.219	18.656	14.482	26.5	12.0	20.3	5.8	3.49	0.43	19.3	7.2	13.1
235	154.6	1.177	87.0	6.2	7.75	18.295	18.675	14.483	26.5	12.0	20.3	5.8	3.49	0.43	19.3	7.2	13.1
236	154.4	1.181	87.0	6.2	7.75	18.371	18.638	14.439	26.5	12.0	20.2	5.8	3.50	0.43	19.2	7.2	13.0
237	154.7	1.186	87.0	6.2	7.76	18.448	18.693	14.469	26.5	12.0	20.3	5.8	3.49	0.43	19.2	7.2	13.0
238	154.6	1.191	87.0	6.2	7.77	18.534	18.675	14.438	26.5	12.0	20.2	5.8	3.48	0.43	19.2	7.2	13.0
239	154.6	1.195	86.9	6.2	7.77	18.601	18.675	14.426	26.4	12.0	20.3	5.9	3.47	0.43	19.2	7.2	13.1
240	154.8	1.200	86.9	6.2	7.78	18.677	18.711	14.441	26.5	12.0	20.3	5.9	3.47	0.43	19.2	7.2	13.1
241	154.7	1.204	86.9	6.2	7.79	18.753	18.693	14.412	26.4	12.0	20.3	5.9	3.46	0.43	19.2	7.2	13.1
242	154.6	1.209	87.0	6.2	7.80	18.839	18.675	14.381	26.4	12.0	20.2	5.8	3.47	0.43	19.2	7.2	13.0
243	154.5	1.213	87.0	6.2	7.80	18.906	18.656	14.354	26.4	12.0	20.2	5.8	3.47	0.43	19.2	7.2	13.0
244	155.2	1.218	86.9	6.2	7.81	18.983	18.766	14.428	26.4	12.0	20.3	5.9	3.47	0.43	19.2	7.2	13.1
245	155.4	1.223	86.9	6.2	7.82	19.069	18.802	14.442	26.5	12.0	20.3	5.9	3.47	0.43	19.2	7.2	13.1
246	155.6	1.228	86.9	6.1	7.83	19.145	18.839	14.457	26.5	12.0	20.3	5.9	3.45	0.42	19.2	7.2	13.1
247	155.5	1.232	86.9	6.1	7.83	19.221	18.820	14.428	26.4	12.0	20.3	5.9	3.45	0.42	19.2	7.2	13.1
248	155.5	1.237	86.9	6.1	7.84	19.298	18.820	14.413	26.4	12.0	20.3	5.9	3.45	0.42	19.2	7.2	13.1
249	155.5	1.241	86.9	6.2	7.85	19.374	18.820	14.399	26.4	12.0	20.3	5.9	3.46	0.43	19.2	7.2	13.1
250	155.6	1.246	86.9	6.1	7.86	19.460	18.839	14.398	26.4	12.0	20.3	5.9	3.44	0.43	19.2	7.2	13.1
251	155.9	1.250	86.9	6.1	7.86	19.527	18.875	14.414	26.4	12.0	20.3	5.9	3.45	0.42	19.2	7.2	13.1
252	156.0	1.255	86.9	6.1	7.87	19.613	18.893	14.413	26.4	12.0	20.3	5.9	3.45	0.42	19.2	7.2	13.1
253	156.2	1.260	86.9	6.1	7.88	19.689	18.930	14.428	26.4	12.0	20.3	5.9	3.45	0.42	19.2	7.2	13.1
254	156.2	1.265	86.9	6.1	7.89	19.766	18.930	14.413	26.4	12.0	20.3	5.9	3.43	0.42	19.2	7.2	13.1
255	156.2	1.269	86.9	6.1	7.89	19.842	18.930	14.399	26.4	12.0	20.3	5.9	3.43	0.42	19.2	7.2	13.1
256	156.5	1.274	86.9	6.1	7.90	19.928	18.966	14.412	26.4	12.0	20.3	5.9	3.43	0.42	19.2	7.2	13.1
257	156.5	1.279	86.9	6.1	7.91	20.004	18.966	14.397	26.4	12.0	20.3	5.9	3.43	0.42	19.2	7.2	13.1

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)

Sample Failures

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. U-2412B

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project 39406.1.1 **County** GUILFORD **Owner**

Date: Sampled 3/22/13 **Received** 5/29/13 **Reported** 5/31/13

Sampled from **By** N ROBERSON

Submitted by SURIYATI B S 1995 **Standard Specifications**

785915 TO 785917
6/25/13

TEST RESULTS

Proj. Sample No.		ST-9#1	ST-9#2	ST-9#3			
Lab. Sample No.		785915	785916	785917			
Retained #4 Sieve	%	-	-	-			
Passing #10 Sieve	%	100	100	100			
Passing #40 Sieve	%	100	100	100			
Passing #200 Sieve	%	86	88	85			

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	2.4	2.0	2.6			
Fine Sand Ret - #270	%	16.4	16.0	20.4			
Silt 0.05 - 0.005 mm	%	42.8	43.6	42.6			
Clay < 0.005 mm	%	38.4	38.4	34.4			
T-#		T-5675	T-5675	T-5675			
Specific Gravity		2.727	2.731	2.732			

L. L.		62	64	58			
P. I.		20	18	16			
AASHTO Classification		A-7-5(23)	A-7-5(23)	A-7-5(19)			
Station		404+50	404+50	404+50			
Offset		3 RT	3 RT	3 RT			
Alignment		L	L	L			
Location							
Depth (Ft)		9.50	9.50	9.50			
	to	11.50	11.50	11.50			
Final Moisture	%	57.23	58.32	56.41			

cc: N ROBERSON
SURIYATI B S
GREG BODENHEIMER

Soils Engineer

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	44.72	42.57	**Plastic Limits:**	0	
Dry Density (pcf):	62.71	81.20	**Plasticity Index (%):**	0	
Saturation (%):	71.15	105.93			
Void Ratio:	1.7149	1.0967	**Specific Gravity:**	2.725	Measured

Soil Description: Reddish-orange tan colored clay slightly dry.

Project Number: 39406.1.1 **Depth:** 9.5 - 11.5 ft

Sample Number: ST-9 **Boring Number:**

Project: U-2412B

Client: T-5675

Location: Guilford County (Sta. 404 + 50)

Remarks:
Solid Height 0.37009 inches ; Est. Blows/Ft= NA.

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	44.72	42.57	**Plastic Limits:**	0	
Dry Density (pcf):	62.71	81.20	**Plasticity Index (%):**	0	
Saturation (%):	71.15	105.93			
Void Ratio:	1.7149	1.0967	**Specific Gravity:**	2.725	Measured

Soil Description: Reddish-orange tan colored clay slightly dry.

Project Number: 39406.1.1 **Depth:** 9.5 - 11.5 ft

Sample Number: ST-9 **Boring Number:**

Project: U-2412B

Client: T-5675

Location: Guilford County (Sta. 404 + 50)

Remarks:
Solid Height 0.37009 inches ; Est. Blows/Ft= NA.

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	44.72	42.57	**Plastic Limits:**	0	
Dry Density (pcf):	62.71	81.20	**Plasticity Index (%):**	0	
Saturation (%):	71.15	105.93			
Void Ratio:	1.7149	1.0967	**Specific Gravity:**	2.725	Measured

Soil Description: Reddish-orange tan colored clay slightly dry.

Project Number: 39406.1.1 **Depth:** 9.5 - 11.5 ft

Sample Number: ST-9 **Boring Number:**

Project: U-2412B

Client: T-5675

Location: Guilford County (Sta. 404 + 50)

Remarks:
Solid Height 0.37009 inches ; Est. Blows/Ft= NA.

Consolidation Test Results
Summary

Project: U-2412B
Location: Guilford County (Sta. 404 + 50)
Job Number: T-5675

Project Number: 39406.1.1

Sample Number: ST-9
Boring Number:
Depth: 9.5 - 11.5 ft
Sample Type: Undisturbed

Soil Description:
Reddish-orange tan colored clay slightly dry.
Remarks:
Solid Height 0.37009 inches ; Est. Blows/Ft= NA.

Test Number:
Test Date:

Index	Load Sequence (tsf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	1.0013	0.6325	0.00	1.7149	0.000		0.000	
1	0.063	0.0010	1.0003	0.6315	0.10	1.7122	1.000		774.264	
2	0.125	0.0022	0.9991	0.6303	0.22	1.7089	4.339		178.015	
3	0.250	0.0046	0.9967	0.6279	0.46	1.7024	10.330		74.414	
4	0.500	0.0090	0.9923	0.6235	0.90	1.6905	2.250		338.635	
5	1.000	0.0161	0.9852	0.6164	1.61	1.6712	1.563		480.528	
6	2.000	0.0424	0.9589	0.5901	4.23	1.5999	0.797		892.276	
7	4.000	0.1153	0.8860	0.5172	11.52	1.4023	0.160		3796.436	
8	2.000	0.1118	0.8895	0.5207	11.17	1.4118	0.000		0.000	
9	1.000	0.1068	0.8945	0.5257	10.67	1.4253	0.000		0.000	
10	0.500	0.0999	0.9014	0.5326	9.98	1.4440	0.000		0.000	
11	1.000	0.1017	0.8996	0.5308	10.16	1.4391	0.000		0.000	
12	2.000	0.1073	0.8940	0.5252	10.72	1.4240	0.000		0.000	
13	4.000	0.1221	0.8792	0.5104	12.19	1.3838	0.000		0.000	
14	8.000	0.2055	0.7958	0.4270	20.52	1.1577	0.238		2059.015	
15	16.000	0.2926	0.7087	0.3399	29.22	0.9215	0.490		793.154	
16	4.000	0.2820	0.7193	0.3505	28.16	0.9503	0.000		0.000	
17	0.016	0.2280	0.7733	0.4045	22.77	1.0967	0.000		0.000	

Tested By:

Checked By:

Consolidation Test
Consolidation Specimen Information

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County (Sta. 404 + 50)
Job Number: T-5675 **Test Date:**

Sample Number: ST-9 **Soil Description:**
Boring Number: Reddish-orange tan colored clay slightly dry.
Depth: 9.5 - 11.5 ft **Remarks:**
Sample Type: Undisturbed Solid Height 0.37009 inches ; Est. Blows/Ft= NA.

Test Number:
Liquid Limit: 0.0000 **Initial Void Ratio:** 1.7149 **Initial Height (in):** 1.0013
Plastic Limit: 0.0000 **Plasticity Index (%):** 0.0000 **Initial Diameter (in):** 2.4999
Specific Gravity: 2.7250 Measured **Weight of Ring (g):** 109.4100

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	117.08	115.34
Dry Soil + Container (g)	80.90	80.90
Weight of Container (g)	0.00	0.00
Moisture Content (%)	44.72	42.57
Void Ratio	1.7149	1.0967
Saturation (%)	71.15	105.93
Dry Density (pcf)	62.71	81.20

Tested By: **Checked By:**

ncdot

Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date

Tested By:

Effective Stress at Maximum Deviator Stress Criterion

Deviator Stress Vs. Axial Strain

Initial	Specimen A	B	C	D
Water Content (%)	38.1	38.1	35.8	
Dry Density (pcf)	67.5	66.3	66.4	
Saturation (%)	68.21	66.30	62.36	
Void Ratio	1.516	1.564	1.561	
Diameter (in)	2.851	2.851	2.864	
Height (in)	6.059	6.110	6.046	
Specific Gravity	2.73	2.73	2.73	
Liquid Limit	0	0	0	
Plastic Limit	0	0	0	
After Consolidation	**A**	**B**	**C**	**D**
B-Value	0.00	0.00	0.00	
Water Content (%)	38.2	38.6	37.1	
Dry Density (pcf)	67.79	67.03	67.76	
Saturation (%)	100.00	100.00	100.00	
Void Ratio	1.511	1.544	1.517	
Effective Stress (psi)	3.0	6.0	12.0	
Back Press. (psi)	80.5	80.6	80.7	
Rate of Strain	0.009	0.009	0.009	

Maximium Deviator Stress Criterion	
C (psi)	0.0
C' (psi)	0.0
Ø (deg)	0.0
Ø' (deg)	0.0

After Shear	A	B	C	D
σ'1 at Failure (psi)	11.26	18.07	20.47	
σ'3 at Failure (psi)	3.57	4.70	5.25	

Project:	U-2412B	N/A	N/A	N/A	N/A
Location:	Guilford County (Sta. 404+50)				
Project Number:	39406.1.1				
Boring Number:					
Sample Number:	ST-9				
Depth:	9.5 - 11.5 ft				
Sample Type:	Undisturbed	Failure Photographs			
Description:					
Test Type	Consolidated Undrained				
Remarks	Research				

ncdot

Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date:

Tested By:

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)

Change in Pore Pressure vs. Axial Strain

Deviator Stress vs. Axial Strain

Principal Stress Ratio vs. Axial Strain

Change in Pore Pressure vs. Axial Strain
Change in Pore Pressure (psi)
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
0.000
5.000
10.000
15.000
20.000
25.000
Axial Strain (%)
Specimen A
Specimen B
Specimen C
Specimen D

Mohr Stress Circles at Maximum Deviator Stress Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at Maximum Principal Stress Ratio Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at 15% Axial Strain Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)
15.0
10.0
5.0
0.0
Q (psi)
0.0
5.0
10.0
15.0
P' (psi)
Specimen A
Specimen B
Specimen C
Specimen D
Tangent Line

Stress Paths (Total)
(C' = 0.0 Ø' = 0.0)
25.0
20.0
15.0
10.0
5.0
0.0
Q (psi)
0.0
5.0
10.0
15.0
20.0
25.0
P (psi)

Specimen A Shear Data

CU Triaxial Test

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File Location
T-5675.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5675
Sample Location: Guilford County (Sta. 404+50)
Sample Description: Soft reddish-orange colored clay
Remarks: 30° shear plane.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.727
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.851	2.848	
Height (in)	6.058	6.043	
Weight (grams)	946.00		1077.00
Moisture (%)	38.10		57.23
Dry Density (pcf)	67.47	67.79	
Saturation (%)	68.21	100.00	
Void Ratio	1.516	1.511	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 83.500
Effective Confining Stress (psi): 3.0
Corrected Peak Deviator Stress (psi): 7.694 at reading number: 146

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	46.2	0.121	80.5	0.0	6.37	0.000	0.000	0.000	3.0	3.0	3.0	3.0	1.00	0.00	3.0	0.0	3.0
1	54.6	0.125	80.9	0.4	6.37	0.053	1.316	1.294	4.2	3.0	3.9	2.6	1.50	0.29	3.6	0.6	3.2
2	59.1	0.129	81.1	0.6	6.38	0.129	2.028	1.976	4.9	3.0	4.3	2.4	1.83	0.30	3.9	1.0	3.4
3	63.2	0.134	81.2	0.7	6.38	0.205	2.668	2.583	5.5	3.0	4.9	2.3	2.13	0.26	4.2	1.3	3.6
4	66.5	0.138	81.3	0.7	6.39	0.282	3.180	3.062	6.0	3.0	5.3	2.2	2.38	0.24	4.5	1.5	3.8
5	70.1	0.143	81.3	0.8	6.39	0.358	3.746	3.594	6.5	3.0	5.8	2.2	2.64	0.21	4.8	1.8	4.0
6	72.4	0.148	81.3	0.8	6.40	0.434	4.111	3.926	6.9	3.0	6.1	2.2	2.81	0.20	4.9	2.0	4.1
7	74.7	0.152	81.4	0.8	6.40	0.502	4.477	4.260	7.2	3.0	6.4	2.1	3.00	0.19	5.1	2.1	4.3
8	78.5	0.156	81.4	0.8	6.41	0.578	5.062	4.809	7.8	3.0	6.9	2.1	3.28	0.18	5.4	2.4	4.5
9	81.0	0.160	81.4	0.8	6.41	0.647	5.464	5.179	8.1	3.0	7.3	2.1	3.46	0.16	5.5	2.6	4.7
10	82.4	0.165	81.4	0.8	6.42	0.723	5.683	5.363	8.3	3.0	7.5	2.1	3.51	0.15	5.6	2.7	4.8
11	84.4	0.169	81.3	0.8	6.42	0.791	5.994	5.641	8.6	3.0	7.8	2.2	3.57	0.13	5.8	2.8	5.0
12	86.3	0.174	81.2	0.7	6.43	0.867	6.286	5.896	8.9	3.0	8.1	2.3	3.62	0.12	5.9	2.9	5.2
13	87.7	0.178	81.2	0.7	6.43	0.936	6.505	6.083	9.0	3.0	8.4	2.3	3.67	0.11	6.0	3.0	5.3
14	89.1	0.183	81.2	0.6	6.44	1.012	6.724	6.266	9.2	3.0	8.6	2.3	3.71	0.10	6.1	3.1	5.4
15	89.9	0.187	81.1	0.6	6.44	1.080	6.852	6.361	9.3	3.0	8.7	2.4	3.69	0.09	6.1	3.2	5.5
16	91.3	0.191	81.1	0.6	6.44	1.149	7.072	6.547	9.5	3.0	8.9	2.4	3.73	0.08	6.2	3.3	5.7
17	91.4	0.195	81.0	0.5	6.45	1.225	7.090	6.530	9.5	3.0	9.0	2.5	3.66	0.08	6.2	3.3	5.7
18	91.7	0.200	81.0	0.4	6.45	1.301	7.145	6.549	9.5	3.0	9.1	2.5	3.60	0.07	6.2	3.3	5.8

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	92.3	0.204	80.9	0.4	6.46	1.370	7.236	6.608	9.6	3.0	9.2	2.6	3.57	0.06	6.3	3.3	5.9
20	91.9	0.209	80.9	0.4	6.46	1.446	7.163	6.501	9.5	3.0	9.1	2.6	3.53	0.06	6.2	3.3	5.8
21	92.5	0.213	80.9	0.4	6.47	1.522	7.273	6.574	9.5	3.0	9.2	2.6	3.53	0.05	6.2	3.3	5.9
22	91.9	0.217	80.9	0.4	6.47	1.590	7.163	6.435	9.4	3.0	9.0	2.6	3.47	0.05	6.2	3.2	5.8
23	93.2	0.222	80.9	0.4	6.48	1.666	7.382	6.616	9.6	3.0	9.2	2.6	3.54	0.05	6.3	3.3	5.9
24	93.2	0.226	80.8	0.3	6.48	1.735	7.382	6.584	9.5	3.0	9.2	2.7	3.47	0.04	6.2	3.3	6.0
25	92.8	0.231	80.8	0.3	6.49	1.811	7.309	6.477	9.4	3.0	9.2	2.7	3.41	0.04	6.2	3.2	5.9
26	92.9	0.235	80.8	0.2	6.49	1.879	7.328	6.464	9.4	3.0	9.2	2.7	3.38	0.04	6.2	3.2	6.0
27	93.9	0.240	80.8	0.2	6.50	1.955	7.492	6.590	9.5	3.0	9.3	2.7	3.42	0.04	6.2	3.3	6.0
28	93.7	0.244	80.8	0.2	6.50	2.032	7.455	6.532	9.5	3.0	9.3	2.7	3.40	0.04	6.2	3.3	6.0
29	94.2	0.248	80.8	0.2	6.51	2.100	7.529	6.598	9.6	3.0	9.3	2.7	3.43	0.04	6.3	3.3	6.0
30	93.7	0.253	80.8	0.2	6.51	2.176	7.455	6.521	9.5	3.0	9.2	2.7	3.40	0.04	6.2	3.3	6.0
31	93.8	0.257	80.7	0.2	6.52	2.252	7.474	6.533	9.5	3.0	9.3	2.8	3.35	0.03	6.2	3.3	6.0
32	93.9	0.262	80.7	0.1	6.52	2.321	7.492	6.546	9.5	3.0	9.4	2.8	3.33	0.02	6.2	3.3	6.1
33	93.7	0.266	80.7	0.1	6.53	2.397	7.455	6.504	9.5	3.0	9.3	2.8	3.32	0.02	6.2	3.3	6.1
34	94.5	0.271	80.7	0.1	6.53	2.473	7.583	6.623	9.6	3.0	9.4	2.8	3.36	0.02	6.3	3.3	6.1
35	93.9	0.275	80.7	0.1	6.54	2.549	7.492	6.529	9.5	3.0	9.3	2.8	3.33	0.02	6.2	3.3	6.1
36	94.1	0.280	80.7	0.1	6.54	2.625	7.510	6.541	9.5	3.0	9.3	2.8	3.33	0.02	6.2	3.3	6.1
37	94.4	0.285	80.7	0.1	6.55	2.701	7.565	6.588	9.5	3.0	9.4	2.8	3.35	0.02	6.2	3.3	6.1
38	94.3	0.289	80.6	0.1	6.55	2.777	7.547	6.565	9.5	3.0	9.4	2.9	3.29	0.01	6.2	3.3	6.1
39	94.6	0.294	80.6	0.1	6.56	2.853	7.602	6.612	9.6	3.0	9.5	2.9	3.28	0.01	6.3	3.3	6.2
40	94.1	0.298	80.6	0.1	6.56	2.929	7.510	6.518	9.5	3.0	9.4	2.9	3.25	0.01	6.2	3.3	6.2
41	94.6	0.303	80.6	0.1	6.57	3.006	7.602	6.601	9.6	3.0	9.5	2.9	3.30	0.01	6.3	3.3	6.2
42	93.6	0.307	80.6	0.1	6.57	3.074	7.437	6.436	9.4	3.0	9.3	2.9	3.25	0.01	6.2	3.2	6.1
43	94.4	0.312	80.6	0.1	6.58	3.150	7.565	6.554	9.5	3.0	9.4	2.9	3.29	0.01	6.2	3.3	6.1
44	94.6	0.316	80.6	0.1	6.58	3.226	7.602	6.584	9.5	3.0	9.5	2.9	3.27	0.01	6.2	3.3	6.2
45	95.3	0.321	80.6	0.0	6.59	3.302	7.711	6.684	9.6	3.0	9.6	2.9	3.29	0.00	6.3	3.3	6.3
46	95.3	0.325	80.5	0.0	6.59	3.371	7.711	6.679	9.6	3.0	9.6	3.0	3.26	0.00	6.3	3.3	6.3
47	95.7	0.329	80.5	0.0	6.60	3.439	7.766	6.727	9.7	3.0	9.7	3.0	3.28	0.00	6.3	3.4	6.3
48	96.0	0.334	80.5	0.0	6.60	3.515	7.821	6.774	9.7	3.0	9.7	3.0	3.29	0.00	6.3	3.4	6.3
49	96.0	0.338	80.6	0.0	6.61	3.591	7.821	6.768	9.7	3.0	9.7	2.9	3.31	0.00	6.3	3.4	6.3
50	96.2	0.343	80.6	0.0	6.61	3.668	7.839	6.779	9.7	3.0	9.7	2.9	3.32	0.00	6.3	3.4	6.3
51	96.3	0.348	80.5	0.0	6.62	3.744	7.857	6.791	9.7	3.0	9.7	3.0	3.30	0.00	6.3	3.4	6.3
52	96.9	0.352	80.5	0.0	6.62	3.820	7.949	6.873	9.8	3.0	9.9	3.0	3.30	0.00	6.4	3.4	6.4
53	96.3	0.356	80.5	-0.1	6.63	3.888	7.857	6.779	9.7	3.0	9.8	3.0	3.25	-0.01	6.3	3.4	6.4
54	96.5	0.361	80.5	-0.1	6.63	3.964	7.894	6.809	9.8	3.0	9.8	3.0	3.26	-0.01	6.4	3.4	6.4
55	96.5	0.365	80.5	-0.1	6.64	4.033	7.894	6.803	9.8	3.0	9.8	3.0	3.26	-0.01	6.4	3.4	6.4
56	95.7	0.369	80.5	0.0	6.64	4.101	7.766	6.675	9.6	3.0	9.7	3.0	3.24	0.00	6.3	3.3	6.3
57	96.3	0.374	80.5	0.0	6.65	4.177	7.857	6.757	9.7	3.0	9.7	3.0	3.27	0.00	6.3	3.4	6.4
58	97.2	0.378	80.5	-0.1	6.65	4.246	8.004	6.891	9.8	3.0	9.9	3.0	3.29	-0.01	6.4	3.4	6.5
59	97.7	0.383	80.5	-0.1	6.66	4.322	8.077	6.955	9.9	3.0	10.0	3.0	3.29	-0.01	6.4	3.5	6.5

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	97.7	0.387	80.4	-0.1	6.66	4.390	8.077	6.950	9.9	3.0	10.0	3.1	3.26	-0.02	6.4	3.5	6.5
61	97.2	0.391	80.4	-0.1	6.67	4.459	8.004	6.874	9.8	3.0	9.9	3.1	3.24	-0.02	6.4	3.4	6.5
62	98.3	0.395	80.4	-0.1	6.67	4.535	8.168	7.025	10.0	3.0	10.1	3.1	3.29	-0.02	6.5	3.5	6.6
63	98.0	0.400	80.4	-0.1	6.68	4.603	8.132	6.985	9.9	3.0	10.1	3.1	3.27	-0.02	6.4	3.5	6.6
64	97.9	0.404	80.5	-0.1	6.68	4.679	8.113	6.961	9.9	3.0	10.0	3.0	3.29	-0.01	6.4	3.5	6.5
65	97.6	0.408	80.4	-0.1	6.69	4.748	8.058	6.903	9.9	3.0	10.0	3.1	3.23	-0.02	6.4	3.5	6.6
66	98.4	0.413	80.4	-0.2	6.69	4.824	8.186	7.019	10.0	3.0	10.1	3.1	3.24	-0.03	6.5	3.5	6.6
67	98.7	0.417	80.4	-0.2	6.70	4.893	8.241	7.066	10.0	3.0	10.2	3.1	3.26	-0.02	6.5	3.5	6.7
68	97.8	0.422	80.4	-0.2	6.70	4.969	8.095	6.920	9.9	3.0	10.0	3.1	3.21	-0.03	6.4	3.5	6.6
69	99.0	0.426	80.4	-0.1	6.71	5.037	8.278	7.088	10.0	3.0	10.2	3.1	3.29	-0.02	6.5	3.5	6.6
70	98.7	0.430	80.4	-0.1	6.71	5.113	8.241	7.047	10.0	3.0	10.1	3.1	3.27	-0.02	6.5	3.5	6.6
71	99.0	0.435	80.4	-0.1	6.72	5.189	8.278	7.076	10.0	3.0	10.2	3.1	3.28	-0.02	6.5	3.5	6.6
72	98.1	0.439	80.3	-0.2	6.72	5.258	8.150	6.949	9.9	3.0	10.1	3.2	3.20	-0.03	6.4	3.5	6.6
73	99.5	0.444	80.3	-0.2	6.73	5.334	8.369	7.150	10.1	3.0	10.3	3.2	3.24	-0.03	6.5	3.6	6.8
74	99.3	0.448	80.3	-0.2	6.74	5.410	8.333	7.109	10.1	3.0	10.3	3.2	3.23	-0.03	6.5	3.6	6.7
75	98.4	0.453	80.3	-0.2	6.74	5.486	8.186	6.965	9.9	3.0	10.2	3.2	3.18	-0.03	6.4	3.5	6.7
76	99.0	0.457	80.3	-0.2	6.75	5.555	8.278	7.045	10.0	3.0	10.2	3.2	3.23	-0.03	6.5	3.5	6.7
77	99.2	0.462	80.3	-0.2	6.75	5.631	8.314	7.074	10.0	3.0	10.2	3.2	3.24	-0.03	6.5	3.5	6.7
78	99.4	0.466	80.3	-0.2	6.76	5.699	8.351	7.102	10.1	3.0	10.3	3.2	3.25	-0.03	6.5	3.6	6.7
79	98.8	0.470	80.3	-0.2	6.76	5.775	8.259	7.010	10.0	3.0	10.2	3.2	3.20	-0.03	6.5	3.5	6.7
80	99.3	0.475	80.3	-0.3	6.77	5.859	8.333	7.072	10.0	3.0	10.3	3.2	3.20	-0.04	6.5	3.5	6.8
81	99.9	0.480	80.3	-0.3	6.77	5.935	8.424	7.151	10.1	3.0	10.4	3.2	3.20	-0.04	6.5	3.6	6.8
82	99.5	0.485	80.3	-0.3	6.78	6.011	8.369	7.094	10.0	3.0	10.3	3.2	3.20	-0.04	6.5	3.5	6.8
83	99.3	0.490	80.3	-0.3	6.78	6.095	8.333	7.052	10.0	3.0	10.3	3.2	3.19	-0.04	6.5	3.5	6.7
84	99.5	0.494	80.3	-0.3	6.79	6.171	8.369	7.080	10.0	3.0	10.3	3.2	3.20	-0.04	6.5	3.5	6.8
85	100.0	0.499	80.3	-0.3	6.80	6.247	8.442	7.142	10.1	3.0	10.4	3.2	3.22	-0.04	6.5	3.6	6.8
86	100.2	0.503	80.3	-0.3	6.80	6.323	8.479	7.170	10.1	3.0	10.4	3.2	3.21	-0.04	6.5	3.6	6.8
87	99.3	0.508	80.2	-0.3	6.81	6.392	8.333	7.028	10.0	3.0	10.3	3.3	3.15	-0.05	6.5	3.5	6.8
88	100.0	0.512	80.2	-0.3	6.81	6.468	8.442	7.124	10.1	3.0	10.4	3.3	3.17	-0.05	6.5	3.6	6.8
89	100.1	0.516	80.2	-0.3	6.82	6.536	8.460	7.135	10.1	3.0	10.4	3.3	3.18	-0.05	6.5	3.6	6.8
90	100.3	0.521	80.3	-0.3	6.82	6.612	8.497	7.163	10.1	3.0	10.4	3.2	3.21	-0.04	6.5	3.6	6.8
91	100.9	0.526	80.3	-0.3	6.83	6.688	8.588	7.241	10.2	3.0	10.5	3.2	3.23	-0.04	6.6	3.6	6.9
92	100.6	0.530	80.2	-0.3	6.83	6.764	8.534	7.184	10.1	3.0	10.5	3.3	3.19	-0.04	6.5	3.6	6.9
93	101.2	0.534	80.2	-0.4	6.84	6.833	8.625	7.263	10.2	3.0	10.6	3.3	3.20	-0.05	6.6	3.6	6.9
94	102.0	0.539	80.2	-0.4	6.84	6.909	8.753	7.376	10.3	3.0	10.7	3.3	3.21	-0.05	6.6	3.7	7.0
95	100.1	0.543	80.2	-0.4	6.85	6.985	8.460	7.097	10.1	3.0	10.4	3.3	3.15	-0.05	6.5	3.5	6.9
96	101.4	0.548	80.2	-0.4	6.85	7.061	8.661	7.277	10.2	3.0	10.6	3.3	3.20	-0.05	6.6	3.6	6.9
97	101.5	0.553	80.2	-0.4	6.86	7.137	8.680	7.288	10.2	3.0	10.6	3.3	3.21	-0.05	6.6	3.6	6.9
98	100.8	0.557	80.2	-0.3	6.87	7.206	8.570	7.180	10.1	3.0	10.5	3.3	3.19	-0.04	6.5	3.6	6.9
99	101.5	0.561	80.2	-0.4	6.87	7.282	8.680	7.275	10.2	3.0	10.6	3.3	3.20	-0.05	6.6	3.6	6.9
100	101.9	0.566	80.1	-0.4	6.88	7.350	8.735	7.320	10.3	3.0	10.7	3.4	3.18	-0.06	6.6	3.7	7.0

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	101.5	0.570	80.1	-0.4	6.88	7.426	8.680	7.263	10.2	3.0	10.6	3.4	3.16	-0.06	6.6	3.6	7.0
102	102.9	0.574	80.1	-0.4	6.89	7.495	8.899	7.460	10.4	3.0	10.8	3.4	3.22	-0.05	6.7	3.7	7.1
103	102.0	0.579	80.2	-0.4	6.89	7.571	8.753	7.318	10.3	3.0	10.7	3.3	3.19	-0.05	6.6	3.7	7.0
104	102.1	0.583	80.2	-0.4	6.90	7.639	8.771	7.329	10.3	3.0	10.7	3.3	3.20	-0.05	6.6	3.7	7.0
105	102.4	0.588	80.2	-0.4	6.90	7.715	8.826	7.372	10.3	3.0	10.7	3.3	3.21	-0.05	6.6	3.7	7.0
106	102.8	0.592	80.1	-0.4	6.91	7.784	8.881	7.417	10.4	3.0	10.8	3.4	3.21	-0.06	6.7	3.7	7.1
107	102.1	0.596	80.1	-0.4	6.91	7.860	8.771	7.309	10.3	3.0	10.7	3.4	3.15	-0.06	6.6	3.7	7.0
108	102.6	0.600	80.1	-0.5	6.92	7.929	8.844	7.371	10.3	3.0	10.8	3.4	3.15	-0.06	6.6	3.7	7.1
109	102.4	0.605	80.1	-0.4	6.92	7.997	8.826	7.348	10.3	3.0	10.7	3.4	3.17	-0.06	6.6	3.7	7.1
110	102.4	0.609	80.1	-0.4	6.93	8.065	8.826	7.342	10.3	3.0	10.7	3.4	3.16	-0.06	6.6	3.7	7.1
111	102.8	0.613	80.1	-0.4	6.94	8.142	8.881	7.385	10.3	3.0	10.7	3.4	3.20	-0.06	6.6	3.7	7.1
112	102.3	0.617	80.1	-0.4	6.94	8.210	8.808	7.312	10.3	3.0	10.7	3.4	3.17	-0.06	6.6	3.7	7.0
113	103.0	0.622	80.1	-0.5	6.95	8.286	8.917	7.406	10.4	3.0	10.8	3.4	3.16	-0.06	6.7	3.7	7.1
114	103.1	0.626	80.0	-0.5	6.95	8.355	8.936	7.417	10.4	3.0	10.9	3.5	3.15	-0.07	6.7	3.7	7.2
115	102.3	0.630	80.0	-0.5	6.96	8.423	8.808	7.293	10.2	3.0	10.7	3.5	3.11	-0.07	6.6	3.6	7.1
116	103.5	0.635	80.1	-0.5	6.96	8.499	8.990	7.454	10.4	3.0	10.9	3.4	3.18	-0.06	6.7	3.7	7.1
117	103.8	0.639	80.1	-0.5	6.97	8.568	9.045	7.498	10.5	3.0	10.9	3.4	3.19	-0.06	6.7	3.7	7.2
118	103.8	0.644	80.1	-0.5	6.97	8.644	9.045	7.491	10.4	3.0	10.9	3.4	3.19	-0.06	6.7	3.7	7.2
119	104.0	0.648	80.1	-0.5	6.98	8.720	9.063	7.501	10.5	3.0	10.9	3.4	3.19	-0.06	6.7	3.8	7.2
120	104.0	0.652	80.0	-0.5	6.98	8.788	9.063	7.494	10.4	3.0	10.9	3.5	3.17	-0.07	6.7	3.7	7.2
121	104.1	0.657	80.0	-0.6	6.99	8.864	9.082	7.504	10.5	3.0	11.0	3.5	3.14	-0.07	6.7	3.8	7.3
122	104.0	0.661	80.0	-0.5	7.00	8.933	9.063	7.481	10.4	3.0	11.0	3.5	3.15	-0.07	6.7	3.7	7.2
123	104.7	0.666	80.0	-0.5	7.00	9.009	9.173	7.574	10.5	3.0	11.1	3.5	3.18	-0.07	6.7	3.8	7.3
124	104.0	0.670	80.0	-0.5	7.01	9.085	9.063	7.468	10.4	3.0	10.9	3.5	3.16	-0.07	6.7	3.7	7.2
125	103.8	0.675	80.0	-0.5	7.01	9.161	9.045	7.444	10.4	3.0	10.9	3.5	3.16	-0.07	6.7	3.7	7.2
126	104.1	0.680	80.0	-0.5	7.02	9.245	9.082	7.470	10.4	3.0	11.0	3.5	3.15	-0.07	6.7	3.7	7.2
127	104.1	0.685	80.0	-0.6	7.03	9.321	9.082	7.463	10.4	3.0	11.0	3.5	3.13	-0.07	6.7	3.7	7.2
128	104.0	0.689	80.0	-0.6	7.03	9.397	9.063	7.439	10.4	3.0	11.0	3.5	3.10	-0.08	6.7	3.7	7.3
129	104.2	0.694	80.0	-0.6	7.04	9.473	9.100	7.465	10.4	3.0	11.0	3.5	3.11	-0.08	6.7	3.7	7.3
130	105.1	0.698	80.0	-0.6	7.04	9.549	9.246	7.591	10.5	3.0	11.1	3.5	3.16	-0.07	6.7	3.8	7.3
131	104.5	0.703	80.0	-0.6	7.05	9.625	9.155	7.501	10.5	3.0	11.0	3.5	3.14	-0.07	6.7	3.8	7.3
132	104.5	0.707	80.0	-0.5	7.05	9.694	9.155	7.495	10.4	3.0	11.0	3.5	3.15	-0.07	6.7	3.7	7.2
133	103.7	0.711	80.0	-0.6	7.06	9.762	9.027	7.373	10.3	3.0	10.9	3.5	3.10	-0.08	6.6	3.7	7.2
134	104.5	0.716	80.0	-0.6	7.07	9.838	9.155	7.482	10.4	3.0	11.0	3.5	3.11	-0.08	6.7	3.7	7.3
135	104.8	0.720	79.9	-0.6	7.07	9.907	9.191	7.508	10.5	3.0	11.1	3.6	3.10	-0.08	6.7	3.8	7.3
136	104.8	0.725	80.0	-0.6	7.08	9.983	9.191	7.501	10.5	3.0	11.0	3.5	3.12	-0.08	6.7	3.8	7.3
137	104.9	0.730	80.0	-0.6	7.08	10.067	9.210	7.510	10.5	3.0	11.0	3.5	3.12	-0.08	6.7	3.8	7.3
138	105.1	0.734	80.0	-0.6	7.09	10.135	9.246	7.537	10.5	3.0	11.1	3.5	3.13	-0.08	6.7	3.8	7.3
139	104.4	0.738	80.0	-0.6	7.10	10.211	9.137	7.431	10.4	3.0	11.0	3.5	3.10	-0.08	6.7	3.7	7.3
140	104.8	0.743	79.9	-0.6	7.10	10.287	9.191	7.473	10.4	3.0	11.0	3.6	3.09	-0.08	6.7	3.7	7.3
141	105.1	0.747	79.9	-0.6	7.11	10.356	9.246	7.516	10.5	3.0	11.1	3.6	3.09	-0.09	6.7	3.8	7.4

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	104.0	0.752	79.9	-0.6	7.11	10.432	9.063	7.346	10.3	3.0	10.9	3.6	3.04	-0.09	6.6	3.7	7.3
143	105.2	0.756	79.9	-0.6	7.12	10.508	9.264	7.519	10.5	3.0	11.1	3.6	3.09	-0.09	6.7	3.8	7.4
144	105.7	0.761	79.9	-0.6	7.12	10.584	9.338	7.577	10.5	3.0	11.1	3.6	3.12	-0.08	6.7	3.8	7.4
145	105.6	0.765	79.9	-0.6	7.13	10.653	9.319	7.554	10.5	3.0	11.1	3.6	3.12	-0.08	6.7	3.8	7.3
146	106.6	0.770	79.9	-0.6	7.14	10.729	9.484	7.694	10.6	3.0	11.3	3.6	3.16	-0.08	6.8	3.8	7.4
147	105.0	0.774	79.9	-0.6	7.14	10.805	9.228	7.458	10.4	3.0	11.1	3.6	3.07	-0.09	6.7	3.7	7.3
148	105.2	0.778	79.9	-0.7	7.15	10.873	9.264	7.485	10.4	3.0	11.1	3.6	3.06	-0.09	6.7	3.7	7.4
149	104.7	0.783	79.9	-0.7	7.15	10.949	9.173	7.396	10.3	3.0	11.0	3.6	3.04	-0.09	6.7	3.7	7.3
150	105.9	0.787	79.9	-0.7	7.16	11.018	9.374	7.569	10.5	3.0	11.2	3.6	3.09	-0.09	6.7	3.8	7.4
151	99.9	0.792	79.9	-0.6	7.17	11.094	8.424	6.343	9.3	3.0	9.9	3.6	2.76	-0.10	6.1	3.2	6.8
152	106.1	0.796	79.9	-0.6	7.17	11.162	9.392	7.572	10.5	3.0	11.2	3.6	3.10	-0.09	6.7	3.8	7.4
153	105.7	0.800	79.9	-0.6	7.18	11.231	9.338	7.138	10.1	3.0	10.7	3.6	2.98	-0.09	6.5	3.6	7.2
154	105.8	0.805	79.9	-0.7	7.18	11.307	9.356	7.144	10.1	3.0	10.8	3.6	2.97	-0.09	6.5	3.6	7.2
155	105.8	0.809	79.8	-0.7	7.19	11.375	9.356	7.136	10.1	3.0	10.8	3.7	2.95	-0.10	6.5	3.6	7.2
156	105.9	0.813	79.8	-0.7	7.19	11.444	9.374	7.143	10.1	3.0	10.8	3.7	2.95	-0.10	6.5	3.6	7.2
157	105.6	0.817	79.9	-0.7	7.20	11.520	9.319	7.085	10.0	3.0	10.7	3.6	2.95	-0.10	6.5	3.5	7.2
158	106.2	0.822	79.9	-0.7	7.21	11.588	9.411	7.157	10.1	3.0	10.8	3.6	2.97	-0.09	6.5	3.6	7.2
159	106.5	0.826	79.9	-0.7	7.21	11.665	9.465	7.196	10.1	3.0	10.8	3.6	2.98	-0.09	6.6	3.6	7.2
160	106.4	0.830	79.9	-0.7	7.22	11.733	9.447	7.171	10.1	3.0	10.8	3.6	2.98	-0.09	6.5	3.6	7.2
161	106.8	0.835	79.8	-0.7	7.22	11.809	9.502	7.209	10.2	3.0	10.9	3.7	2.97	-0.10	6.6	3.6	7.3
162	105.8	0.839	79.8	-0.7	7.23	11.878	9.356	7.072	10.0	3.0	10.8	3.7	2.92	-0.10	6.5	3.5	7.2
163	106.1	0.843	79.8	-0.7	7.24	11.946	9.392	7.095	10.0	3.0	10.8	3.7	2.93	-0.10	6.5	3.5	7.2
164	106.3	0.848	79.8	-0.7	7.24	12.022	9.429	7.118	10.1	3.0	10.8	3.7	2.93	-0.10	6.5	3.6	7.2
165	106.8	0.852	79.8	-0.7	7.25	12.098	9.502	7.172	10.1	3.0	10.8	3.7	2.96	-0.10	6.5	3.6	7.2
166	106.9	0.857	79.8	-0.7	7.25	12.174	9.520	7.178	10.1	3.0	10.8	3.7	2.96	-0.10	6.5	3.6	7.2
167	106.3	0.861	79.8	-0.7	7.26	12.243	9.429	7.089	10.0	3.0	10.8	3.7	2.92	-0.10	6.5	3.5	7.2
168	106.3	0.866	79.8	-0.8	7.27	12.319	9.429	7.080	10.0	3.0	10.8	3.7	2.91	-0.11	6.5	3.5	7.3
169	106.3	0.870	79.8	-0.8	7.27	12.395	9.429	7.070	10.0	3.0	10.8	3.7	2.90	-0.11	6.5	3.5	7.2
170	106.3	0.875	79.8	-0.8	7.28	12.471	9.429	7.060	10.0	3.0	10.8	3.7	2.90	-0.11	6.5	3.5	7.2
171	106.8	0.880	79.8	-0.7	7.28	12.547	9.502	7.114	10.1	3.0	10.8	3.7	2.93	-0.10	6.5	3.6	7.2
172	106.4	0.884	79.8	-0.7	7.29	12.623	9.447	7.057	10.0	3.0	10.7	3.7	2.91	-0.10	6.5	3.5	7.2
173	107.1	0.889	79.8	-0.7	7.30	12.699	9.557	7.143	10.1	3.0	10.8	3.7	2.95	-0.10	6.5	3.6	7.2
174	107.2	0.893	79.8	-0.7	7.30	12.775	9.575	7.149	10.1	3.0	10.8	3.7	2.94	-0.10	6.5	3.6	7.3
175	106.5	0.898	79.8	-0.8	7.31	12.851	9.465	7.043	10.0	3.0	10.8	3.7	2.90	-0.11	6.5	3.5	7.2
176	106.4	0.902	79.8	-0.8	7.32	12.920	9.447	7.019	10.0	3.0	10.8	3.7	2.87	-0.11	6.5	3.5	7.3
177	106.1	0.907	79.8	-0.8	7.32	12.996	9.392	6.961	9.9	3.0	10.7	3.7	2.86	-0.11	6.4	3.5	7.2
178	106.4	0.911	79.8	-0.8	7.33	13.072	9.447	6.999	10.0	3.0	10.7	3.7	2.88	-0.11	6.5	3.5	7.2
179	106.9	0.915	79.8	-0.8	7.33	13.141	9.520	7.054	10.0	3.0	10.8	3.7	2.90	-0.11	6.5	3.5	7.2
180	107.0	0.920	79.8	-0.8	7.34	13.217	9.539	7.060	10.0	3.0	10.8	3.7	2.90	-0.11	6.5	3.5	7.2
181	106.1	0.925	79.8	-0.8	7.35	13.293	9.392	6.923	9.9	3.0	10.6	3.7	2.86	-0.11	6.4	3.5	7.2
182	106.5	0.929	79.7	-0.8	7.35	13.369	9.465	6.977	9.9	3.0	10.8	3.8	2.85	-0.12	6.4	3.5	7.3

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	106.4	0.934	79.7	-0.8	7.36	13.445	9.447	6.951	9.9	3.0	10.7	3.8	2.84	-0.12	6.4	3.5	7.2
184	107.0	0.938	79.8	-0.8	7.37	13.513	9.539	7.022	10.0	3.0	10.8	3.7	2.88	-0.11	6.5	3.5	7.3
185	106.9	0.943	79.8	-0.8	7.37	13.590	9.520	6.996	9.9	3.0	10.7	3.7	2.87	-0.11	6.5	3.5	7.2
186	106.5	0.947	79.8	-0.8	7.38	13.666	9.465	6.939	9.9	3.0	10.7	3.7	2.85	-0.11	6.4	3.5	7.2
187	106.9	0.951	79.8	-0.8	7.39	13.734	9.520	6.977	9.9	3.0	10.7	3.7	2.86	-0.11	6.4	3.5	7.2
188	107.1	0.956	79.8	-0.8	7.39	13.810	9.557	6.999	10.0	3.0	10.7	3.7	2.87	-0.11	6.5	3.5	7.2
189	107.5	0.960	79.8	-0.8	7.40	13.886	9.612	7.036	10.0	3.0	10.8	3.7	2.89	-0.11	6.5	3.5	7.2
190	107.2	0.965	79.8	-0.8	7.40	13.955	9.575	6.996	9.9	3.0	10.7	3.7	2.87	-0.11	6.5	3.5	7.2
191	106.2	0.969	79.7	-0.8	7.41	14.031	9.411	6.845	9.8	3.0	10.6	3.8	2.81	-0.12	6.4	3.4	7.2
192	107.3	0.973	79.7	-0.8	7.42	14.099	9.593	6.993	9.9	3.0	10.8	3.8	2.84	-0.12	6.5	3.5	7.3
193	107.5	0.978	79.7	-0.8	7.42	14.175	9.612	6.999	10.0	3.0	10.8	3.8	2.85	-0.12	6.5	3.5	7.3
194	107.3	0.982	79.8	-0.8	7.43	14.244	9.593	6.974	9.9	3.0	10.7	3.7	2.86	-0.11	6.4	3.5	7.2
195	107.9	0.987	79.8	-0.8	7.44	14.320	9.685	7.043	10.0	3.0	10.8	3.7	2.88	-0.11	6.5	3.5	7.3
196	105.6	0.991	79.8	-0.8	7.44	14.389	9.319	6.721	9.7	3.0	10.5	3.7	2.80	-0.12	6.3	3.4	7.1
197	106.8	0.995	79.7	-0.8	7.45	14.457	9.502	6.869	9.8	3.0	10.6	3.8	2.82	-0.12	6.4	3.4	7.2
198	108.3	1.000	79.7	-0.8	7.45	14.533	9.740	7.062	10.0	3.0	10.8	3.8	2.87	-0.12	6.5	3.5	7.3
199	107.5	1.004	79.7	-0.8	7.46	14.602	9.612	6.944	9.9	3.0	10.7	3.8	2.83	-0.12	6.4	3.5	7.3
200	108.1	1.008	79.7	-0.8	7.47	14.678	9.721	7.027	10.0	3.0	10.8	3.8	2.86	-0.12	6.5	3.5	7.3
201	107.8	1.012	79.7	-0.8	7.47	14.746	9.666	6.972	9.9	3.0	10.7	3.8	2.85	-0.12	6.4	3.5	7.3
202	108.1	1.017	79.7	-0.8	7.48	14.815	9.721	7.009	10.0	3.0	10.8	3.8	2.86	-0.12	6.5	3.5	7.3
203	107.1	1.021	79.8	-0.8	7.49	14.891	9.557	6.859	9.8	3.0	10.6	3.7	2.83	-0.12	6.4	3.4	7.2
204	108.5	1.026	79.7	-0.8	7.49	14.967	9.776	7.036	10.0	3.0	10.8	3.8	2.86	-0.12	6.5	3.5	7.3
205	108.0	1.030	79.7	-0.8	7.50	15.035	9.703	6.965	9.9	3.0	10.8	3.8	2.83	-0.12	6.4	3.5	7.3
206	107.9	1.034	79.7	-0.9	7.50	15.111	9.685	6.939	9.9	3.0	10.8	3.8	2.81	-0.13	6.4	3.5	7.3
207	108.7	1.039	79.7	-0.8	7.51	15.180	9.813	7.039	10.0	3.0	10.8	3.8	2.85	-0.12	6.5	3.5	7.3
208	107.7	1.043	79.7	-0.8	7.52	15.256	9.648	6.890	9.8	3.0	10.7	3.8	2.81	-0.12	6.4	3.4	7.2
209	108.4	1.048	79.7	-0.8	7.52	15.332	9.758	6.973	9.9	3.0	10.7	3.8	2.85	-0.12	6.4	3.5	7.3
210	108.5	1.052	79.7	-0.8	7.53	15.400	9.776	6.979	9.9	3.0	10.8	3.8	2.85	-0.12	6.4	3.5	7.3
211	107.5	1.057	79.7	-0.8	7.54	15.477	9.612	6.830	9.8	3.0	10.6	3.8	2.80	-0.12	6.4	3.4	7.2
212	107.9	1.061	79.7	-0.9	7.54	15.553	9.685	6.882	9.8	3.0	10.7	3.8	2.80	-0.13	6.4	3.4	7.3
213	108.8	1.065	79.7	-0.9	7.55	15.621	9.831	6.996	9.9	3.0	10.8	3.8	2.83	-0.13	6.5	3.5	7.3
214	108.5	1.070	79.7	-0.9	7.56	15.697	9.776	6.940	9.9	3.0	10.8	3.8	2.81	-0.13	6.4	3.5	7.3
215	108.1	1.074	79.7	-0.8	7.56	15.773	9.721	6.884	9.8	3.0	10.7	3.8	2.81	-0.12	6.4	3.4	7.2
216	108.3	1.079	79.7	-0.8	7.57	15.849	9.740	6.889	9.8	3.0	10.7	3.8	2.81	-0.12	6.4	3.4	7.2
217	108.4	1.084	79.7	-0.8	7.58	15.926	9.758	6.895	9.8	3.0	10.7	3.8	2.81	-0.12	6.4	3.4	7.2
218	107.8	1.088	79.7	-0.8	7.58	16.002	9.666	6.808	9.8	3.0	10.6	3.8	2.79	-0.12	6.4	3.4	7.2
219	108.4	1.093	79.6	-0.9	7.59	16.078	9.758	6.875	9.8	3.0	10.7	3.9	2.78	-0.13	6.4	3.4	7.3
220	108.6	1.097	79.6	-0.9	7.60	16.154	9.794	6.895	9.8	3.0	10.8	3.9	2.79	-0.13	6.4	3.4	7.3
221	107.6	1.102	79.7	-0.9	7.60	16.222	9.630	6.748	9.7	3.0	10.6	3.8	2.76	-0.13	6.3	3.4	7.2
222	108.0	1.106	79.7	-0.9	7.61	16.298	9.703	6.800	9.8	3.0	10.6	3.8	2.77	-0.13	6.4	3.4	7.2
223	108.8	1.110	79.7	-0.8	7.62	16.367	9.831	6.898	9.9	3.0	10.7	3.8	2.81	-0.12	6.4	3.4	7.3

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	108.1	1.115	79.7	-0.8	7.62	16.443	9.721	6.796	9.7	3.0	10.6	3.8	2.79	-0.12	6.4	3.4	7.2
225	108.4	1.119	79.7	-0.9	7.63	16.511	9.758	6.818	9.8	3.0	10.6	3.8	2.78	-0.13	6.4	3.4	7.2
226	108.5	1.124	79.6	-0.9	7.64	16.587	9.776	6.823	9.8	3.0	10.7	3.9	2.77	-0.13	6.4	3.4	7.3
227	108.5	1.128	79.6	-0.9	7.64	16.664	9.776	6.813	9.8	3.0	10.7	3.9	2.76	-0.13	6.4	3.4	7.3
228	108.3	1.132	79.6	-0.9	7.65	16.732	9.740	6.773	9.7	3.0	10.6	3.9	2.75	-0.13	6.3	3.4	7.2
229	108.1	1.137	79.7	-0.9	7.66	16.808	9.721	6.748	9.7	3.0	10.6	3.8	2.76	-0.13	6.3	3.4	7.2
230	109.0	1.141	79.7	-0.9	7.66	16.877	9.849	6.846	9.8	3.0	10.7	3.8	2.79	-0.13	6.4	3.4	7.3
231	108.1	1.146	79.7	-0.9	7.67	16.953	9.721	6.729	9.7	3.0	10.6	3.8	2.76	-0.13	6.3	3.4	7.2
232	109.5	1.150	79.6	-0.9	7.68	17.021	9.941	6.902	9.9	3.0	10.8	3.9	2.79	-0.13	6.4	3.5	7.3
233	108.7	1.154	79.6	-0.9	7.68	17.097	9.813	6.786	9.7	3.0	10.7	3.9	2.74	-0.14	6.3	3.4	7.3
234	109.5	1.159	79.6	-0.9	7.69	17.173	9.941	6.882	9.8	3.0	10.8	3.9	2.77	-0.14	6.4	3.4	7.3
235	108.7	1.163	79.6	-0.9	7.70	17.242	9.813	6.767	9.7	3.0	10.6	3.9	2.75	-0.13	6.3	3.4	7.2
236	109.1	1.168	79.6	-0.9	7.71	17.318	9.867	6.802	9.8	3.0	10.7	3.9	2.76	-0.13	6.4	3.4	7.3
237	109.3	1.172	79.7	-0.9	7.71	17.394	9.904	6.823	9.8	3.0	10.7	3.8	2.78	-0.13	6.4	3.4	7.2
238	109.5	1.177	79.7	-0.9	7.72	17.463	9.941	6.844	9.8	3.0	10.7	3.8	2.79	-0.13	6.4	3.4	7.3
239	109.4	1.181	79.6	-0.9	7.73	17.539	9.922	6.818	9.8	3.0	10.7	3.9	2.77	-0.13	6.4	3.4	7.3
240	109.1	1.185	79.6	-0.9	7.73	17.607	9.867	6.764	9.7	3.0	10.7	3.9	2.74	-0.14	6.3	3.4	7.3
241	108.4	1.190	79.6	-0.9	7.74	17.683	9.758	6.664	9.6	3.0	10.6	3.9	2.71	-0.14	6.3	3.3	7.2
242	108.6	1.194	79.6	-0.9	7.75	17.752	9.794	6.685	9.6	3.0	10.6	3.9	2.72	-0.14	6.3	3.3	7.2
243	108.6	1.199	79.6	-0.9	7.75	17.828	9.794	6.675	9.6	3.0	10.5	3.9	2.73	-0.14	6.3	3.3	7.2
244	109.0	1.203	79.6	-0.9	7.76	17.896	9.849	6.711	9.7	3.0	10.6	3.9	2.74	-0.14	6.3	3.4	7.2
245	109.0	1.207	79.6	-0.9	7.77	17.972	9.849	6.701	9.7	3.0	10.6	3.9	2.74	-0.14	6.3	3.4	7.2
246	109.1	1.211	79.6	-0.9	7.77	18.041	9.867	6.707	9.7	3.0	10.6	3.9	2.72	-0.14	6.3	3.4	7.2
247	109.1	1.216	79.6	-0.9	7.78	18.109	9.867	6.698	9.7	3.0	10.6	3.9	2.72	-0.14	6.3	3.3	7.2
248	109.4	1.220	79.6	-1.0	7.79	18.185	9.922	6.732	9.7	3.0	10.7	3.9	2.72	-0.14	6.3	3.4	7.3
249	108.7	1.224	79.6	-0.9	7.79	18.254	9.813	6.634	9.6	3.0	10.5	3.9	2.71	-0.14	6.3	3.3	7.2
250	109.1	1.229	79.6	-0.9	7.80	18.330	9.867	6.668	9.6	3.0	10.6	3.9	2.71	-0.14	6.3	3.3	7.2
251	109.9	1.234	79.6	-0.9	7.81	18.406	9.995	6.763	9.7	3.0	10.6	3.9	2.75	-0.13	6.3	3.4	7.2
252	109.4	1.238	79.6	-0.9	7.81	18.475	9.922	6.694	9.6	3.0	10.6	3.9	2.73	-0.14	6.3	3.3	7.2
253	109.4	1.242	79.6	-0.9	7.82	18.543	9.922	6.685	9.6	3.0	10.6	3.9	2.72	-0.14	6.3	3.3	7.2
254	109.7	1.246	79.6	-1.0	7.83	18.619	9.959	6.705	9.7	3.0	10.6	3.9	2.71	-0.14	6.3	3.4	7.3
255	109.4	1.251	79.6	-1.0	7.83	18.688	9.922	6.666	9.6	3.0	10.6	3.9	2.70	-0.14	6.3	3.3	7.3
256	109.9	1.255	79.6	-0.9	7.84	18.764	9.995	6.715	9.7	3.0	10.6	3.9	2.73	-0.14	6.3	3.4	7.2
257	109.5	1.260	79.6	-0.9	7.85	18.840	9.941	6.660	9.6	3.0	10.6	3.9	2.71	-0.14	6.3	3.3	7.2
258	109.2	1.264	79.6	-0.9	7.86	18.916	9.886	6.606	9.6	3.0	10.5	3.9	2.71	-0.14	6.3	3.3	7.2
259	109.5	1.269	79.6	-0.9	7.86	18.992	9.941	6.640	9.6	3.0	10.5	3.9	2.72	-0.14	6.3	3.3	7.2
260	110.2	1.274	79.6	-0.9	7.87	19.068	10.050	6.719	9.7	3.0	10.6	3.9	2.73	-0.14	6.3	3.4	7.2
261	109.1	1.278	79.6	-1.0	7.88	19.136	9.867	6.562	9.5	3.0	10.5	3.9	2.67	-0.15	6.2	3.3	7.2
262	109.8	1.283	79.6	-1.0	7.89	19.220	9.977	6.639	9.6	3.0	10.6	3.9	2.69	-0.15	6.3	3.3	7.2
263	109.9	1.287	79.6	-1.0	7.89	19.289	9.995	6.645	9.6	3.0	10.6	3.9	2.70	-0.15	6.3	3.3	7.2
264	108.8	1.291	79.6	-0.9	7.90	19.365	9.831	6.502	9.5	3.0	10.4	3.9	2.67	-0.14	6.2	3.3	7.1

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
265	109.8	1.296	79.6	-0.9	7.91	19.441	9.977	6.610	9.6	3.0	10.5	3.9	2.70	-0.14	6.3	3.3	7.2
266	109.0	1.300	79.6	-0.9	7.91	19.509	9.849	6.498	9.5	3.0	10.4	3.9	2.67	-0.14	6.2	3.2	7.1
267	109.0	1.305	79.6	-0.9	7.92	19.585	9.849	6.488	9.4	3.0	10.3	3.9	2.68	-0.14	6.2	3.2	7.1
268	109.1	1.309	79.6	-0.9	7.93	19.661	9.867	6.492	9.4	3.0	10.4	3.9	2.67	-0.14	6.2	3.2	7.1
269	108.4	1.314	79.6	-1.0	7.94	19.730	9.758	6.395	9.3	3.0	10.3	3.9	2.63	-0.15	6.2	3.2	7.1
270	109.9	1.318	79.6	-1.0	7.94	19.806	9.995	6.576	9.5	3.0	10.5	3.9	2.68	-0.15	6.2	3.3	7.2
271	109.4	1.323	79.6	-1.0	7.95	19.882	9.922	6.507	9.5	3.0	10.4	3.9	2.66	-0.15	6.2	3.3	7.2
272	109.5	1.327	79.6	-0.9	7.96	19.958	9.941	6.511	9.5	3.0	10.4	3.9	2.67	-0.14	6.2	3.3	7.1
273	109.5	1.330	79.6	-0.9	7.96	19.996	9.941	6.506	9.5	3.0	10.4	3.9	2.67	-0.14	6.2	3.3	7.1

Specimen B Shear Data

CU Triaxial Test

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File Location
T-5675.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5675
Sample Location: Guilford County (Sta. 404+50)
Sample Description: Soft reddish-orange colored clay.
Remarks:

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.7309999
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.851	2.840	
Height (in)	6.109	6.093	
Weight (grams)	938.00		1075.00
Moisture (%)	38.14		58.32
Dry Density (pcf)	66.31	67.03	
Saturation (%)	66.30	100.00	
Void Ratio	1.564	1.544	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 86.600
Effective Confining Stress (psi): 6.0
Corrected Peak Deviator Stress (psi): 13.366 at reading number: 184

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	31.6	0.115	80.6	0.0	6.33	0.000	0.000	0.000	6.0	6.0	6.0	6.0	1.00	0.00	6.0	0.0	6.0
1	55.1	0.119	81.2	0.7	6.34	0.057	3.704	3.680	9.7	6.0	9.1	5.4	1.68	0.18	7.9	1.8	7.2
2	65.0	0.123	81.7	1.2	6.34	0.132	5.266	5.208	11.3	6.0	10.1	4.9	2.07	0.22	8.6	2.6	7.5
3	73.2	0.127	82.0	1.5	6.35	0.198	6.555	6.466	12.5	6.0	11.0	4.6	2.42	0.23	9.3	3.2	7.8
4	80.1	0.131	82.3	1.8	6.35	0.264	7.645	7.522	13.6	6.0	11.8	4.3	2.76	0.24	9.8	3.8	8.0
5	85.8	0.136	82.5	2.0	6.36	0.339	8.553	8.392	14.4	6.0	12.5	4.1	3.07	0.24	10.2	4.2	8.3
6	90.5	0.140	82.7	2.2	6.36	0.405	9.297	9.102	15.1	6.0	13.0	3.9	3.34	0.24	10.6	4.6	8.4
7	94.1	0.145	82.9	2.3	6.36	0.480	9.860	9.627	15.7	6.0	13.4	3.7	3.57	0.24	10.9	4.8	8.6
8	96.6	0.149	82.9	2.4	6.37	0.546	10.259	9.992	16.0	6.0	13.6	3.7	3.74	0.24	11.0	5.0	8.6
9	98.0	0.152	83.0	2.5	6.37	0.603	10.477	10.181	16.2	6.0	13.8	3.6	3.83	0.24	11.1	5.1	8.7
10	100.1	0.157	83.1	2.5	6.38	0.678	10.804	10.468	16.5	6.0	14.0	3.5	3.96	0.24	11.3	5.2	8.8
11	101.4	0.161	83.1	2.5	6.38	0.754	11.022	10.647	16.7	6.0	14.2	3.5	4.04	0.24	11.4	5.3	8.8
12	102.8	0.165	83.1	2.6	6.39	0.820	11.240	10.830	16.9	6.0	14.3	3.5	4.12	0.24	11.5	5.4	8.9
13	103.7	0.170	83.2	2.6	6.39	0.895	11.385	10.937	17.0	6.0	14.4	3.4	4.17	0.24	11.5	5.5	8.9
14	104.7	0.174	83.2	2.6	6.40	0.970	11.531	11.043	17.1	6.0	14.5	3.4	4.20	0.24	11.6	5.5	9.0
15	105.5	0.179	83.2	2.6	6.40	1.046	11.658	11.131	17.2	6.0	14.6	3.4	4.23	0.23	11.6	5.6	9.0
16	106.2	0.184	83.2	2.6	6.41	1.130	11.767	11.196	17.2	6.0	14.6	3.4	4.25	0.23	11.6	5.6	9.0
17	106.6	0.189	83.2	2.6	6.41	1.206	11.839	11.229	17.3	6.0	14.7	3.4	4.26	0.23	11.7	5.6	9.1
18	106.7	0.194	83.2	2.6	6.42	1.290	11.857	11.204	17.2	6.0	14.7	3.4	4.25	0.23	11.6	5.6	9.0

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	107.0	0.199	83.2	2.6	6.42	1.366	11.894	11.202	17.2	6.0	14.6	3.4	4.25	0.23	11.6	5.6	9.0
20	107.0	0.203	83.2	2.6	6.43	1.441	11.894	11.164	17.2	6.0	14.6	3.4	4.24	0.23	11.6	5.6	9.0
21	107.2	0.208	83.2	2.6	6.43	1.517	11.930	11.162	17.2	6.0	14.6	3.4	4.24	0.23	11.6	5.6	9.0
22	107.9	0.212	83.1	2.6	6.44	1.592	12.039	11.231	17.3	6.0	14.7	3.5	4.23	0.23	11.7	5.6	9.1
23	108.5	0.217	83.1	2.6	6.44	1.667	12.130	11.282	17.3	6.0	14.8	3.5	4.25	0.23	11.7	5.6	9.1
24	108.8	0.222	83.1	2.5	6.45	1.743	12.184	11.297	17.3	6.0	14.8	3.5	4.22	0.22	11.7	5.6	9.2
25	109.2	0.226	83.1	2.5	6.45	1.818	12.239	11.312	17.4	6.0	14.8	3.5	4.23	0.22	11.7	5.7	9.2
26	109.4	0.231	83.1	2.5	6.46	1.893	12.275	11.309	17.4	6.0	14.8	3.5	4.23	0.22	11.7	5.7	9.2
27	109.3	0.235	83.1	2.5	6.46	1.969	12.257	11.253	17.3	6.0	14.8	3.5	4.21	0.23	11.7	5.6	9.1
28	109.3	0.239	83.1	2.5	6.47	2.035	12.257	11.233	17.3	6.0	14.8	3.5	4.18	0.22	11.7	5.6	9.2
29	109.3	0.244	83.1	2.5	6.47	2.110	12.257	11.224	17.3	6.0	14.8	3.5	4.18	0.22	11.7	5.6	9.1
30	109.5	0.249	83.1	2.5	6.48	2.195	12.293	11.249	17.3	6.0	14.8	3.5	4.18	0.22	11.7	5.6	9.2
31	109.3	0.254	83.0	2.5	6.48	2.270	12.257	11.204	17.2	6.0	14.8	3.6	4.14	0.22	11.6	5.6	9.2
32	109.0	0.259	83.0	2.5	6.49	2.364	12.221	11.157	17.2	6.0	14.7	3.6	4.13	0.22	11.6	5.6	9.1
33	108.4	0.265	83.0	2.5	6.49	2.449	12.112	11.040	17.1	6.0	14.6	3.6	4.10	0.22	11.6	5.5	9.1
34	108.7	0.269	83.0	2.5	6.50	2.515	12.166	11.085	17.1	6.0	14.6	3.6	4.11	0.22	11.6	5.5	9.1
35	108.9	0.273	83.0	2.5	6.50	2.590	12.202	11.112	17.2	6.0	14.7	3.6	4.12	0.22	11.6	5.6	9.1
36	108.8	0.277	83.0	2.5	6.51	2.656	12.184	11.086	17.1	6.0	14.7	3.6	4.09	0.22	11.6	5.5	9.1
37	109.2	0.282	83.0	2.5	6.51	2.732	12.239	11.130	17.2	6.0	14.7	3.6	4.10	0.22	11.6	5.6	9.2
38	109.4	0.286	83.0	2.4	6.52	2.798	12.275	11.157	17.2	6.0	14.8	3.6	4.08	0.22	11.6	5.6	9.2
39	110.3	0.290	83.0	2.5	6.52	2.864	12.420	11.290	17.3	6.0	14.9	3.6	4.14	0.22	11.7	5.6	9.2
40	110.8	0.294	83.0	2.4	6.53	2.929	12.493	11.352	17.4	6.0	15.0	3.6	4.13	0.21	11.7	5.7	9.3
41	111.3	0.298	83.0	2.4	6.53	2.995	12.584	11.432	17.5	6.0	15.1	3.6	4.16	0.21	11.8	5.7	9.3
42	111.9	0.302	83.0	2.4	6.54	3.071	12.674	11.511	17.6	6.0	15.1	3.6	4.18	0.21	11.8	5.8	9.4
43	112.3	0.306	82.9	2.4	6.54	3.137	12.729	11.555	17.6	6.0	15.2	3.7	4.16	0.21	11.8	5.8	9.4
44	112.6	0.310	82.9	2.4	6.54	3.203	12.783	11.599	17.6	6.0	15.3	3.7	4.18	0.21	11.8	5.8	9.5
45	113.2	0.315	82.9	2.4	6.55	3.278	12.874	11.678	17.7	6.0	15.3	3.7	4.20	0.21	11.9	5.8	9.5
46	113.3	0.319	82.9	2.4	6.55	3.344	12.892	11.687	17.7	6.0	15.3	3.7	4.20	0.20	11.9	5.8	9.5
47	113.5	0.323	82.9	2.4	6.56	3.410	12.929	11.713	17.8	6.0	15.4	3.7	4.18	0.20	11.9	5.9	9.5
48	114.0	0.328	82.9	2.4	6.56	3.485	13.001	11.774	17.8	6.0	15.5	3.7	4.20	0.20	11.9	5.9	9.6
49	114.3	0.332	82.9	2.4	6.57	3.551	13.056	11.818	17.9	6.0	15.5	3.7	4.21	0.20	12.0	5.9	9.6
50	114.9	0.336	82.9	2.3	6.57	3.627	13.147	11.895	17.9	6.0	15.6	3.7	4.21	0.20	12.0	5.9	9.7
51	115.3	0.341	82.9	2.3	6.58	3.702	13.201	11.938	18.0	6.0	15.7	3.7	4.19	0.19	12.0	6.0	9.7
52	115.5	0.345	82.9	2.3	6.58	3.768	13.237	11.964	18.0	6.0	15.7	3.7	4.20	0.19	12.0	6.0	9.7
53	115.6	0.349	82.9	2.3	6.59	3.843	13.256	11.971	18.0	6.0	15.7	3.7	4.20	0.19	12.0	6.0	9.7
54	115.9	0.354	82.9	2.3	6.59	3.919	13.310	12.014	18.1	6.0	15.8	3.7	4.21	0.19	12.1	6.0	9.7
55	116.3	0.359	82.9	2.3	6.60	3.994	13.364	12.056	18.1	6.0	15.8	3.7	4.22	0.19	12.1	6.0	9.8
56	116.5	0.363	82.8	2.3	6.60	4.069	13.401	12.081	18.1	6.0	15.8	3.8	4.21	0.19	12.1	6.0	9.8
57	117.1	0.368	82.8	2.2	6.61	4.145	13.492	12.158	18.2	6.0	16.0	3.8	4.20	0.18	12.1	6.1	9.9
58	117.3	0.372	82.8	2.2	6.61	4.220	13.528	12.182	18.2	6.0	16.0	3.8	4.21	0.18	12.1	6.1	9.9
59	117.6	0.378	82.8	2.2	6.62	4.305	13.564	12.206	18.3	6.0	16.0	3.8	4.21	0.18	12.1	6.1	9.9

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	116.9	0.383	82.8	2.2	6.63	4.390	13.455	12.090	18.1	6.0	15.9	3.8	4.16	0.18	12.1	6.0	9.9
61	116.3	0.387	82.8	2.2	6.63	4.465	13.364	11.993	18.0	6.0	15.8	3.8	4.13	0.19	12.0	6.0	9.8
62	115.8	0.393	82.8	2.2	6.64	4.550	13.292	11.912	18.0	6.0	15.7	3.8	4.11	0.19	12.0	6.0	9.8
63	115.1	0.397	82.8	2.2	6.64	4.625	13.183	11.799	17.8	6.0	15.6	3.8	4.08	0.19	11.9	5.9	9.7
64	114.6	0.402	82.7	2.2	6.65	4.700	13.092	11.702	17.7	6.0	15.6	3.9	4.04	0.19	11.9	5.9	9.7
65	114.9	0.406	82.7	2.2	6.65	4.776	13.147	11.744	17.8	6.0	15.6	3.9	4.02	0.18	11.9	5.9	9.8
66	115.4	0.411	82.7	2.2	6.66	4.851	13.219	11.803	17.8	6.0	15.7	3.9	4.04	0.18	11.9	5.9	9.8
67	115.5	0.415	82.7	2.2	6.66	4.926	13.237	11.811	17.9	6.0	15.7	3.9	4.04	0.18	12.0	5.9	9.8
68	115.3	0.420	82.7	2.2	6.67	4.992	13.201	11.767	17.8	6.0	15.7	3.9	4.03	0.18	11.9	5.9	9.8
69	115.6	0.424	82.7	2.2	6.67	5.068	13.256	11.809	17.9	6.0	15.7	3.9	4.04	0.18	11.9	5.9	9.8
70	115.7	0.429	82.7	2.1	6.68	5.143	13.274	11.816	17.9	6.0	15.7	3.9	4.02	0.18	12.0	5.9	9.8
71	116.1	0.433	82.7	2.1	6.68	5.209	13.328	11.859	17.9	6.0	15.8	3.9	4.01	0.18	12.0	5.9	9.9
72	116.4	0.437	82.7	2.1	6.69	5.284	13.383	11.901	17.9	6.0	15.8	3.9	4.02	0.18	12.0	6.0	9.9
73	116.9	0.442	82.7	2.1	6.69	5.360	13.455	11.959	18.0	6.0	15.9	3.9	4.03	0.18	12.0	6.0	9.9
74	116.7	0.446	82.6	2.1	6.70	5.435	13.437	11.932	18.0	6.0	15.9	4.0	4.00	0.17	12.0	6.0	9.9
75	116.5	0.451	82.6	2.1	6.70	5.510	13.401	11.888	17.9	6.0	15.9	4.0	3.99	0.17	12.0	5.9	9.9
76	116.2	0.457	82.6	2.1	6.71	5.605	13.346	11.824	17.9	6.0	15.8	4.0	3.98	0.18	12.0	5.9	9.9
77	115.5	0.462	82.6	2.0	6.72	5.689	13.237	11.710	17.8	6.0	15.7	4.0	3.93	0.17	11.9	5.9	9.9
78	115.6	0.467	82.6	2.0	6.72	5.765	13.256	11.717	17.8	6.0	15.7	4.0	3.93	0.17	11.9	5.9	9.9
79	115.8	0.471	82.6	2.0	6.73	5.840	13.292	11.741	17.8	6.0	15.8	4.0	3.91	0.17	11.9	5.9	9.9
80	116.5	0.475	82.6	2.0	6.73	5.906	13.401	11.835	17.9	6.0	15.9	4.0	3.94	0.17	12.0	5.9	9.9
81	116.9	0.479	82.6	2.0	6.74	5.972	13.455	11.877	17.9	6.0	15.9	4.0	3.95	0.17	12.0	5.9	10.0
82	117.2	0.484	82.6	2.0	6.74	6.047	13.510	11.918	18.0	6.0	15.9	4.0	3.96	0.17	12.0	6.0	10.0
83	118.0	0.488	82.5	2.0	6.75	6.113	13.637	12.029	18.1	6.0	16.1	4.1	3.96	0.17	12.1	6.0	10.1
84	118.6	0.492	82.5	2.0	6.75	6.179	13.728	12.105	18.1	6.0	16.2	4.1	3.98	0.16	12.1	6.1	10.1
85	119.2	0.496	82.5	2.0	6.76	6.245	13.818	12.181	18.2	6.0	16.3	4.1	3.98	0.16	12.1	6.1	10.2
86	119.4	0.500	82.5	1.9	6.76	6.321	13.855	12.204	18.2	6.0	16.3	4.1	3.96	0.16	12.1	6.1	10.2
87	120.2	0.504	82.5	1.9	6.77	6.386	13.982	12.314	18.4	6.0	16.4	4.1	3.99	0.16	12.2	6.2	10.3
88	121.2	0.508	82.5	1.9	6.77	6.452	14.145	12.458	18.5	6.0	16.6	4.1	4.03	0.15	12.3	6.2	10.3
89	121.6	0.513	82.5	1.9	6.78	6.528	14.200	12.498	18.5	6.0	16.6	4.1	4.03	0.15	12.3	6.2	10.4
90	122.5	0.517	82.5	1.9	6.78	6.594	14.345	12.625	18.7	6.0	16.7	4.1	4.07	0.15	12.4	6.3	10.4
91	123.2	0.521	82.5	1.9	6.79	6.660	14.454	12.717	18.8	6.0	16.9	4.1	4.07	0.15	12.4	6.4	10.5
92	123.5	0.525	82.4	1.9	6.79	6.726	14.508	12.758	18.8	6.0	16.9	4.2	4.05	0.15	12.4	6.4	10.6
93	123.9	0.530	82.4	1.9	6.80	6.801	14.563	12.798	18.8	6.0	17.0	4.2	4.06	0.15	12.4	6.4	10.6
94	123.9	0.534	82.4	1.9	6.80	6.867	14.563	12.788	18.8	6.0	17.0	4.2	4.06	0.15	12.4	6.4	10.6
95	124.5	0.538	82.4	1.9	6.81	6.942	14.654	12.862	18.9	6.0	17.0	4.2	4.08	0.15	12.5	6.4	10.6
96	124.9	0.543	82.4	1.9	6.81	7.018	14.726	12.918	19.0	6.0	17.1	4.2	4.09	0.14	12.5	6.5	10.6
97	125.4	0.547	82.4	1.8	6.82	7.084	14.799	12.976	19.0	6.0	17.2	4.2	4.09	0.14	12.5	6.5	10.7
98	125.4	0.552	82.4	1.8	6.82	7.159	14.799	12.965	19.0	6.0	17.2	4.2	4.06	0.14	12.5	6.5	10.7
99	125.7	0.556	82.4	1.8	6.83	7.234	14.853	13.004	19.0	6.0	17.2	4.2	4.07	0.14	12.5	6.5	10.7
100	125.6	0.561	82.4	1.8	6.83	7.310	14.835	12.976	19.0	6.0	17.2	4.2	4.06	0.14	12.5	6.5	10.7

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	125.3	0.565	82.4	1.8	6.84	7.385	14.781	12.915	19.0	6.0	17.1	4.2	4.05	0.14	12.5	6.5	10.7
102	124.9	0.570	82.4	1.8	6.85	7.470	14.726	12.852	18.9	6.0	17.1	4.2	4.03	0.14	12.5	6.4	10.7
103	124.5	0.575	82.3	1.8	6.85	7.545	14.654	12.773	18.8	6.0	17.0	4.3	4.00	0.14	12.4	6.4	10.7
104	124.1	0.580	82.3	1.8	6.86	7.630	14.599	12.711	18.8	6.0	17.0	4.3	3.98	0.14	12.4	6.4	10.6
105	123.8	0.585	82.3	1.8	6.86	7.705	14.545	12.649	18.7	6.0	16.9	4.3	3.95	0.14	12.4	6.3	10.6
106	123.5	0.589	82.3	1.8	6.87	7.781	14.508	12.605	18.7	6.0	16.9	4.3	3.94	0.14	12.3	6.3	10.6
107	123.6	0.594	82.3	1.8	6.87	7.856	14.527	12.611	18.7	6.0	16.9	4.3	3.94	0.14	12.4	6.3	10.6
108	124.1	0.599	82.3	1.8	6.88	7.931	14.599	12.667	18.7	6.0	17.0	4.3	3.95	0.14	12.4	6.3	10.6
109	124.1	0.603	82.3	1.8	6.89	8.007	14.599	12.656	18.7	6.0	16.9	4.3	3.95	0.14	12.4	6.3	10.6
110	124.7	0.608	82.3	1.8	6.89	8.082	14.690	12.728	18.8	6.0	17.0	4.3	3.96	0.14	12.4	6.4	10.7
111	124.1	0.612	82.3	1.7	6.90	8.157	14.599	12.634	18.7	6.0	17.0	4.3	3.92	0.14	12.4	6.3	10.6
112	124.5	0.617	82.3	1.7	6.90	8.233	14.654	12.673	18.7	6.0	17.0	4.3	3.93	0.14	12.4	6.3	10.7
113	124.8	0.621	82.2	1.7	6.91	8.299	14.708	12.713	18.8	6.0	17.1	4.4	3.92	0.13	12.4	6.4	10.7
114	125.1	0.626	82.2	1.7	6.91	8.374	14.763	12.752	18.8	6.0	17.1	4.4	3.93	0.13	12.4	6.4	10.7
115	125.5	0.630	82.2	1.7	6.92	8.449	14.817	12.791	18.8	6.0	17.1	4.4	3.94	0.13	12.4	6.4	10.7
116	125.9	0.635	82.2	1.7	6.92	8.525	14.890	12.846	18.9	6.0	17.2	4.4	3.95	0.13	12.5	6.4	10.8
117	125.5	0.639	82.2	1.7	6.93	8.600	14.817	12.768	18.8	6.0	17.1	4.4	3.93	0.13	12.4	6.4	10.7
118	125.7	0.644	82.2	1.7	6.94	8.675	14.853	12.790	18.8	6.0	17.2	4.4	3.92	0.13	12.4	6.4	10.8
119	125.5	0.648	82.2	1.7	6.94	8.751	14.817	12.746	18.8	6.0	17.1	4.4	3.91	0.13	12.4	6.4	10.8
120	125.1	0.654	82.2	1.6	6.95	8.836	14.763	12.684	18.7	6.0	17.1	4.4	3.88	0.13	12.4	6.3	10.8
121	124.1	0.659	82.2	1.6	6.96	8.930	14.599	12.521	18.6	6.0	16.9	4.4	3.84	0.13	12.3	6.3	10.7
122	124.1	0.665	82.2	1.6	6.96	9.015	14.599	12.509	18.6	6.0	16.9	4.4	3.84	0.13	12.3	6.3	10.7
123	124.9	0.669	82.2	1.6	6.97	9.090	14.726	12.613	18.7	6.0	17.0	4.4	3.86	0.13	12.4	6.3	10.7
124	124.8	0.673	82.2	1.6	6.97	9.156	14.708	12.587	18.6	6.0	17.0	4.4	3.85	0.13	12.3	6.3	10.7
125	124.8	0.678	82.2	1.6	6.98	9.231	14.708	12.576	18.6	6.0	17.0	4.4	3.83	0.13	12.3	6.3	10.7
126	125.4	0.682	82.2	1.6	6.98	9.297	14.799	12.648	18.7	6.0	17.1	4.4	3.85	0.13	12.4	6.3	10.8
127	125.8	0.686	82.2	1.6	6.99	9.363	14.872	12.705	18.7	6.0	17.1	4.4	3.86	0.13	12.4	6.4	10.8
128	126.3	0.690	82.2	1.6	6.99	9.429	14.944	12.761	18.8	6.0	17.2	4.4	3.87	0.13	12.4	6.4	10.8
129	126.8	0.694	82.2	1.6	7.00	9.495	15.017	12.816	18.9	6.0	17.3	4.4	3.89	0.13	12.5	6.4	10.8
130	127.2	0.698	82.2	1.6	7.00	9.561	15.090	12.872	18.9	6.0	17.3	4.4	3.90	0.12	12.5	6.4	10.9
131	127.8	0.702	82.2	1.6	7.01	9.627	15.180	12.944	19.0	6.0	17.4	4.4	3.92	0.12	12.5	6.5	10.9
132	128.0	0.706	82.1	1.6	7.01	9.693	15.217	12.967	19.0	6.0	17.4	4.5	3.90	0.12	12.5	6.5	11.0
133	128.1	0.710	82.1	1.5	7.02	9.759	15.235	12.973	19.0	6.0	17.5	4.5	3.88	0.12	12.5	6.5	11.0
134	128.4	0.714	82.1	1.6	7.02	9.825	15.271	12.996	19.0	6.0	17.5	4.5	3.91	0.12	12.5	6.5	11.0
135	128.8	0.718	82.1	1.6	7.03	9.891	15.344	13.051	19.1	6.0	17.5	4.5	3.92	0.12	12.6	6.5	11.0
136	129.2	0.723	82.1	1.6	7.04	9.966	15.398	13.089	19.1	6.0	17.6	4.5	3.93	0.12	12.6	6.5	11.0
137	129.2	0.727	82.1	1.5	7.04	10.032	15.398	13.079	19.1	6.0	17.6	4.5	3.91	0.12	12.6	6.5	11.0
138	129.6	0.731	82.1	1.5	7.05	10.107	15.471	13.133	19.2	6.0	17.6	4.5	3.92	0.12	12.6	6.6	11.1
139	129.5	0.735	82.1	1.5	7.05	10.173	15.453	13.106	19.2	6.0	17.6	4.5	3.90	0.12	12.6	6.6	11.1
140	129.3	0.740	82.1	1.5	7.06	10.249	15.416	13.062	19.1	6.0	17.6	4.5	3.89	0.12	12.6	6.5	11.1
141	129.3	0.744	82.1	1.5	7.06	10.324	15.416	13.050	19.1	6.0	17.6	4.5	3.88	0.12	12.6	6.5	11.1

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	129.4	0.748	82.1	1.5	7.07	10.390	15.435	13.056	19.1	6.0	17.6	4.5	3.88	0.12	12.6	6.5	11.1
143	129.5	0.753	82.1	1.5	7.07	10.465	15.453	13.061	19.1	6.0	17.6	4.5	3.89	0.12	12.6	6.5	11.1
144	129.3	0.758	82.1	1.5	7.08	10.541	15.416	13.017	19.1	6.0	17.5	4.5	3.88	0.12	12.6	6.5	11.0
145	129.5	0.762	82.1	1.5	7.09	10.616	15.453	13.038	19.1	6.0	17.6	4.5	3.88	0.12	12.6	6.5	11.0
146	129.6	0.767	82.0	1.5	7.09	10.691	15.471	13.042	19.1	6.0	17.6	4.6	3.86	0.11	12.6	6.5	11.1
147	129.5	0.772	82.0	1.5	7.10	10.776	15.453	13.013	19.1	6.0	17.6	4.6	3.86	0.11	12.6	6.5	11.1
148	129.1	0.776	82.0	1.5	7.11	10.851	15.380	12.936	19.0	6.0	17.5	4.6	3.84	0.12	12.5	6.5	11.0
149	128.4	0.781	82.0	1.5	7.11	10.927	15.271	12.828	18.9	6.0	17.4	4.6	3.82	0.12	12.5	6.4	11.0
150	128.7	0.786	82.0	1.5	7.12	11.002	15.326	12.865	18.9	6.0	17.4	4.6	3.82	0.12	12.5	6.4	11.0
151	128.6	0.790	82.0	1.5	7.12	11.077	15.307	12.837	18.9	6.0	17.4	4.6	3.82	0.12	12.5	6.4	11.0
152	128.6	0.795	82.0	1.5	7.13	11.153	15.307	12.826	18.9	6.0	17.4	4.6	3.80	0.11	12.5	6.4	11.0
153	128.6	0.799	82.0	1.5	7.14	11.228	15.307	12.814	18.9	6.0	17.4	4.6	3.79	0.11	12.5	6.4	11.0
154	128.7	0.804	82.0	1.5	7.14	11.303	15.326	12.819	18.9	6.0	17.4	4.6	3.80	0.11	12.5	6.4	11.0
155	128.8	0.809	82.0	1.5	7.15	11.379	15.344	12.823	18.9	6.0	17.4	4.6	3.80	0.11	12.5	6.4	11.0
156	128.9	0.813	82.0	1.5	7.15	11.454	15.362	12.828	18.9	6.0	17.4	4.6	3.80	0.11	12.5	6.4	11.0
157	129.4	0.818	82.0	1.5	7.16	11.530	15.435	12.880	18.9	6.0	17.5	4.6	3.81	0.11	12.5	6.4	11.0
158	130.2	0.822	82.0	1.5	7.17	11.605	15.562	12.981	19.0	6.0	17.6	4.6	3.83	0.11	12.5	6.5	11.1
159	130.1	0.826	82.0	1.4	7.17	11.671	15.543	12.955	19.0	6.0	17.6	4.6	3.81	0.11	12.5	6.5	11.1
160	130.3	0.831	82.0	1.4	7.18	11.746	15.580	12.975	19.0	6.0	17.6	4.6	3.81	0.11	12.5	6.5	11.1
161	130.4	0.836	82.0	1.4	7.18	11.822	15.598	12.979	19.0	6.0	17.6	4.6	3.81	0.11	12.5	6.5	11.1
162	130.3	0.840	82.0	1.4	7.19	11.897	15.580	12.952	19.0	6.0	17.6	4.6	3.81	0.11	12.5	6.5	11.1
163	130.0	0.845	82.0	1.4	7.20	11.972	15.525	12.892	18.9	6.0	17.5	4.6	3.79	0.11	12.5	6.4	11.1
164	129.6	0.850	82.0	1.4	7.20	12.057	15.471	12.831	18.9	6.0	17.4	4.6	3.78	0.11	12.5	6.4	11.0
165	129.1	0.855	82.0	1.4	7.21	12.142	15.380	12.738	18.8	6.0	17.4	4.6	3.76	0.11	12.4	6.4	11.0
166	128.5	0.860	82.0	1.4	7.22	12.227	15.289	12.645	18.7	6.0	17.3	4.6	3.72	0.11	12.4	6.3	11.0
167	128.6	0.865	82.0	1.4	7.22	12.302	15.307	12.650	18.7	6.0	17.3	4.6	3.72	0.11	12.4	6.3	11.0
168	129.4	0.869	82.0	1.4	7.23	12.368	15.435	12.751	18.8	6.0	17.4	4.6	3.75	0.11	12.4	6.4	11.0
169	129.6	0.873	82.0	1.4	7.23	12.443	15.471	12.771	18.8	6.0	17.4	4.6	3.75	0.11	12.4	6.4	11.0
170	130.2	0.877	82.0	1.4	7.24	12.509	15.562	12.840	18.9	6.0	17.5	4.6	3.77	0.11	12.5	6.4	11.1
171	130.5	0.881	82.0	1.4	7.25	12.575	15.616	12.878	18.9	6.0	17.5	4.6	3.77	0.11	12.5	6.4	11.1
172	130.9	0.886	81.9	1.4	7.25	12.641	15.671	12.915	19.0	6.0	17.6	4.7	3.76	0.11	12.5	6.5	11.1
173	131.5	0.890	81.9	1.4	7.26	12.707	15.761	12.984	19.0	6.0	17.7	4.7	3.78	0.11	12.5	6.5	11.2
174	131.5	0.894	81.9	1.4	7.26	12.773	15.761	12.974	19.0	6.0	17.6	4.7	3.78	0.11	12.5	6.5	11.2
175	131.7	0.898	81.9	1.4	7.27	12.839	15.798	12.995	19.0	6.0	17.7	4.7	3.78	0.11	12.5	6.5	11.2
176	131.8	0.902	81.9	1.4	7.27	12.914	15.816	12.999	19.0	6.0	17.7	4.7	3.78	0.11	12.5	6.5	11.2
177	132.0	0.906	81.9	1.4	7.28	12.980	15.852	13.020	19.1	6.0	17.7	4.7	3.79	0.11	12.6	6.5	11.2
178	132.7	0.910	81.9	1.4	7.28	13.046	15.961	13.104	19.1	6.0	17.8	4.7	3.80	0.10	12.6	6.6	11.2
179	132.9	0.914	81.9	1.3	7.29	13.112	15.979	13.109	19.2	6.0	17.8	4.7	3.79	0.10	12.6	6.6	11.3
180	133.8	0.918	81.9	1.3	7.30	13.178	16.125	13.225	19.3	6.0	17.9	4.7	3.81	0.10	12.7	6.6	11.3
181	134.2	0.923	81.9	1.3	7.30	13.253	16.197	13.276	19.3	6.0	18.0	4.7	3.82	0.10	12.7	6.6	11.3
182	134.3	0.927	81.9	1.3	7.31	13.329	16.215	13.279	19.3	6.0	18.0	4.7	3.82	0.10	12.7	6.6	11.3

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	134.9	0.932	81.9	1.3	7.31	13.404	16.306	13.346	19.4	6.0	18.0	4.7	3.84	0.10	12.7	6.7	11.4
184	135.2	0.936	81.9	1.3	7.32	13.470	16.342	13.366	19.4	6.0	18.1	4.7	3.84	0.10	12.7	6.7	11.4
185	134.7	0.941	81.9	1.3	7.33	13.545	16.270	13.291	19.3	6.0	18.0	4.7	3.83	0.10	12.7	6.6	11.3
186	134.6	0.945	81.9	1.3	7.33	13.621	16.252	13.263	19.3	6.0	18.0	4.7	3.80	0.10	12.7	6.6	11.4
187	134.2	0.950	81.9	1.3	7.34	13.705	16.197	13.203	19.2	6.0	17.9	4.7	3.79	0.10	12.6	6.6	11.3
188	133.7	0.955	81.8	1.3	7.35	13.781	16.106	13.112	19.2	6.0	17.9	4.8	3.75	0.10	12.6	6.6	11.3
189	133.1	0.960	81.9	1.3	7.35	13.866	16.016	13.020	19.1	6.0	17.8	4.7	3.75	0.10	12.6	6.5	11.2
190	133.0	0.965	81.9	1.3	7.36	13.941	15.997	12.993	19.0	6.0	17.7	4.7	3.75	0.10	12.5	6.5	11.2
191	133.1	0.970	81.9	1.3	7.37	14.026	16.016	12.995	19.0	6.0	17.7	4.7	3.75	0.10	12.5	6.5	11.2
192	132.6	0.975	81.9	1.3	7.38	14.111	15.943	12.919	19.0	6.0	17.7	4.7	3.73	0.10	12.5	6.5	11.2
193	132.3	0.979	81.8	1.3	7.38	14.176	15.888	12.861	18.9	6.0	17.6	4.8	3.70	0.10	12.5	6.4	11.2
194	131.9	0.984	81.8	1.3	7.39	14.252	15.834	12.803	18.8	6.0	17.6	4.8	3.69	0.10	12.4	6.4	11.2
195	131.8	0.988	81.8	1.3	7.39	14.327	15.816	12.775	18.8	6.0	17.5	4.8	3.68	0.10	12.4	6.4	11.1
196	132.0	0.993	81.8	1.3	7.40	14.403	15.852	12.794	18.8	6.0	17.6	4.8	3.67	0.10	12.4	6.4	11.2
197	131.9	0.997	81.8	1.3	7.41	14.478	15.834	12.767	18.8	6.0	17.6	4.8	3.67	0.10	12.4	6.4	11.2
198	131.9	1.002	81.8	1.3	7.41	14.553	15.834	12.755	18.8	6.0	17.5	4.8	3.66	0.10	12.4	6.4	11.2
199	131.9	1.006	81.8	1.3	7.42	14.619	15.834	12.745	18.8	6.0	17.5	4.8	3.66	0.10	12.4	6.4	11.2
200	132.5	1.011	81.8	1.3	7.43	14.695	15.925	12.810	18.9	6.0	17.6	4.8	3.67	0.10	12.5	6.4	11.2
201	132.6	1.015	81.8	1.3	7.43	14.770	15.943	12.814	18.9	6.0	17.6	4.8	3.68	0.10	12.5	6.4	11.2
202	132.5	1.020	81.8	1.3	7.44	14.845	15.925	12.786	18.8	6.0	17.6	4.8	3.67	0.10	12.4	6.4	11.2
203	132.9	1.024	81.8	1.2	7.44	14.911	15.979	12.822	18.9	6.0	17.6	4.8	3.66	0.10	12.5	6.4	11.2
204	133.0	1.028	81.8	1.2	7.45	14.987	15.997	12.825	18.9	6.0	17.6	4.8	3.66	0.10	12.5	6.4	11.2
205	133.1	1.033	81.8	1.2	7.46	15.062	16.016	12.829	18.9	6.0	17.6	4.8	3.66	0.10	12.5	6.4	11.2
206	132.6	1.038	81.8	1.2	7.46	15.137	15.943	12.755	18.8	6.0	17.6	4.8	3.65	0.10	12.4	6.4	11.2
207	133.2	1.042	81.8	1.2	7.47	15.213	16.034	12.820	18.9	6.0	17.6	4.8	3.66	0.10	12.5	6.4	11.2
208	133.0	1.047	81.8	1.2	7.48	15.297	15.997	12.776	18.8	6.0	17.6	4.8	3.65	0.10	12.4	6.4	11.2
209	131.9	1.052	81.8	1.2	7.49	15.373	15.834	12.625	18.7	6.0	17.4	4.8	3.62	0.10	12.4	6.3	11.1
210	131.7	1.057	81.8	1.2	7.49	15.458	15.798	12.581	18.6	6.0	17.4	4.8	3.60	0.10	12.3	6.3	11.1
211	131.7	1.062	81.8	1.2	7.50	15.542	15.798	12.568	18.6	6.0	17.4	4.8	3.59	0.10	12.3	6.3	11.1
212	131.7	1.066	81.8	1.2	7.51	15.608	15.798	12.557	18.6	6.0	17.4	4.8	3.59	0.10	12.3	6.3	11.1
213	132.6	1.071	81.8	1.2	7.51	15.684	15.943	12.668	18.7	6.0	17.5	4.8	3.61	0.09	12.4	6.3	11.2
214	133.0	1.075	81.8	1.2	7.52	15.750	15.997	12.703	18.7	6.0	17.6	4.8	3.62	0.09	12.4	6.4	11.2
215	133.4	1.079	81.8	1.2	7.53	15.825	16.070	12.752	18.8	6.0	17.6	4.8	3.63	0.09	12.4	6.4	11.2
216	133.4	1.084	81.7	1.2	7.53	15.891	16.070	12.742	18.8	6.0	17.6	4.9	3.61	0.09	12.4	6.4	11.2
217	133.9	1.088	81.7	1.2	7.54	15.957	16.143	12.792	18.8	6.0	17.7	4.9	3.62	0.09	12.4	6.4	11.3
218	133.9	1.092	81.7	1.1	7.54	16.032	16.143	12.780	18.8	6.0	17.7	4.9	3.60	0.09	12.4	6.4	11.3
219	134.1	1.096	81.7	1.2	7.55	16.098	16.179	12.800	18.8	6.0	17.7	4.9	3.62	0.09	12.4	6.4	11.3
220	134.1	1.100	81.7	1.2	7.56	16.164	16.179	12.789	18.8	6.0	17.7	4.9	3.62	0.09	12.4	6.4	11.3
221	134.5	1.104	81.7	1.2	7.56	16.230	16.234	12.824	18.9	6.0	17.7	4.9	3.63	0.09	12.5	6.4	11.3
222	134.7	1.109	81.7	1.2	7.57	16.305	16.270	12.842	18.9	6.0	17.7	4.9	3.63	0.09	12.5	6.4	11.3
223	135.2	1.113	81.7	1.1	7.57	16.371	16.342	12.892	18.9	6.0	17.8	4.9	3.63	0.09	12.5	6.4	11.4

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	135.5	1.117	81.7	1.1	7.58	16.447	16.397	12.926	19.0	6.0	17.8	4.9	3.63	0.09	12.5	6.5	11.4
225	136.1	1.121	81.7	1.1	7.59	16.513	16.488	12.991	19.0	6.0	17.9	4.9	3.63	0.09	12.5	6.5	11.4
226	136.8	1.126	81.7	1.1	7.59	16.588	16.597	13.069	19.1	6.0	18.0	4.9	3.66	0.09	12.6	6.5	11.4
227	137.2	1.130	81.7	1.1	7.60	16.654	16.669	13.119	19.2	6.0	18.0	4.9	3.67	0.09	12.6	6.6	11.5
228	137.9	1.135	81.7	1.1	7.61	16.729	16.778	13.197	19.2	6.0	18.1	4.9	3.69	0.09	12.6	6.6	11.5
229	137.2	1.139	81.7	1.1	7.61	16.805	16.669	13.093	19.1	6.0	18.0	4.9	3.65	0.08	12.6	6.5	11.5
230	137.0	1.144	81.7	1.1	7.62	16.880	16.633	13.051	19.1	6.0	18.0	4.9	3.64	0.09	12.6	6.5	11.5
231	136.5	1.148	81.7	1.1	7.63	16.955	16.560	12.978	19.0	6.0	17.9	4.9	3.63	0.09	12.5	6.5	11.4
232	136.4	1.153	81.6	1.1	7.63	17.031	16.542	12.950	19.0	6.0	17.9	5.0	3.61	0.08	12.5	6.5	11.4
233	136.2	1.158	81.6	1.1	7.64	17.115	16.506	12.906	19.0	6.0	17.9	5.0	3.60	0.08	12.5	6.5	11.4
234	136.5	1.163	81.7	1.1	7.65	17.191	16.560	12.939	19.0	6.0	17.9	4.9	3.62	0.09	12.5	6.5	11.4
235	136.1	1.167	81.6	1.1	7.66	17.266	16.488	12.866	18.9	6.0	17.8	5.0	3.59	0.08	12.5	6.4	11.4
236	136.2	1.172	81.6	1.1	7.66	17.341	16.506	12.869	18.9	6.0	17.8	5.0	3.59	0.08	12.5	6.4	11.4
237	136.1	1.177	81.6	1.1	7.67	17.426	16.488	12.840	18.9	6.0	17.8	5.0	3.59	0.08	12.5	6.4	11.4
238	136.1	1.181	81.6	1.1	7.68	17.492	16.488	12.829	18.9	6.0	17.8	5.0	3.58	0.08	12.5	6.4	11.4
239	135.8	1.186	81.6	1.1	7.68	17.568	16.451	12.787	18.8	6.0	17.8	5.0	3.56	0.08	12.4	6.4	11.4
240	135.4	1.190	81.6	1.1	7.69	17.643	16.379	12.714	18.8	6.0	17.7	5.0	3.55	0.08	12.4	6.4	11.4
241	135.3	1.195	81.6	1.1	7.70	17.718	16.361	12.687	18.7	6.0	17.7	5.0	3.54	0.08	12.4	6.3	11.3
242	135.8	1.199	81.6	1.1	7.70	17.784	16.451	12.751	18.8	6.0	17.7	5.0	3.55	0.08	12.4	6.4	11.4
243	136.0	1.203	81.6	1.1	7.71	17.860	16.470	12.754	18.8	6.0	17.7	5.0	3.55	0.08	12.4	6.4	11.4
244	135.5	1.208	81.6	1.1	7.72	17.935	16.397	12.681	18.7	6.0	17.7	5.0	3.54	0.08	12.4	6.3	11.3
245	135.2	1.213	81.6	1.0	7.73	18.010	16.342	12.624	18.7	6.0	17.6	5.0	3.51	0.08	12.4	6.3	11.3
246	135.2	1.217	81.6	1.0	7.73	18.086	16.342	12.612	18.7	6.0	17.6	5.0	3.51	0.08	12.4	6.3	11.3
247	134.8	1.221	81.6	1.0	7.74	18.152	16.288	12.557	18.6	6.0	17.6	5.0	3.50	0.08	12.3	6.3	11.3
248	134.8	1.226	81.6	1.0	7.75	18.236	16.288	12.543	18.6	6.0	17.6	5.0	3.50	0.08	12.3	6.3	11.3
249	134.8	1.231	81.6	1.0	7.75	18.312	16.288	12.531	18.6	6.0	17.6	5.0	3.49	0.08	12.3	6.3	11.3
250	134.6	1.236	81.6	1.0	7.76	18.387	16.252	12.489	18.5	6.0	17.5	5.0	3.49	0.08	12.3	6.2	11.3
251	134.9	1.240	81.5	1.0	7.77	18.462	16.306	12.521	18.6	6.0	17.6	5.1	3.48	0.08	12.3	6.3	11.3
252	134.8	1.245	81.5	1.0	7.78	18.538	16.288	11.867	17.9	6.0	16.9	5.1	3.35	0.08	12.0	5.9	11.0
253	134.8	1.250	81.5	1.0	7.78	18.623	16.288	11.851	17.9	6.0	16.9	5.1	3.35	0.08	12.0	5.9	11.0
254	134.5	1.255	81.5	1.0	7.79	18.707	16.234	11.790	17.8	6.0	16.8	5.1	3.33	0.08	11.9	5.9	10.9
255	134.2	1.260	81.5	1.0	7.80	18.783	16.197	11.745	17.8	6.0	16.8	5.1	3.32	0.08	11.9	5.9	10.9
256	134.1	1.264	81.5	1.0	7.81	18.858	16.179	11.716	17.8	6.0	16.8	5.1	3.32	0.08	11.9	5.9	10.9
257	134.3	1.269	81.5	1.0	7.81	18.933	16.215	11.731	17.8	6.0	16.8	5.1	3.32	0.08	11.9	5.9	10.9
258	134.3	1.273	81.5	1.0	7.82	18.999	16.215	11.718	17.8	6.0	16.8	5.1	3.31	0.08	11.9	5.9	10.9
259	134.5	1.277	81.5	1.0	7.83	19.075	16.234	11.718	17.8	6.0	16.8	5.1	3.31	0.08	11.9	5.9	10.9
260	134.8	1.281	81.5	1.0	7.83	19.141	16.288	11.749	17.8	6.0	16.8	5.1	3.31	0.08	11.9	5.9	11.0
261	134.9	1.286	81.5	1.0	7.84	19.216	16.306	11.749	17.8	6.0	16.8	5.1	3.31	0.08	11.9	5.9	11.0
262	135.2	1.290	81.5	1.0	7.85	19.282	16.342	11.765	17.8	6.0	16.8	5.1	3.32	0.08	11.9	5.9	11.0
263	135.4	1.294	81.5	1.0	7.85	19.348	16.379	11.781	17.8	6.0	16.9	5.1	3.32	0.08	11.9	5.9	11.0
264	135.8	1.298	81.5	1.0	7.86	19.414	16.451	11.827	17.9	6.0	16.9	5.1	3.33	0.08	12.0	5.9	11.0

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
265	136.5	1.302	81.5	0.9	7.87	19.480	16.560	11.901	17.9	6.0	17.0	5.1	3.33	0.08	12.0	6.0	11.1
266	136.5	1.307	81.5	0.9	7.87	19.555	16.560	11.886	17.9	6.0	17.0	5.1	3.33	0.08	12.0	5.9	11.1
267	137.1	1.311	81.5	0.9	7.88	19.621	16.651	11.946	18.0	6.0	17.1	5.1	3.32	0.08	12.0	6.0	11.1
268	137.9	1.315	81.5	0.9	7.89	19.687	16.778	12.035	18.1	6.0	17.1	5.1	3.35	0.08	12.1	6.0	11.1
269	138.3	1.319	81.5	0.9	7.89	19.762	16.833	12.063	18.1	6.0	17.2	5.1	3.36	0.08	12.1	6.0	11.1
270	138.7	1.323	81.5	0.9	7.90	19.828	16.905	12.108	18.2	6.0	17.2	5.1	3.37	0.08	12.1	6.1	11.2
271	138.3	1.328	81.5	0.9	7.91	19.904	16.833	12.035	18.1	6.0	17.1	5.1	3.35	0.08	12.1	6.0	11.1
272	138.5	1.332	81.5	0.9	7.91	19.970	16.869	12.051	18.1	6.0	17.2	5.1	3.36	0.08	12.1	6.0	11.1
273	138.5	1.334	81.5	0.9	7.92	19.998	16.869	12.045	18.1	6.0	17.2	5.1	3.34	0.08	12.1	6.0	11.2

Specimen C Shear Data

CU Triaxial Test

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File Location
T-5675.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5675
Sample Location: Guilford County (Sta. 404+50)
Sample Description: Soft reddish orange colored clay
Remarks: Partial shear.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.7320001
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.864	2.845	
Height (in)	6.045	6.003	
Weight (grams)	922.00		1062.00
Moisture (%)	35.79		56.41
Dry Density (pcf)	66.42	67.76	
Saturation (%)	62.36	100.00	
Void Ratio	1.561	1.517	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 92.700
Effective Confining Stress (psi): 12.0
Corrected Peak Deviator Stress (psi): 15.226 at reading number: 36

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	24.4	0.145	80.7	0.0	6.36	0.000	0.000	0.000	12.0	12.0	12.0	12.0	1.00	0.00	12.0	0.0	12.0
1	51.2	0.149	81.4	0.7	6.36	0.067	4.206	4.178	16.1	12.0	15.4	11.3	1.37	0.17	14.1	2.1	13.4
2	67.6	0.154	82.4	1.7	6.37	0.152	6.781	6.712	18.7	12.0	17.0	10.3	1.65	0.25	15.3	3.4	13.6
3	77.8	0.160	83.1	2.3	6.37	0.247	8.395	8.278	20.2	12.0	17.9	9.6	1.86	0.28	16.1	4.1	13.8
4	63.8	0.164	82.8	2.0	6.38	0.323	6.183	6.038	18.0	12.0	16.0	9.9	1.61	0.34	15.0	3.0	13.0
5	85.2	0.169	83.7	3.0	6.38	0.399	9.555	9.363	21.3	12.0	18.3	9.0	2.04	0.32	16.6	4.7	13.7
6	92.9	0.174	84.2	3.5	6.39	0.476	10.770	10.535	22.5	12.0	19.0	8.5	2.24	0.33	17.2	5.3	13.8
7	97.9	0.178	84.6	3.9	6.39	0.552	11.550	11.273	23.2	12.0	19.4	8.1	2.39	0.34	17.6	5.6	13.7
8	102.3	0.183	85.0	4.2	6.40	0.637	12.239	11.914	23.9	12.0	19.7	7.7	2.54	0.35	17.9	6.0	13.7
9	105.8	0.188	85.3	4.5	6.40	0.713	12.801	12.434	24.4	12.0	19.9	7.4	2.67	0.36	18.2	6.2	13.7
10	109.0	0.192	85.5	4.8	6.41	0.789	13.290	12.880	24.8	12.0	20.1	7.2	2.79	0.37	18.4	6.4	13.6
11	111.7	0.198	85.8	5.0	6.41	0.875	13.725	13.267	25.2	12.0	20.2	6.9	2.91	0.38	18.6	6.6	13.6
12	114.0	0.202	86.0	5.2	6.42	0.951	14.088	13.586	25.6	12.0	20.3	6.7	3.02	0.38	18.8	6.8	13.5
13	115.6	0.207	86.1	5.4	6.42	1.027	14.342	13.797	25.8	12.0	20.4	6.6	3.10	0.39	18.9	6.9	13.5
14	117.6	0.211	86.3	5.5	6.43	1.103	14.650	14.062	26.0	12.0	20.5	6.4	3.19	0.39	19.0	7.0	13.5
15	119.0	0.216	86.4	5.7	6.43	1.179	14.868	14.236	26.2	12.0	20.5	6.3	3.27	0.40	19.1	7.1	13.4
16	120.4	0.221	86.5	5.8	6.44	1.265	15.085	14.405	26.4	12.0	20.6	6.2	3.34	0.40	19.2	7.2	13.4
17	121.6	0.226	86.7	5.9	6.45	1.341	15.285	14.561	26.5	12.0	20.6	6.0	3.41	0.41	19.2	7.3	13.3
18	122.6	0.230	86.7	6.0	6.45	1.417	15.430	14.663	26.6	12.0	20.6	6.0	3.46	0.41	19.3	7.3	13.3

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	123.4	0.235	86.8	6.1	6.46	1.493	15.557	14.747	26.7	12.0	20.6	5.9	3.52	0.41	19.3	7.4	13.2
20	124.2	0.239	86.9	6.2	6.46	1.569	15.683	14.831	26.8	12.0	20.6	5.8	3.57	0.42	19.4	7.4	13.2
21	124.7	0.244	87.0	6.3	6.47	1.645	15.774	14.879	26.8	12.0	20.6	5.7	3.60	0.42	19.4	7.4	13.2
22	125.4	0.248	87.0	6.3	6.47	1.721	15.883	14.944	26.9	12.0	20.6	5.7	3.64	0.42	19.4	7.5	13.1
23	126.0	0.253	87.1	6.4	6.48	1.797	15.974	14.992	27.0	12.0	20.6	5.6	3.68	0.42	19.5	7.5	13.1
24	126.5	0.258	87.1	6.4	6.48	1.883	16.046	15.016	27.0	12.0	20.6	5.6	3.70	0.43	19.5	7.5	13.1
25	126.7	0.263	87.2	6.5	6.49	1.959	16.082	15.010	27.0	12.0	20.5	5.5	3.72	0.43	19.5	7.5	13.0
26	127.1	0.267	87.2	6.5	6.49	2.035	16.137	15.035	27.0	12.0	20.5	5.5	3.76	0.43	19.5	7.5	13.0
27	127.4	0.272	87.2	6.5	6.50	2.111	16.191	15.076	27.0	12.0	20.5	5.5	3.77	0.43	19.5	7.5	13.0
28	127.6	0.276	87.3	6.6	6.50	2.187	16.227	15.099	27.1	12.0	20.5	5.4	3.80	0.44	19.5	7.5	12.9
29	128.1	0.281	87.3	6.6	6.51	2.263	16.300	15.158	27.1	12.0	20.6	5.4	3.81	0.43	19.5	7.6	13.0
30	128.2	0.285	87.3	6.6	6.51	2.339	16.318	15.163	27.1	12.0	20.5	5.4	3.83	0.44	19.5	7.6	12.9
31	128.4	0.291	87.4	6.6	6.52	2.425	16.354	15.185	27.2	12.0	20.5	5.3	3.85	0.44	19.6	7.6	12.9
32	128.3	0.295	87.4	6.7	6.52	2.501	16.336	15.154	27.1	12.0	20.5	5.3	3.86	0.44	19.5	7.6	12.9
33	128.3	0.300	87.4	6.7	6.53	2.577	16.336	15.142	27.1	12.0	20.4	5.3	3.87	0.44	19.5	7.6	12.8
34	128.6	0.304	87.4	6.7	6.53	2.653	16.372	15.165	27.1	12.0	20.4	5.3	3.87	0.44	19.5	7.6	12.9
35	129.0	0.309	87.4	6.7	6.54	2.739	16.445	15.221	27.2	12.0	20.5	5.3	3.89	0.44	19.6	7.6	12.9
36	129.1	0.314	87.5	6.7	6.54	2.815	16.463	15.226	27.2	12.0	20.5	5.2	3.90	0.44	19.6	7.6	12.9
37	128.9	0.319	87.5	6.7	6.55	2.891	16.427	15.179	27.1	12.0	20.4	5.2	3.91	0.44	19.6	7.6	12.8
38	129.2	0.324	87.5	6.8	6.55	2.977	16.481	15.217	27.2	12.0	20.4	5.2	3.93	0.45	19.6	7.6	12.8
39	129.2	0.328	87.5	6.8	6.56	3.043	16.481	15.206	27.2	12.0	20.4	5.2	3.93	0.45	19.6	7.6	12.8
40	129.4	0.333	87.5	6.8	6.56	3.129	16.499	15.210	27.2	12.0	20.4	5.2	3.95	0.45	19.6	7.6	12.8
41	129.2	0.337	87.5	6.8	6.57	3.205	16.481	15.180	27.1	12.0	20.3	5.2	3.94	0.45	19.6	7.6	12.7
42	129.4	0.342	87.5	6.8	6.57	3.281	16.499	15.185	27.2	12.0	20.3	5.2	3.94	0.45	19.6	7.6	12.8
43	129.4	0.347	87.5	6.8	6.58	3.357	16.499	15.172	27.1	12.0	20.3	5.2	3.94	0.45	19.6	7.6	12.7
44	129.4	0.352	87.6	6.8	6.59	3.443	16.499	15.158	27.1	12.0	20.3	5.1	3.96	0.45	19.5	7.6	12.7
45	129.5	0.356	87.6	6.8	6.59	3.519	16.517	15.163	27.1	12.0	20.3	5.1	3.96	0.45	19.5	7.6	12.7
46	129.7	0.361	87.6	6.9	6.60	3.595	16.554	15.185	27.2	12.0	20.3	5.1	3.98	0.45	19.6	7.6	12.7
47	129.7	0.365	87.6	6.9	6.60	3.671	16.554	15.173	27.1	12.0	20.3	5.1	3.98	0.45	19.6	7.6	12.7
48	129.7	0.370	87.6	6.9	6.61	3.747	16.554	15.160	27.1	12.0	20.3	5.1	3.97	0.45	19.5	7.6	12.7
49	129.7	0.375	87.6	6.9	6.61	3.833	16.554	15.146	27.1	12.0	20.2	5.1	3.97	0.45	19.5	7.6	12.7
50	129.8	0.379	87.6	6.9	6.62	3.899	16.572	15.153	27.1	12.0	20.3	5.1	3.97	0.45	19.5	7.6	12.7
51	129.7	0.384	87.6	6.9	6.62	3.985	16.554	15.121	27.1	12.0	20.2	5.1	3.98	0.46	19.5	7.6	12.6
52	129.9	0.389	87.6	6.9	6.63	4.061	16.590	15.143	27.1	12.0	20.2	5.1	3.99	0.46	19.5	7.6	12.6
53	129.9	0.393	87.6	6.9	6.63	4.137	16.590	15.131	27.1	12.0	20.2	5.1	3.98	0.46	19.5	7.6	12.6
54	130.1	0.398	87.6	6.9	6.64	4.213	16.608	15.135	27.1	12.0	20.2	5.1	3.99	0.46	19.5	7.6	12.6
55	130.1	0.403	87.6	6.9	6.64	4.289	16.608	15.123	27.1	12.0	20.2	5.1	3.98	0.46	19.5	7.6	12.6
56	130.3	0.407	87.6	6.9	6.65	4.365	16.644	15.145	27.1	12.0	20.2	5.1	3.99	0.46	19.5	7.6	12.6
57	130.3	0.412	87.6	6.9	6.65	4.441	16.644	15.132	27.1	12.0	20.2	5.1	3.98	0.46	19.5	7.6	12.6
58	130.4	0.417	87.7	6.9	6.66	4.527	16.663	15.135	27.1	12.0	20.2	5.0	4.00	0.46	19.5	7.6	12.6
59	130.4	0.421	87.7	6.9	6.67	4.603	16.663	15.122	27.1	12.0	20.2	5.0	4.00	0.46	19.5	7.6	12.6

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	130.3	0.426	87.7	6.9	6.67	4.679	16.644	15.092	27.1	12.0	20.1	5.0	3.99	0.46	19.5	7.5	12.6
61	130.3	0.430	87.7	6.9	6.68	4.755	16.644	15.080	27.0	12.0	20.1	5.0	3.99	0.46	19.5	7.5	12.6
62	130.5	0.435	87.7	6.9	6.68	4.831	16.681	15.102	27.1	12.0	20.1	5.0	4.00	0.46	19.5	7.6	12.6
63	130.5	0.440	87.7	6.9	6.69	4.907	16.681	15.089	27.1	12.0	20.1	5.0	3.99	0.46	19.5	7.5	12.6
64	130.4	0.444	87.7	6.9	6.69	4.983	16.663	15.059	27.0	12.0	20.1	5.0	3.99	0.46	19.5	7.5	12.6
65	130.4	0.449	87.7	6.9	6.70	5.069	16.663	15.045	27.0	12.0	20.1	5.0	3.98	0.46	19.5	7.5	12.6
66	130.5	0.454	87.7	6.9	6.70	5.145	16.681	15.049	27.0	12.0	20.1	5.0	3.99	0.46	19.5	7.5	12.6
67	130.5	0.458	87.7	6.9	6.71	5.221	16.681	15.037	27.0	12.0	20.1	5.0	3.98	0.46	19.5	7.5	12.6
68	130.6	0.463	87.7	6.9	6.71	5.297	16.699	15.041	27.0	12.0	20.1	5.0	3.98	0.46	19.5	7.5	12.6
69	130.9	0.468	87.7	7.0	6.72	5.383	16.735	15.061	27.0	12.0	20.1	5.0	4.01	0.46	19.5	7.5	12.5
70	131.0	0.473	87.7	6.9	6.73	5.459	16.753	15.065	27.0	12.0	20.1	5.0	3.99	0.46	19.5	7.5	12.6
71	131.1	0.477	87.7	6.9	6.73	5.535	16.771	15.070	27.0	12.0	20.1	5.0	3.99	0.46	19.5	7.5	12.6
72	131.1	0.482	87.7	6.9	6.74	5.611	16.771	15.057	27.0	12.0	20.1	5.0	3.99	0.46	19.5	7.5	12.6
73	131.2	0.486	87.7	7.0	6.74	5.687	16.789	15.061	27.0	12.0	20.1	5.0	4.01	0.46	19.5	7.5	12.5
74	131.1	0.491	87.7	7.0	6.75	5.763	16.771	15.032	27.0	12.0	20.0	5.0	4.00	0.46	19.5	7.5	12.5
75	131.2	0.496	87.7	6.9	6.75	5.849	16.789	15.034	27.0	12.0	20.1	5.0	3.98	0.46	19.5	7.5	12.6
76	131.2	0.501	87.7	6.9	6.76	5.925	16.789	15.022	27.0	12.0	20.1	5.0	3.98	0.46	19.5	7.5	12.6
77	131.1	0.505	87.7	6.9	6.76	6.001	16.771	14.992	27.0	12.0	20.0	5.0	3.97	0.46	19.5	7.5	12.5
78	131.3	0.510	87.7	6.9	6.77	6.077	16.808	15.013	27.0	12.0	20.1	5.0	3.98	0.46	19.5	7.5	12.5
79	131.4	0.514	87.7	7.0	6.78	6.153	16.826	15.017	27.0	12.0	20.0	5.0	4.00	0.46	19.5	7.5	12.5
80	131.4	0.519	87.7	7.0	6.78	6.229	16.826	15.004	27.0	12.0	20.0	5.0	3.99	0.46	19.5	7.5	12.5
81	131.6	0.524	87.7	7.0	6.79	6.305	16.844	15.009	27.0	12.0	20.0	5.0	4.00	0.46	19.5	7.5	12.5
82	131.8	0.528	87.7	6.9	6.79	6.381	16.880	15.030	27.0	12.0	20.1	5.0	3.98	0.46	19.5	7.5	12.6
83	131.6	0.533	87.7	6.9	6.80	6.457	16.844	14.983	26.9	12.0	20.0	5.0	3.97	0.46	19.5	7.5	12.5
84	131.7	0.537	87.7	6.9	6.80	6.533	16.862	14.987	27.0	12.0	20.0	5.0	3.97	0.46	19.5	7.5	12.5
85	131.7	0.542	87.7	6.9	6.81	6.610	16.862	14.974	26.9	12.0	20.0	5.0	3.97	0.46	19.5	7.5	12.5
86	131.6	0.546	87.7	7.0	6.81	6.686	16.844	14.945	26.9	12.0	20.0	5.0	3.98	0.47	19.4	7.5	12.5
87	131.6	0.551	87.7	7.0	6.82	6.762	16.844	14.932	26.9	12.0	19.9	5.0	3.98	0.47	19.4	7.5	12.5
88	131.7	0.556	87.7	7.0	6.83	6.838	16.862	14.936	26.9	12.0	19.9	5.0	3.98	0.47	19.4	7.5	12.5
89	131.9	0.560	87.7	6.9	6.83	6.914	16.898	14.957	26.9	12.0	20.0	5.0	3.97	0.46	19.4	7.5	12.5
90	131.9	0.565	87.7	6.9	6.84	6.990	16.898	14.944	26.9	12.0	20.0	5.0	3.96	0.46	19.4	7.5	12.5
91	132.2	0.570	87.7	6.9	6.84	7.076	16.953	14.980	26.9	12.0	20.0	5.0	3.97	0.46	19.5	7.5	12.5
92	132.5	0.574	87.7	7.0	6.85	7.152	16.989	15.001	27.0	12.0	20.0	5.0	3.99	0.46	19.5	7.5	12.5
93	132.6	0.579	87.7	7.0	6.85	7.228	17.007	15.005	27.0	12.0	20.0	5.0	3.99	0.46	19.5	7.5	12.5
94	132.7	0.583	87.7	7.0	6.86	7.304	17.025	15.009	27.0	12.0	20.0	5.0	4.00	0.46	19.5	7.5	12.5
95	132.5	0.588	87.7	6.9	6.87	7.380	16.989	14.962	26.9	12.0	20.0	5.0	3.97	0.46	19.4	7.5	12.5
96	132.7	0.593	87.7	6.9	6.87	7.456	17.025	14.983	26.9	12.0	20.0	5.0	3.97	0.46	19.5	7.5	12.5
97	132.7	0.597	87.7	6.9	6.88	7.532	17.025	14.970	26.9	12.0	20.0	5.0	3.97	0.46	19.5	7.5	12.5
98	132.7	0.602	87.7	6.9	6.88	7.618	17.025	14.955	26.9	12.0	20.0	5.0	3.97	0.46	19.4	7.5	12.5
99	132.7	0.607	87.7	6.9	6.89	7.694	17.025	14.942	26.9	12.0	20.0	5.0	3.96	0.46	19.4	7.5	12.5
100	132.6	0.611	87.7	7.0	6.89	7.770	17.007	14.912	26.9	12.0	19.9	5.0	3.98	0.47	19.4	7.5	12.5

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	132.8	0.616	87.7	7.0	6.90	7.846	17.043	14.933	26.9	12.0	19.9	5.0	3.98	0.47	19.4	7.5	12.5
102	133.0	0.621	87.7	6.9	6.91	7.931	17.080	14.952	26.9	12.0	20.0	5.0	3.97	0.46	19.4	7.5	12.5
103	132.9	0.626	87.7	6.9	6.91	8.008	17.061	14.922	26.9	12.0	20.0	5.0	3.96	0.46	19.4	7.5	12.5
104	133.0	0.630	87.7	6.9	6.92	8.084	17.080	14.926	26.9	12.0	20.0	5.0	3.96	0.46	19.4	7.5	12.5
105	133.2	0.635	87.7	6.9	6.92	8.160	17.098	14.929	26.9	12.0	20.0	5.0	3.96	0.46	19.4	7.5	12.5
106	133.3	0.640	87.7	6.9	6.93	8.245	17.116	14.931	26.9	12.0	20.0	5.0	3.96	0.46	19.4	7.5	12.5
107	133.3	0.645	87.7	6.9	6.94	8.321	17.116	14.918	26.9	12.0	20.0	5.0	3.96	0.46	19.4	7.5	12.5
108	133.4	0.649	87.7	6.9	6.94	8.397	17.134	14.922	26.9	12.0	20.0	5.0	3.96	0.46	19.4	7.5	12.5
109	133.5	0.654	87.7	6.9	6.95	8.474	17.152	14.926	26.9	12.0	20.0	5.0	3.96	0.46	19.4	7.5	12.5
110	133.6	0.658	87.7	6.9	6.95	8.550	17.170	14.929	26.9	12.0	20.0	5.0	3.96	0.46	19.4	7.5	12.5
111	133.7	0.663	87.7	6.9	6.96	8.626	17.188	14.933	26.9	12.0	20.0	5.0	3.96	0.46	19.4	7.5	12.5
112	133.5	0.667	87.7	6.9	6.96	8.702	17.152	14.886	26.9	12.0	19.9	5.0	3.95	0.47	19.4	7.4	12.5
113	133.6	0.672	87.7	6.9	6.97	8.778	17.170	14.890	26.9	12.0	19.9	5.0	3.95	0.47	19.4	7.4	12.5
114	133.7	0.677	87.7	6.9	6.98	8.854	17.188	14.893	26.9	12.0	19.9	5.0	3.95	0.47	19.4	7.4	12.5
115	133.9	0.681	87.7	6.9	6.98	8.930	17.206	14.897	26.9	12.0	19.9	5.0	3.96	0.46	19.4	7.4	12.5
116	133.7	0.686	87.7	6.9	6.99	9.006	17.188	14.867	26.8	12.0	19.9	5.0	3.95	0.47	19.4	7.4	12.5
117	134.0	0.690	87.6	6.9	6.99	9.082	17.225	14.887	26.9	12.0	20.0	5.1	3.94	0.46	19.4	7.4	12.5
118	134.1	0.695	87.6	6.9	7.00	9.158	17.243	14.890	26.9	12.0	20.0	5.1	3.94	0.46	19.4	7.4	12.5
119	134.1	0.699	87.6	6.9	7.01	9.234	17.243	14.877	26.8	12.0	19.9	5.1	3.93	0.46	19.4	7.4	12.5
120	134.1	0.704	87.6	6.9	7.01	9.310	17.243	14.864	26.8	12.0	19.9	5.1	3.93	0.46	19.4	7.4	12.5
121	134.2	0.709	87.7	6.9	7.02	9.386	17.261	14.867	26.8	12.0	19.9	5.0	3.95	0.47	19.4	7.4	12.5
122	134.2	0.713	87.6	6.9	7.02	9.463	17.261	14.854	26.8	12.0	19.9	5.1	3.93	0.46	19.4	7.4	12.5
123	134.5	0.718	87.6	6.9	7.03	9.539	17.315	14.890	26.9	12.0	20.0	5.1	3.94	0.46	19.4	7.4	12.5
124	134.4	0.722	87.6	6.9	7.04	9.615	17.297	14.861	26.8	12.0	19.9	5.1	3.93	0.46	19.4	7.4	12.5
125	134.5	0.727	87.6	6.9	7.04	9.691	17.315	14.864	26.8	12.0	19.9	5.1	3.93	0.46	19.4	7.4	12.5
126	134.5	0.731	87.6	6.9	7.05	9.767	17.315	14.851	26.8	12.0	19.9	5.1	3.93	0.46	19.4	7.4	12.5
127	134.4	0.737	87.6	6.9	7.05	9.852	17.297	14.820	26.8	12.0	19.9	5.1	3.92	0.47	19.4	7.4	12.5
128	134.7	0.741	87.7	6.9	7.06	9.929	17.333	14.839	26.8	12.0	19.9	5.0	3.94	0.47	19.4	7.4	12.5
129	134.5	0.746	87.6	6.9	7.07	10.005	17.315	14.810	26.8	12.0	19.9	5.1	3.92	0.47	19.4	7.4	12.5
130	134.7	0.750	87.6	6.9	7.07	10.081	17.333	14.813	26.8	12.0	19.9	5.1	3.90	0.46	19.4	7.4	12.5
131	134.8	0.755	87.6	6.9	7.08	10.157	17.352	14.816	26.8	12.0	19.9	5.1	3.91	0.46	19.4	7.4	12.5
132	134.8	0.760	87.6	6.9	7.08	10.242	17.352	14.801	26.8	12.0	19.9	5.1	3.90	0.46	19.4	7.4	12.5
133	134.8	0.764	87.6	6.9	7.09	10.318	17.352	14.788	26.8	12.0	19.9	5.1	3.90	0.46	19.4	7.4	12.5
134	135.1	0.769	87.6	6.9	7.10	10.395	17.406	14.823	26.8	12.0	19.9	5.1	3.91	0.46	19.4	7.4	12.5
135	135.2	0.774	87.6	6.9	7.10	10.471	17.424	14.826	26.8	12.0	19.9	5.1	3.91	0.46	19.4	7.4	12.5
136	135.2	0.779	87.6	6.9	7.11	10.556	17.424	14.812	26.8	12.0	19.9	5.1	3.90	0.46	19.4	7.4	12.5
137	135.1	0.783	87.6	6.9	7.12	10.632	17.406	14.782	26.7	12.0	19.9	5.1	3.90	0.46	19.4	7.4	12.5
138	135.5	0.788	87.6	6.9	7.12	10.708	17.460	14.817	26.8	12.0	19.9	5.1	3.91	0.46	19.4	7.4	12.5
139	135.5	0.792	87.6	6.9	7.13	10.784	17.460	14.804	26.8	12.0	19.9	5.1	3.90	0.46	19.4	7.4	12.5
140	135.2	0.798	87.6	6.9	7.13	10.870	17.424	14.757	26.7	12.0	19.9	5.1	3.89	0.47	19.3	7.4	12.5
141	135.5	0.802	87.6	6.9	7.14	10.946	17.460	14.776	26.7	12.0	19.9	5.1	3.90	0.46	19.4	7.4	12.5

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	135.4	0.807	87.6	6.9	7.15	11.022	17.442	14.746	26.7	12.0	19.8	5.1	3.89	0.47	19.3	7.4	12.5
143	135.5	0.811	87.6	6.8	7.15	11.098	17.460	14.749	26.7	12.0	19.9	5.1	3.88	0.46	19.3	7.4	12.5
144	135.7	0.816	87.6	6.8	7.16	11.174	17.497	14.768	26.7	12.0	19.9	5.1	3.88	0.46	19.4	7.4	12.5
145	135.8	0.820	87.6	6.8	7.16	11.250	17.515	14.771	26.7	12.0	19.9	5.1	3.88	0.46	19.4	7.4	12.5
146	135.7	0.825	87.6	6.8	7.17	11.327	17.497	14.742	26.7	12.0	19.9	5.1	3.87	0.46	19.3	7.4	12.5
147	135.7	0.830	87.6	6.8	7.18	11.403	17.497	14.728	26.7	12.0	19.9	5.1	3.87	0.46	19.3	7.4	12.5
148	136.2	0.834	87.6	6.8	7.18	11.479	17.569	14.779	26.7	12.0	19.9	5.1	3.88	0.46	19.4	7.4	12.5
149	136.3	0.839	87.6	6.8	7.19	11.555	17.587	14.782	26.7	12.0	19.9	5.1	3.88	0.46	19.4	7.4	12.5
150	136.3	0.843	87.6	6.8	7.20	11.631	17.587	14.769	26.7	12.0	19.9	5.1	3.88	0.46	19.4	7.4	12.5
151	136.4	0.848	87.5	6.8	7.20	11.707	17.605	14.771	26.7	12.0	19.9	5.2	3.86	0.46	19.4	7.4	12.5
152	136.3	0.852	87.5	6.8	7.21	11.783	17.587	14.742	26.7	12.0	19.9	5.2	3.86	0.46	19.3	7.4	12.5
153	136.4	0.857	87.5	6.8	7.21	11.859	17.605	14.744	26.7	12.0	19.9	5.2	3.86	0.46	19.3	7.4	12.5
154	136.3	0.862	87.5	6.8	7.22	11.935	17.587	14.715	26.7	12.0	19.9	5.2	3.85	0.46	19.3	7.4	12.5
155	136.6	0.866	87.6	6.8	7.23	12.011	17.642	14.749	26.7	12.0	19.9	5.1	3.88	0.46	19.3	7.4	12.5
156	136.9	0.871	87.5	6.8	7.23	12.087	17.678	14.768	26.7	12.0	19.9	5.2	3.86	0.46	19.4	7.4	12.5
157	137.0	0.875	87.5	6.8	7.24	12.163	17.696	14.770	26.7	12.0	19.9	5.2	3.86	0.46	19.4	7.4	12.5
158	137.0	0.880	87.5	6.8	7.25	12.240	17.696	14.757	26.7	12.0	19.9	5.2	3.86	0.46	19.3	7.4	12.5
159	137.2	0.885	87.5	6.8	7.25	12.325	17.732	14.774	26.7	12.0	19.9	5.2	3.86	0.46	19.4	7.4	12.5
160	137.3	0.890	87.5	6.8	7.26	12.401	17.750	14.776	26.7	12.0	19.9	5.2	3.86	0.46	19.4	7.4	12.5
161	137.4	0.894	87.5	6.8	7.27	12.477	17.769	14.778	26.7	12.0	19.9	5.2	3.87	0.46	19.4	7.4	12.5
162	137.5	0.899	87.5	6.8	7.27	12.553	17.787	14.781	26.7	12.0	19.9	5.2	3.87	0.46	19.4	7.4	12.5
163	137.5	0.903	87.5	6.8	7.28	12.629	17.787	14.767	26.7	12.0	19.9	5.2	3.86	0.46	19.3	7.4	12.5
164	137.8	0.908	87.5	6.8	7.29	12.715	17.823	14.784	26.7	12.0	20.0	5.2	3.85	0.46	19.4	7.4	12.6
165	138.0	0.913	87.5	6.8	7.29	12.791	17.859	14.802	26.8	12.0	20.0	5.2	3.85	0.46	19.4	7.4	12.6
166	138.0	0.917	87.5	6.8	7.30	12.867	17.859	14.788	26.8	12.0	20.0	5.2	3.85	0.46	19.4	7.4	12.6
167	138.1	0.923	87.5	6.8	7.31	12.953	17.877	14.789	26.8	12.0	20.0	5.2	3.85	0.46	19.4	7.4	12.6
168	138.2	0.927	87.5	6.8	7.31	13.029	17.895	14.791	26.8	12.0	20.0	5.2	3.85	0.46	19.4	7.4	12.6
169	138.2	0.932	87.5	6.8	7.32	13.105	17.895	14.777	26.7	12.0	20.0	5.2	3.85	0.46	19.4	7.4	12.6
170	138.2	0.936	87.5	6.8	7.32	13.181	17.895	14.763	26.7	12.0	20.0	5.2	3.85	0.46	19.3	7.4	12.6
171	138.6	0.941	87.5	6.8	7.33	13.257	17.950	14.797	26.8	12.0	20.0	5.2	3.85	0.46	19.4	7.4	12.6
172	138.5	0.945	87.5	6.7	7.34	13.333	17.932	14.768	26.7	12.0	20.0	5.2	3.83	0.46	19.4	7.4	12.6
173	138.6	0.950	87.5	6.8	7.34	13.409	17.950	14.770	26.7	12.0	20.0	5.2	3.85	0.46	19.4	7.4	12.6
174	138.7	0.955	87.5	6.8	7.35	13.485	17.968	14.772	26.7	12.0	20.0	5.2	3.85	0.46	19.4	7.4	12.6
175	138.9	0.959	87.5	6.8	7.36	13.561	18.004	14.789	26.8	12.0	20.0	5.2	3.85	0.46	19.4	7.4	12.6
176	139.2	0.964	87.5	6.8	7.36	13.637	18.041	14.807	26.8	12.0	20.0	5.2	3.85	0.46	19.4	7.4	12.6
177	139.2	0.968	87.5	6.7	7.37	13.714	18.041	14.793	26.8	12.0	20.0	5.2	3.84	0.46	19.4	7.4	12.6
178	139.3	0.973	87.5	6.7	7.38	13.790	18.059	14.795	26.8	12.0	20.0	5.2	3.84	0.46	19.4	7.4	12.6
179	139.4	0.977	87.5	6.7	7.38	13.866	18.077	14.797	26.8	12.0	20.0	5.2	3.84	0.46	19.4	7.4	12.6
180	139.6	0.982	87.5	6.7	7.39	13.942	18.113	14.815	26.8	12.0	20.0	5.2	3.84	0.46	19.4	7.4	12.6
181	139.6	0.987	87.5	6.7	7.40	14.018	18.113	14.801	26.8	12.0	20.0	5.2	3.84	0.46	19.4	7.4	12.6
182	139.6	0.991	87.5	6.7	7.40	14.094	18.113	14.787	26.8	12.0	20.0	5.2	3.83	0.46	19.4	7.4	12.6

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	139.7	0.996	87.5	6.7	7.41	14.170	18.131	14.789	26.8	12.0	20.0	5.2	3.83	0.46	19.4	7.4	12.6
184	139.7	1.000	87.5	6.7	7.42	14.246	18.131	14.775	26.7	12.0	20.0	5.2	3.83	0.46	19.4	7.4	12.6
185	139.7	1.005	87.5	6.7	7.42	14.322	18.131	14.761	26.7	12.0	20.0	5.2	3.81	0.46	19.3	7.4	12.6
186	139.9	1.009	87.5	6.7	7.43	14.398	18.149	14.763	26.7	12.0	20.0	5.2	3.81	0.46	19.3	7.4	12.6
187	140.0	1.014	87.5	6.7	7.44	14.474	18.167	14.765	26.7	12.0	20.0	5.2	3.81	0.46	19.3	7.4	12.6
188	140.1	1.019	87.5	6.7	7.44	14.550	18.186	14.766	26.7	12.0	20.0	5.2	3.81	0.46	19.3	7.4	12.6
189	140.2	1.024	87.5	6.7	7.45	14.636	18.204	14.766	26.7	12.0	20.0	5.2	3.81	0.46	19.3	7.4	12.6
190	140.4	1.028	87.5	6.7	7.46	14.712	18.240	14.783	26.7	12.0	20.0	5.2	3.82	0.45	19.4	7.4	12.6
191	140.4	1.033	87.5	6.7	7.46	14.788	18.240	14.769	26.7	12.0	20.0	5.2	3.82	0.46	19.4	7.4	12.6
192	140.8	1.037	87.5	6.7	7.47	14.864	18.294	14.802	26.8	12.0	20.0	5.2	3.82	0.45	19.4	7.4	12.6
193	140.7	1.042	87.4	6.7	7.48	14.940	18.276	14.772	26.7	12.0	20.0	5.3	3.80	0.45	19.4	7.4	12.7
194	140.9	1.047	87.5	6.7	7.48	15.026	18.312	14.788	26.8	12.0	20.0	5.2	3.82	0.45	19.4	7.4	12.6
195	140.5	1.052	87.5	6.7	7.49	15.102	18.258	14.728	26.7	12.0	20.0	5.2	3.81	0.46	19.3	7.4	12.6
196	140.9	1.056	87.5	6.7	7.50	15.178	18.312	14.760	26.7	12.0	20.0	5.2	3.81	0.46	19.3	7.4	12.6
197	141.0	1.061	87.5	6.7	7.50	15.254	18.331	14.761	26.7	12.0	20.0	5.2	3.81	0.46	19.3	7.4	12.6
198	140.9	1.066	87.4	6.7	7.51	15.340	18.312	14.730	26.7	12.0	20.0	5.3	3.79	0.45	19.3	7.4	12.6
199	140.9	1.071	87.4	6.7	7.52	15.416	18.312	14.716	26.7	12.0	20.0	5.3	3.79	0.45	19.3	7.4	12.6
200	141.1	1.075	87.4	6.7	7.52	15.492	18.349	14.733	26.7	12.0	20.0	5.3	3.79	0.45	19.3	7.4	12.6
201	141.4	1.080	87.4	6.7	7.53	15.568	18.385	14.750	26.7	12.0	20.0	5.3	3.80	0.45	19.3	7.4	12.7
202	141.4	1.084	87.4	6.7	7.54	15.644	18.385	14.736	26.7	12.0	20.0	5.3	3.79	0.45	19.3	7.4	12.6
203	141.5	1.089	87.4	6.7	7.54	15.720	18.403	14.737	26.7	12.0	20.0	5.3	3.79	0.45	19.3	7.4	12.6
204	141.6	1.094	87.4	6.7	7.55	15.806	18.421	14.736	26.7	12.0	20.0	5.3	3.79	0.45	19.3	7.4	12.6
205	141.7	1.098	87.4	6.7	7.56	15.882	18.439	14.738	26.7	12.0	20.0	5.3	3.78	0.45	19.3	7.4	12.7
206	141.6	1.102	87.4	6.7	7.57	15.948	18.421	14.710	26.7	12.0	20.0	5.3	3.77	0.45	19.3	7.4	12.7
207	141.7	1.108	87.4	6.7	7.57	16.034	18.439	14.710	26.7	12.0	20.0	5.3	3.77	0.45	19.3	7.4	12.7
208	141.5	1.112	87.4	6.7	7.58	16.101	18.403	14.667	26.6	12.0	20.0	5.3	3.76	0.45	19.3	7.3	12.6
209	141.6	1.116	87.4	6.7	7.59	16.177	18.421	14.668	26.6	12.0	20.0	5.3	3.77	0.45	19.3	7.3	12.6
210	141.8	1.121	87.4	6.7	7.59	16.262	18.458	14.683	26.6	12.0	20.0	5.3	3.77	0.45	19.3	7.3	12.6
211	142.2	1.126	87.4	6.7	7.60	16.338	18.512	14.714	26.7	12.0	20.0	5.3	3.77	0.45	19.3	7.4	12.7
212	142.3	1.130	87.4	6.7	7.61	16.405	18.530	14.717	26.7	12.0	20.0	5.3	3.77	0.45	19.3	7.4	12.7
213	142.4	1.134	87.4	6.7	7.61	16.481	18.548	14.718	26.7	12.0	20.0	5.3	3.77	0.45	19.3	7.4	12.7
214	142.5	1.139	87.4	6.6	7.62	16.557	18.566	14.719	26.7	12.0	20.1	5.3	3.76	0.45	19.3	7.4	12.7
215	142.6	1.144	87.4	6.6	7.63	16.633	18.584	14.720	26.7	12.0	20.1	5.3	3.76	0.45	19.3	7.4	12.7
216	142.8	1.149	87.4	6.6	7.64	16.719	18.621	14.734	26.7	12.0	20.1	5.3	3.76	0.45	19.3	7.4	12.7
217	143.0	1.153	87.4	6.6	7.64	16.785	18.639	14.737	26.7	12.0	20.1	5.3	3.76	0.45	19.3	7.4	12.7
218	143.3	1.157	87.4	6.6	7.65	16.861	18.693	14.768	26.7	12.0	20.1	5.3	3.77	0.45	19.4	7.4	12.7
219	143.1	1.162	87.4	6.6	7.66	16.937	18.657	14.724	26.7	12.0	20.1	5.3	3.76	0.45	19.3	7.4	12.7
220	143.1	1.166	87.4	6.6	7.66	17.014	18.657	14.710	26.7	12.0	20.0	5.3	3.76	0.45	19.3	7.4	12.7
221	143.0	1.171	87.3	6.6	7.67	17.090	18.639	14.680	26.6	12.0	20.0	5.4	3.74	0.45	19.3	7.3	12.7
222	143.1	1.176	87.3	6.6	7.68	17.166	18.657	14.681	26.6	12.0	20.0	5.4	3.74	0.45	19.3	7.3	12.7
223	143.1	1.180	87.3	6.6	7.68	17.242	18.657	14.667	26.6	12.0	20.0	5.4	3.73	0.45	19.3	7.3	12.7

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	143.4	1.185	87.3	6.6	7.69	17.327	18.711	14.696	26.7	12.0	20.1	5.4	3.74	0.45	19.3	7.3	12.7
225	143.3	1.190	87.3	6.6	7.70	17.403	18.693	14.667	26.6	12.0	20.0	5.4	3.73	0.45	19.3	7.3	12.7
226	143.1	1.194	87.3	6.6	7.71	17.480	18.657	14.623	26.6	12.0	20.0	5.4	3.73	0.45	19.3	7.3	12.7
227	143.5	1.199	87.3	6.6	7.71	17.556	18.729	14.668	26.6	12.0	20.0	5.4	3.73	0.45	19.3	7.3	12.7
228	143.4	1.204	87.3	6.6	7.72	17.632	18.711	14.639	26.6	12.0	20.0	5.4	3.73	0.45	19.3	7.3	12.7
229	143.5	1.209	87.3	6.6	7.73	17.717	18.729	14.638	26.6	12.0	20.0	5.4	3.71	0.45	19.3	7.3	12.7
230	143.7	1.213	87.3	6.6	7.74	17.793	18.748	14.639	26.6	12.0	20.0	5.4	3.71	0.45	19.3	7.3	12.7
231	144.1	1.218	87.3	6.6	7.74	17.869	18.820	14.684	26.7	12.0	20.1	5.4	3.72	0.45	19.3	7.3	12.7
232	144.1	1.222	87.3	6.6	7.75	17.946	18.820	14.670	26.6	12.0	20.1	5.4	3.72	0.45	19.3	7.3	12.7
233	144.2	1.227	87.3	6.6	7.76	18.022	18.838	14.670	26.6	12.0	20.1	5.4	3.72	0.45	19.3	7.3	12.7
234	143.9	1.232	87.3	6.6	7.76	18.107	18.784	14.609	26.6	12.0	20.0	5.4	3.71	0.45	19.3	7.3	12.7
235	144.2	1.237	87.3	6.6	7.77	18.183	18.838	14.640	26.6	12.0	20.0	5.4	3.71	0.45	19.3	7.3	12.7
236	144.1	1.241	87.3	6.5	7.78	18.259	18.820	14.611	26.6	12.0	20.0	5.4	3.69	0.45	19.3	7.3	12.7
237	144.3	1.246	87.3	6.6	7.79	18.335	18.856	14.626	26.6	12.0	20.0	5.4	3.71	0.45	19.3	7.3	12.7
238	144.2	1.250	87.3	6.6	7.79	18.412	18.838	14.597	26.6	12.0	20.0	5.4	3.71	0.45	19.3	7.3	12.7
239	144.3	1.255	87.3	6.6	7.80	18.488	18.856	14.597	26.6	12.0	20.0	5.4	3.71	0.45	19.3	7.3	12.7
240	144.6	1.259	87.3	6.6	7.81	18.564	18.893	14.612	26.6	12.0	20.0	5.4	3.71	0.45	19.3	7.3	12.7
241	144.6	1.264	87.3	6.5	7.82	18.640	18.893	14.598	26.6	12.0	20.0	5.4	3.69	0.45	19.3	7.3	12.7
242	144.8	1.269	87.3	6.5	7.82	18.716	18.929	14.613	26.6	12.0	20.0	5.4	3.70	0.45	19.3	7.3	12.7
243	145.0	1.273	87.3	6.5	7.83	18.792	18.965	14.628	26.6	12.0	20.1	5.4	3.70	0.45	19.3	7.3	12.7
244	144.8	1.278	87.3	6.5	7.84	18.868	18.929	14.584	26.6	12.0	20.0	5.4	3.69	0.45	19.3	7.3	12.7
245	144.7	1.282	87.3	6.5	7.85	18.944	18.911	14.555	26.5	12.0	20.0	5.4	3.68	0.45	19.2	7.3	12.7
246	144.9	1.287	87.3	6.5	7.85	19.020	18.947	14.570	26.5	12.0	20.0	5.4	3.69	0.45	19.3	7.3	12.7
247	145.0	1.291	87.3	6.5	7.86	19.096	18.965	14.570	26.5	12.0	20.0	5.4	3.69	0.45	19.3	7.3	12.7
248	144.9	1.296	87.3	6.5	7.87	19.172	18.947	14.541	26.5	12.0	20.0	5.4	3.68	0.45	19.2	7.3	12.7
249	144.9	1.301	87.2	6.5	7.87	19.248	18.947	14.527	26.5	12.0	20.0	5.5	3.66	0.45	19.2	7.3	12.7
250	144.9	1.305	87.2	6.5	7.88	19.325	18.947	14.512	26.5	12.0	20.0	5.5	3.66	0.45	19.2	7.3	12.7
251	145.0	1.310	87.2	6.5	7.89	19.401	18.965	14.513	26.5	12.0	20.0	5.5	3.66	0.45	19.2	7.3	12.7
252	145.3	1.314	87.2	6.5	7.90	19.467	19.001	14.529	26.5	12.0	20.0	5.5	3.67	0.45	19.2	7.3	12.7
253	145.3	1.319	87.2	6.5	7.90	19.553	19.001	14.513	26.5	12.0	20.0	5.5	3.66	0.45	19.2	7.3	12.7
254	145.3	1.323	87.2	6.5	7.91	19.629	19.001	14.499	26.5	12.0	19.9	5.5	3.66	0.45	19.2	7.2	12.7
255	145.4	1.328	87.2	6.5	7.92	19.705	19.020	14.499	26.5	12.0	19.9	5.5	3.66	0.45	19.2	7.2	12.7
256	145.4	1.333	87.2	6.5	7.93	19.781	19.020	14.484	26.5	12.0	20.0	5.5	3.64	0.45	19.2	7.2	12.7
257	145.6	1.337	87.2	6.5	7.93	19.857	19.056	14.499	26.5	12.0	20.0	5.5	3.65	0.45	19.2	7.2	12.7
258	145.7	1.342	87.2	6.5	7.94	19.933	19.074	14.499	26.5	12.0	20.0	5.5	3.65	0.45	19.2	7.2	12.7
259	145.7	1.346	87.2	6.5	7.95	20.000	19.074	14.486	26.5	12.0	20.0	5.5	3.64	0.45	19.2	7.2	12.7

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. U-2412B

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project 39406.1.1 **County** GUILFORD **Owner**

Date: Sampled 3/3/13 **Received** 10/8/13 **Reported** 10/10/13

Sampled from RDWY **By** N ROBERSON

Submitted by M HURT 1995 **Standard Specifications**

787811 TO 787812
10/14/13

TEST RESULTS

Proj. Sample No.		ST-10 #1	ST-10 #2				
Lab. Sample No.		787811	787812				
Retained #4 Sieve	%	-	-				
Passing #10 Sieve	%	100	100				
Passing #40 Sieve	%	100	100				
Passing #200 Sieve	%	85	86				

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	3.0	2.8				
Fine Sand Ret - #270	%	16.1	14.7				
Silt 0.05 - 0.005 mm	%	52.7	54.3				
Clay < 0.005 mm	%	28.2	28.2				
T-#		T-5762	T-5762				
Specific Gravity		2.642	2.657				

L. L.		58	55				
P. I.		18	15				
AASHTO Classification		A-7-5(20)	A-7-5(18)				
Station		404+50	404+50				
Offset		3 RT	3 RT				
Alignment		L	L				
Location							
Depth (Ft)		14.5 FT	14.5 FT				
	to	16.5 FT	16.5 FT				
Final Moisture	%	58.22	46.61				

cc: N ROBERSON
SURIYATI BS

Soils Engineer

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	40.11	41.93	**Plastic Limits:**	0	
Dry Density (pcf):	64.34	84.41	**Plasticity Index (%):**	0	
Saturation (%):	67.97	116.69			
Void Ratio:	1.5491	0.9429	**Specific Gravity:**	2.630	Measured

Soil Description: Reddish-orange colored clay

Project Number: 39406.1.1 **Depth:** 14.5 - 16.5 ft

Sample Number: ST-10 **Boring Number:**

Project: U-2412B

Client: T-5762

Location: Guilford County (Sta. 404 + 50)

Remarks: Solid Height 0.39308 inches ; Blows/Ft. = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	40.11	41.93	**Plastic Limits:**	0	
Dry Density (pcf):	64.34	84.41	**Plasticity Index (%):**	0	
Saturation (%):	67.97	116.69			
Void Ratio:	1.5491	0.9429	**Specific Gravity:**	2.630	Measured

Soil Description: Reddish-orange colored clay

Project Number: 39406.1.1 **Depth:** 14.5 - 16.5 ft

Sample Number: ST-10 **Boring Number:**

Project: U-2412B

Client: T-5762

Location: Guilford County (Sta. 404 + 50)

Remarks:
Solid Height 0.39308 inches ; Blows/Ft. = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	40.11	41.93	**Plastic Limits:**	0	
Dry Density (pcf):	64.34	84.41	**Plasticity Index (%):**	0	
Saturation (%):	67.97	116.69			
Void Ratio:	1.5491	0.9429	**Specific Gravity:**	2.630	Measured

Soil Description: Reddish-orange colored clay

Project Number: 39406.1.1 **Depth:** 14.5 - 16.5 ft

Sample Number: ST-10 **Boring Number:**

Project: U-2412B

Client: T-5762

Location: Guilford County (Sta. 404 + 50)

Remarks: Solid Height 0.39308 inches ; Blows/Ft. = NA

Consolidation Test Results
Summary

Project: U-2412B
Location: Guilford County (Sta. 404 + 50)
Job Number: T-5762

Project Number: 39406.1.1

Sample Number: ST-10
Boring Number:
Depth: 14.5 - 16.5 ft
Sample Type: Undisturbed

Soil Description:
Reddish-orange colored clay
Remarks:
Solid Height 0.39308 inches ; Blows/Ft. = NA

Test Number:
Test Date:

Index	Load Sequence (tsf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	1.0004	0.6080	0.00	1.5491	0.000		0.000	
1	0.063	0.0059	0.9945	0.6021	0.59	1.5341	0.069		11043.455	
2	0.125	0.0124	0.9880	0.5956	1.24	1.5175	0.103		7312.102	
3	0.250	0.0202	0.9802	0.5878	2.02	1.4977	0.090		8260.675	
4	0.500	0.0319	0.9685	0.5761	3.19	1.4678	0.287		2528.984	
5	1.000	0.0461	0.9543	0.5619	4.61	1.4317	0.277		2546.768	
6	2.000	0.0678	0.9326	0.5402	6.78	1.3764	0.751		895.909	
7	4.000	0.1309	0.8695	0.4771	13.08	1.2156	0.176		3316.418	
8	2.000	0.1267	0.8737	0.4813	12.66	1.2263	0.000		0.000	
9	1.000	0.1202	0.8802	0.4878	12.02	1.2428	0.000		0.000	
10	0.500	0.1135	0.8869	0.4945	11.35	1.2599	0.000		0.000	
11	1.000	0.1159	0.8845	0.4921	11.59	1.2538	0.000		0.000	
12	2.000	0.1214	0.8790	0.4866	12.14	1.2398	0.000		0.000	
13	4.000	0.1366	0.8638	0.4714	13.65	1.2011	0.000		0.000	
14	8.000	0.2237	0.7767	0.3843	22.36	0.9791	0.172		2720.308	
15	16.000	0.3139	0.6865	0.2941	31.38	0.7493	0.413		882.357	
16	4.000	0.3015	0.6989	0.3065	30.14	0.7809	0.000		0.000	
17	0.016	0.2379	0.7625	0.3701	23.78	0.9429	0.000		0.000	

Tested By:

Checked By:

Consolidation Test
Consolidation Specimen Information

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County (Sta. 404 + 50)
Job Number: T-5762 **Test Date:**

Sample Number: ST-10 **Soil Description:**
Boring Number: Reddish-orange colored clay
Depth: 14.5 - 16.5 ft **Remarks:**
Sample Type: Undisturbed Solid Height 0.39308 inches ; Blows/Ft. = NA

Test Number:
Liquid Limit: 0.0000 **Initial Void Ratio:** 1.5491 **Initial Height (in):** 1.0004
Plastic Limit: 0.0000 **Plasticity Index (%):** 0.0000 **Initial Diameter (in):** 2.4999
Specific Gravity: 2.6300 Measured **Weight of Ring (g):** 109.8200

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	116.19	117.70
Dry Soil + Container (g)	82.93	82.93
Weight of Container (g)	0.00	0.00
Moisture Content (%)	40.11	41.93
Void Ratio	1.5491	0.9429
Saturation (%)	67.97	116.69
Dry Density (pcf)	64.34	84.41

Tested By: **Checked By:**

ncdot

Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date

Tested By:

Effective Stress at Maximum Deviator Stress Criterion

Deviator Stress Vs. Axial Strain

Initial	Specimen A	B	C	D
Water Content (%)	42.4	40.5		
Dry Density (pcf)	66.0	76.1		
Saturation (%)	74.81	91.24		
Void Ratio	1.491	1.172		
Diameter (in)	2.871	2.877		
Height (in)	5.800	6.009		
Specific Gravity	2.64	2.66		
Liquid Limit	0	0		
Plastic Limit	0	0		
After Consolidation	**A**	**B**	**C**	**D**
B-Value	0.00	0.00		
Water Content (%)	42.7	41.7		
Dry Density (pcf)	69.04	77.99		
Saturation (%)	100.00	100.00		
Void Ratio	1.396	1.121		
Effective Stress (psi)	6.0	12.0		
Back Press. (psi)	50.2	50.4		
Rate of Strain	0.009	0.009		

Maximium Deviator Stress Criterion		After Shear	A	B	C	D
C (psi)	0.0	σ'1 at Failure (psi)	11.57	43.83		
C' (psi)	0.0	σ'3 at Failure (psi)	4.48	11.79		
Ø (deg)	0.0					
Ø' (deg)	0.0					

		A	B	C	D
Project:	U-2412B	N/A	N/A	N/A	N/A
Location:	Guilford County (Sta. 404+50)				
Project Number:	39406.1.1				
Boring Number:	0				
Sample Number:	ST-10				
Depth:	14.5 - 16.5 ft.				
Sample Type:	Undisturbed	Failure Photographs			
Description:					
Test Type	Consolidated Undrained				
Remarks	Research				

ncdot

Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date:

Tested By:

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)

Change in Pore Pressure vs. Axial Strain

Deviator Stress vs. Axial Strain

Principal Stress Ratio vs. Axial Strain

Change in Pore Pressure vs. Axial Strain
Change in Pore Pressure (psi)
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
0.000
5.000
10.000
15.000
20.000
25.000
Axial Strain (%)
Specimen A
Specimen B
Specimen C
Specimen D

Mohr Stress Circles at Maximum Deviator Stress Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at Maximum Principal Stress Ratio Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at 15% Axial Strain Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)
30.0
20.0
10.0
0.0
Q (psi)
0.0
10.0
20.0
30.0
P' (psi)
Specimen A
Specimen B
Specimen C
Specimen D
Tangent Line

Stress Paths (Total)
(C' = 0.0 Ø' = 0.0)
30.0
20.0
10.0
0.0
Q (psi)
0.0
10.0
20.0
30.0
P (psi)

Specimen A Shear Data

CU Triaxial Test

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File Location
T-5762.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5762
Sample Location: Guilford County (Sta. 404+50)
Sample Description: Reddish-orange colored clay.
Remarks:

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.642
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.871	2.833	
Height (in)	5.800	5.700	
Weight (grams)	927.00		1030.00
Moisture (%)	42.40		58.22
Dry Density (pcf)	66.04	69.04	
Saturation (%)	74.81	100.00	
Void Ratio	1.491	1.396	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 56.200
Effective Confining Stress (psi): 6.0
Corrected Peak Deviator Stress (psi): 7.096 at reading number: 136

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	68.3	0.130	50.2	0.0	6.30	0.000	0.000	0.000	6.0	6.0	6.0	6.0	1.00	0.00	6.0	0.0	6.0
1	91.1	0.134	50.8	0.7	6.31	0.070	3.617	3.587	9.6	6.0	8.9	5.4	1.67	0.19	7.8	1.8	7.1
2	97.3	0.138	51.2	1.0	6.31	0.131	4.603	4.546	10.6	6.0	9.5	5.0	1.91	0.22	8.3	2.3	7.3
3	101.3	0.141	51.4	1.2	6.31	0.191	5.242	5.158	11.2	6.0	10.0	4.8	2.08	0.24	8.6	2.6	7.4
4	103.1	0.144	51.5	1.3	6.32	0.242	5.535	5.427	11.4	6.0	10.1	4.7	2.16	0.25	8.7	2.7	7.4
5	105.7	0.146	51.6	1.5	6.32	0.282	5.936	5.810	11.8	6.0	10.4	4.6	2.27	0.25	8.9	2.9	7.5
6	107.5	0.149	51.7	1.5	6.32	0.332	6.229	6.079	12.1	6.0	10.6	4.5	2.36	0.25	9.1	3.0	7.5
7	110.2	0.153	51.8	1.6	6.33	0.403	6.649	6.466	12.5	6.0	10.9	4.4	2.46	0.25	9.3	3.2	7.6
8	111.7	0.158	51.8	1.7	6.33	0.483	6.886	6.665	12.7	6.0	11.0	4.4	2.53	0.25	9.4	3.3	7.7
9	112.5	0.162	51.9	1.7	6.34	0.564	7.014	6.756	12.8	6.0	11.1	4.3	2.57	0.25	9.4	3.4	7.7
10	113.3	0.167	51.9	1.8	6.34	0.654	7.142	6.841	12.9	6.0	11.1	4.3	2.60	0.26	9.4	3.4	7.7
11	113.6	0.172	52.0	1.8	6.35	0.735	7.197	6.859	12.9	6.0	11.1	4.2	2.63	0.26	9.5	3.4	7.6
12	113.8	0.177	52.0	1.8	6.35	0.815	7.233	6.858	12.9	6.0	11.1	4.2	2.63	0.26	9.5	3.4	7.6
13	114.3	0.182	52.0	1.8	6.36	0.906	7.306	6.889	12.9	6.0	11.1	4.2	2.65	0.27	9.5	3.4	7.6
14	114.2	0.186	52.0	1.8	6.36	0.986	7.288	6.833	12.9	6.0	11.0	4.2	2.63	0.27	9.4	3.4	7.6
15	114.1	0.190	52.0	1.9	6.37	1.057	7.270	6.783	12.8	6.0	10.9	4.2	2.63	0.28	9.4	3.4	7.5
16	114.1	0.194	52.1	1.9	6.37	1.117	7.270	6.755	12.8	6.0	10.9	4.1	2.64	0.28	9.4	3.4	7.5
17	114.5	0.197	52.1	1.9	6.38	1.177	7.343	6.799	12.8	6.0	10.9	4.1	2.65	0.28	9.4	3.4	7.5
18	115.1	0.202	52.1	1.9	6.38	1.258	7.434	6.852	12.9	6.0	11.0	4.1	2.66	0.28	9.4	3.4	7.6

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	115.1	0.205	52.1	1.9	6.39	1.318	7.434	6.824	12.8	6.0	10.9	4.1	2.67	0.28	9.4	3.4	7.5
20	115.5	0.209	52.1	1.9	6.39	1.379	7.489	6.850	12.9	6.0	10.9	4.1	2.67	0.28	9.4	3.4	7.5
21	115.8	0.212	52.1	1.9	6.39	1.439	7.544	6.876	12.9	6.0	11.0	4.1	2.68	0.28	9.5	3.4	7.5
22	116.0	0.216	52.1	1.9	6.40	1.509	7.580	6.880	12.9	6.0	11.0	4.1	2.68	0.28	9.5	3.4	7.5
23	115.9	0.220	52.1	1.9	6.40	1.580	7.562	6.829	12.9	6.0	10.9	4.1	2.67	0.28	9.4	3.4	7.5
24	116.0	0.225	52.1	1.9	6.41	1.660	7.580	6.810	12.8	6.0	10.9	4.1	2.66	0.28	9.4	3.4	7.5
25	115.5	0.229	52.1	1.9	6.41	1.741	7.489	6.683	12.7	6.0	10.8	4.1	2.63	0.29	9.4	3.3	7.4
26	115.5	0.234	52.1	1.9	6.42	1.821	7.489	6.645	12.7	6.0	10.7	4.1	2.62	0.29	9.3	3.3	7.4
27	115.6	0.239	52.1	1.9	6.42	1.902	7.507	6.626	12.6	6.0	10.7	4.1	2.62	0.29	9.3	3.3	7.4
28	115.8	0.243	52.1	1.9	6.43	1.982	7.544	6.624	12.6	6.0	10.7	4.1	2.62	0.29	9.3	3.3	7.4
29	115.7	0.248	52.1	1.9	6.43	2.063	7.526	6.594	12.6	6.0	10.7	4.1	2.61	0.29	9.3	3.3	7.4
30	115.7	0.252	52.1	1.9	6.44	2.143	7.526	6.588	12.6	6.0	10.7	4.1	2.61	0.29	9.3	3.3	7.4
31	115.1	0.257	52.1	1.9	6.45	2.224	7.434	6.492	12.5	6.0	10.6	4.1	2.59	0.30	9.3	3.2	7.3
32	114.9	0.262	52.1	1.9	6.45	2.304	7.398	6.451	12.5	6.0	10.5	4.1	2.57	0.30	9.2	3.2	7.3
33	114.9	0.266	52.1	1.9	6.46	2.385	7.398	6.445	12.5	6.0	10.5	4.1	2.57	0.30	9.2	3.2	7.3
34	114.9	0.270	52.1	1.9	6.46	2.455	7.398	6.439	12.5	6.0	10.5	4.1	2.57	0.30	9.2	3.2	7.3
35	115.1	0.274	52.1	1.9	6.47	2.526	7.434	6.470	12.5	6.0	10.6	4.1	2.58	0.30	9.3	3.2	7.3
36	115.7	0.278	52.1	1.9	6.47	2.596	7.526	6.554	12.6	6.0	10.6	4.1	2.60	0.29	9.3	3.3	7.4
37	115.8	0.282	52.1	1.9	6.47	2.667	7.544	6.566	12.6	6.0	10.7	4.1	2.60	0.29	9.3	3.3	7.4
38	115.6	0.287	52.1	1.9	6.48	2.747	7.507	6.524	12.5	6.0	10.6	4.1	2.59	0.30	9.3	3.3	7.4
39	115.9	0.290	52.1	1.9	6.48	2.808	7.562	6.573	12.6	6.0	10.7	4.1	2.60	0.29	9.3	3.3	7.4
40	116.1	0.294	52.1	1.9	6.49	2.878	7.599	6.603	12.6	6.0	10.7	4.1	2.60	0.29	9.3	3.3	7.4
41	116.4	0.299	52.1	1.9	6.49	2.958	7.635	6.633	12.7	6.0	10.8	4.1	2.61	0.29	9.3	3.3	7.4
42	116.8	0.303	52.1	1.9	6.50	3.029	7.708	6.698	12.7	6.0	10.8	4.1	2.62	0.28	9.4	3.3	7.5
43	117.6	0.307	52.1	1.9	6.50	3.099	7.836	6.817	12.8	6.0	10.9	4.1	2.65	0.28	9.4	3.4	7.5
44	118.0	0.311	52.1	1.9	6.51	3.170	7.891	6.864	12.9	6.0	11.0	4.1	2.66	0.28	9.5	3.4	7.6
45	118.3	0.315	52.1	1.9	6.51	3.250	7.946	6.911	12.9	6.0	11.0	4.1	2.68	0.27	9.5	3.5	7.6
46	118.1	0.319	52.1	1.9	6.52	3.321	7.909	6.870	12.9	6.0	11.0	4.1	2.67	0.28	9.5	3.4	7.6
47	118.4	0.324	52.1	1.9	6.52	3.401	7.964	6.916	12.9	6.0	11.0	4.1	2.68	0.27	9.5	3.5	7.6
48	118.6	0.329	52.1	1.9	6.53	3.482	7.982	6.928	13.0	6.0	11.1	4.1	2.68	0.27	9.5	3.5	7.6
49	118.4	0.333	52.1	1.9	6.53	3.552	7.964	6.904	12.9	6.0	11.0	4.1	2.67	0.27	9.5	3.5	7.6
50	119.0	0.337	52.0	1.9	6.54	3.633	8.055	6.986	13.0	6.0	11.1	4.2	2.68	0.27	9.5	3.5	7.6
51	119.1	0.342	52.0	1.9	6.54	3.713	8.074	6.997	13.0	6.0	11.2	4.2	2.68	0.27	9.5	3.5	7.7
52	119.1	0.347	52.0	1.9	6.55	3.804	8.074	6.990	13.0	6.0	11.1	4.2	2.68	0.27	9.5	3.5	7.6
53	119.0	0.352	52.0	1.9	6.56	3.884	8.055	6.966	13.0	6.0	11.1	4.2	2.68	0.27	9.5	3.5	7.6
54	118.7	0.356	52.0	1.9	6.56	3.965	8.000	6.907	12.9	6.0	11.1	4.2	2.66	0.27	9.5	3.5	7.6
55	118.8	0.361	52.0	1.9	6.57	4.055	8.019	6.917	12.9	6.0	11.1	4.2	2.67	0.27	9.5	3.5	7.6
56	118.6	0.366	52.0	1.9	6.57	4.136	7.982	6.875	12.9	6.0	11.0	4.2	2.66	0.27	9.5	3.4	7.6
57	118.1	0.371	52.0	1.9	6.58	4.226	7.909	6.798	12.8	6.0	11.0	4.2	2.64	0.27	9.4	3.4	7.6
58	118.4	0.376	52.0	1.8	6.59	4.317	7.964	6.843	12.9	6.0	11.0	4.2	2.64	0.27	9.4	3.4	7.6
59	118.7	0.381	52.0	1.8	6.59	4.397	8.000	6.872	12.9	6.0	11.1	4.2	2.64	0.27	9.5	3.4	7.6

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	118.8	0.385	52.0	1.8	6.60	4.478	8.019	6.883	12.9	6.0	11.1	4.2	2.65	0.27	9.5	3.4	7.6
61	118.1	0.391	52.0	1.8	6.60	4.569	7.909	6.771	12.8	6.0	11.0	4.2	2.62	0.27	9.4	3.4	7.6
62	117.6	0.395	52.0	1.8	6.61	4.639	7.836	6.696	12.7	6.0	10.9	4.2	2.60	0.27	9.4	3.3	7.5
63	117.2	0.399	52.0	1.8	6.61	4.719	7.763	6.620	12.6	6.0	10.8	4.2	2.58	0.28	9.3	3.3	7.5
64	116.8	0.404	52.0	1.8	6.62	4.800	7.708	6.562	12.6	6.0	10.7	4.2	2.57	0.28	9.3	3.3	7.5
65	116.6	0.408	52.0	1.8	6.63	4.880	7.672	6.521	12.5	6.0	10.7	4.2	2.56	0.28	9.3	3.3	7.4
66	116.6	0.413	52.0	1.8	6.63	4.961	7.672	6.514	12.5	6.0	10.7	4.2	2.55	0.28	9.3	3.3	7.5
67	116.8	0.418	52.0	1.8	6.64	5.041	7.708	6.543	12.6	6.0	10.8	4.2	2.55	0.28	9.3	3.3	7.5
68	117.1	0.422	52.0	1.8	6.64	5.122	7.745	6.571	12.6	6.0	10.8	4.2	2.56	0.28	9.3	3.3	7.5
69	116.9	0.427	52.0	1.8	6.65	5.202	7.726	6.548	12.6	6.0	10.8	4.2	2.55	0.28	9.3	3.3	7.5
70	116.8	0.431	52.0	1.8	6.65	5.283	7.708	6.524	12.5	6.0	10.8	4.2	2.54	0.27	9.3	3.3	7.5
71	116.6	0.435	52.0	1.8	6.66	5.353	7.672	6.484	12.5	6.0	10.7	4.2	2.53	0.27	9.3	3.2	7.5
72	116.5	0.440	52.0	1.8	6.66	5.434	7.653	6.461	12.5	6.0	10.7	4.2	2.52	0.28	9.3	3.2	7.5
73	116.4	0.445	52.0	1.8	6.67	5.514	7.635	6.437	12.5	6.0	10.7	4.2	2.52	0.28	9.2	3.2	7.5
74	116.5	0.449	52.0	1.8	6.68	5.595	7.653	6.449	12.5	6.0	10.7	4.2	2.52	0.28	9.2	3.2	7.5
75	116.3	0.454	52.0	1.8	6.68	5.685	7.617	6.407	12.4	6.0	10.6	4.2	2.51	0.28	9.2	3.2	7.4
76	115.3	0.459	52.0	1.8	6.69	5.766	7.471	6.263	12.3	6.0	10.5	4.2	2.48	0.28	9.2	3.1	7.4
77	115.3	0.463	51.9	1.8	6.69	5.836	7.471	6.258	12.3	6.0	10.5	4.3	2.47	0.28	9.2	3.1	7.4
78	115.8	0.467	51.9	1.8	6.70	5.907	7.544	6.322	12.3	6.0	10.6	4.3	2.48	0.28	9.2	3.2	7.4
79	116.3	0.471	51.9	1.8	6.70	5.977	7.617	6.385	12.4	6.0	10.7	4.3	2.49	0.27	9.2	3.2	7.5
80	116.1	0.475	51.9	1.8	6.71	6.058	7.599	6.362	12.4	6.0	10.6	4.3	2.49	0.28	9.2	3.2	7.5
81	116.7	0.479	51.9	1.8	6.71	6.128	7.690	6.442	12.5	6.0	10.7	4.3	2.51	0.27	9.2	3.2	7.5
82	117.3	0.484	51.9	1.8	6.72	6.199	7.781	6.522	12.5	6.0	10.8	4.3	2.53	0.27	9.3	3.3	7.5
83	117.6	0.488	51.9	1.8	6.72	6.279	7.836	6.567	12.6	6.0	10.8	4.3	2.54	0.27	9.3	3.3	7.6
84	118.1	0.492	51.9	1.8	6.73	6.350	7.909	6.630	12.7	6.0	10.9	4.3	2.55	0.26	9.3	3.3	7.6
85	118.4	0.496	51.9	1.7	6.73	6.420	7.964	6.676	12.7	6.0	11.0	4.3	2.55	0.26	9.4	3.3	7.6
86	119.1	0.501	51.9	1.7	6.74	6.501	8.074	6.772	12.8	6.0	11.1	4.3	2.57	0.25	9.4	3.4	7.7
87	119.1	0.505	51.9	1.7	6.74	6.571	8.074	6.766	12.8	6.0	11.1	4.3	2.57	0.25	9.4	3.4	7.7
88	119.3	0.509	51.9	1.7	6.75	6.641	8.092	6.778	12.8	6.0	11.1	4.3	2.58	0.25	9.4	3.4	7.7
89	119.7	0.513	51.9	1.7	6.76	6.722	8.165	6.839	12.9	6.0	11.1	4.3	2.59	0.25	9.4	3.4	7.7
90	119.9	0.517	51.9	1.7	6.76	6.792	8.201	6.868	12.9	6.0	11.2	4.3	2.60	0.25	9.5	3.4	7.7
91	119.9	0.522	51.9	1.7	6.77	6.873	8.201	6.861	12.9	6.0	11.2	4.3	2.60	0.25	9.5	3.4	7.7
92	120.1	0.527	51.9	1.7	6.77	6.953	8.220	6.871	12.9	6.0	11.2	4.3	2.60	0.25	9.5	3.4	7.7
93	120.7	0.531	51.9	1.7	6.78	7.024	8.329	6.968	13.0	6.0	11.3	4.3	2.61	0.24	9.5	3.5	7.8
94	120.9	0.535	51.9	1.7	6.78	7.104	8.348	6.978	13.0	6.0	11.3	4.3	2.61	0.24	9.5	3.5	7.8
95	121.0	0.540	51.9	1.7	6.79	7.185	8.366	6.988	13.0	6.0	11.3	4.3	2.61	0.24	9.5	3.5	7.8
96	121.1	0.544	51.9	1.7	6.80	7.265	8.384	6.998	13.0	6.0	11.3	4.3	2.62	0.24	9.5	3.5	7.8
97	121.4	0.549	51.9	1.7	6.80	7.356	8.439	7.041	13.1	6.0	11.4	4.3	2.63	0.24	9.5	3.5	7.9
98	121.8	0.553	51.9	1.7	6.81	7.426	8.494	7.086	13.1	6.0	11.4	4.3	2.64	0.24	9.6	3.5	7.9
99	121.3	0.559	51.8	1.7	6.81	7.517	8.421	7.011	13.0	6.0	11.4	4.4	2.61	0.24	9.5	3.5	7.9
100	120.9	0.563	51.9	1.7	6.82	7.597	8.348	6.937	13.0	6.0	11.3	4.3	2.60	0.24	9.5	3.5	7.8

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	120.4	0.568	51.8	1.7	6.83	7.688	8.274	6.862	12.9	6.0	11.2	4.4	2.57	0.24	9.5	3.4	7.8
102	119.9	0.573	51.8	1.7	6.83	7.768	8.201	6.788	12.8	6.0	11.1	4.4	2.56	0.25	9.4	3.4	7.8
103	119.4	0.578	51.8	1.7	6.84	7.859	8.110	6.696	12.7	6.0	11.1	4.4	2.54	0.25	9.4	3.3	7.7
104	119.3	0.583	51.8	1.7	6.85	7.940	8.092	6.673	12.7	6.0	11.0	4.4	2.53	0.25	9.4	3.3	7.7
105	119.3	0.587	51.8	1.7	6.85	8.020	8.092	6.666	12.7	6.0	11.0	4.4	2.53	0.25	9.4	3.3	7.7
106	118.9	0.591	51.8	1.7	6.86	8.090	8.037	6.610	12.6	6.0	11.0	4.4	2.52	0.25	9.3	3.3	7.7
107	118.1	0.596	51.8	1.7	6.86	8.171	7.909	6.486	12.5	6.0	10.8	4.4	2.49	0.26	9.3	3.2	7.6
108	118.0	0.601	51.8	1.7	6.87	8.251	7.891	6.463	12.5	6.0	10.8	4.4	2.48	0.26	9.3	3.2	7.6
109	118.1	0.605	51.8	1.7	6.87	8.332	7.909	6.473	12.5	6.0	10.8	4.4	2.49	0.26	9.3	3.2	7.6
110	118.0	0.610	51.8	1.7	6.88	8.412	7.891	6.450	12.5	6.0	10.8	4.4	2.48	0.26	9.2	3.2	7.6
111	118.7	0.614	51.8	1.6	6.89	8.493	8.000	6.544	12.6	6.0	10.9	4.4	2.49	0.25	9.3	3.3	7.7
112	119.6	0.619	51.8	1.6	6.89	8.573	8.147	6.671	12.7	6.0	11.1	4.4	2.52	0.25	9.4	3.3	7.7
113	120.3	0.623	51.8	1.6	6.90	8.644	8.256	6.766	12.8	6.0	11.2	4.4	2.54	0.24	9.4	3.4	7.8
114	120.2	0.627	51.8	1.6	6.90	8.724	8.238	6.743	12.8	6.0	11.1	4.4	2.54	0.24	9.4	3.4	7.8
115	119.8	0.632	51.8	1.6	6.91	8.805	8.183	6.686	12.7	6.0	11.1	4.4	2.52	0.24	9.4	3.3	7.7
116	119.7	0.637	51.8	1.6	6.92	8.885	8.165	6.663	12.7	6.0	11.1	4.4	2.52	0.25	9.4	3.3	7.7
117	119.7	0.641	51.8	1.6	6.92	8.966	8.165	6.656	12.7	6.0	11.0	4.4	2.52	0.25	9.4	3.3	7.7
118	119.5	0.646	51.8	1.6	6.93	9.046	8.128	6.616	12.6	6.0	11.0	4.4	2.51	0.25	9.3	3.3	7.7
119	119.3	0.650	51.8	1.6	6.93	9.127	8.092	6.577	12.6	6.0	11.0	4.4	2.50	0.25	9.3	3.3	7.7
120	119.4	0.655	51.8	1.6	6.94	9.207	8.110	6.587	12.6	6.0	11.0	4.4	2.49	0.24	9.3	3.3	7.7
121	119.5	0.659	51.8	1.6	6.95	9.278	8.128	6.598	12.6	6.0	11.0	4.4	2.49	0.24	9.3	3.3	7.7
122	119.7	0.663	51.8	1.6	6.95	9.348	8.165	6.625	12.6	6.0	11.0	4.4	2.50	0.24	9.3	3.3	7.7
123	120.3	0.668	51.8	1.6	6.96	9.429	8.256	6.701	12.7	6.0	11.1	4.4	2.52	0.24	9.4	3.4	7.8
124	120.4	0.672	51.8	1.6	6.96	9.499	8.274	6.712	12.7	6.0	11.1	4.4	2.52	0.24	9.4	3.4	7.8
125	120.7	0.676	51.8	1.6	6.97	9.570	8.329	6.756	12.8	6.0	11.2	4.4	2.53	0.24	9.4	3.4	7.8
126	121.0	0.680	51.8	1.6	6.97	9.640	8.366	6.783	12.8	6.0	11.2	4.4	2.54	0.24	9.4	3.4	7.8
127	121.4	0.684	51.8	1.6	6.98	9.721	8.439	6.842	12.9	6.0	11.3	4.4	2.55	0.23	9.4	3.4	7.8
128	122.0	0.688	51.8	1.6	6.99	9.791	8.530	6.918	12.9	6.0	11.4	4.4	2.56	0.23	9.5	3.5	7.9
129	122.4	0.693	51.8	1.6	6.99	9.872	8.585	6.961	13.0	6.0	11.4	4.4	2.57	0.23	9.5	3.5	7.9
130	122.2	0.697	51.8	1.6	7.00	9.942	8.567	6.938	13.0	6.0	11.4	4.4	2.56	0.23	9.5	3.5	7.9
131	122.5	0.701	51.8	1.6	7.00	10.023	8.603	6.964	13.0	6.0	11.4	4.4	2.57	0.23	9.5	3.5	7.9
132	123.2	0.705	51.8	1.6	7.01	10.093	8.713	7.057	13.1	6.0	11.5	4.4	2.59	0.22	9.6	3.5	8.0
133	123.1	0.709	51.8	1.6	7.01	10.163	8.695	7.034	13.1	6.0	11.5	4.4	2.58	0.22	9.5	3.5	8.0
134	123.3	0.714	51.7	1.5	7.02	10.244	8.731	7.060	13.1	6.0	11.5	4.5	2.58	0.22	9.6	3.5	8.0
135	122.9	0.719	51.7	1.5	7.03	10.324	8.676	7.004	13.0	6.0	11.5	4.5	2.56	0.22	9.5	3.5	8.0
136	123.6	0.723	51.7	1.5	7.03	10.395	8.786	7.096	13.1	6.0	11.6	4.5	2.59	0.22	9.6	3.5	8.0
137	123.6	0.727	51.7	1.5	7.04	10.475	8.786	6.734	12.8	6.0	11.2	4.5	2.50	0.23	9.4	3.4	7.8
138	123.9	0.732	51.7	1.5	7.05	10.556	8.822	6.757	12.8	6.0	11.2	4.5	2.51	0.23	9.4	3.4	7.9
139	124.0	0.736	51.7	1.5	7.05	10.636	8.841	6.763	12.8	6.0	11.2	4.5	2.51	0.23	9.4	3.4	7.9
140	124.1	0.741	51.7	1.5	7.06	10.717	8.859	6.770	12.8	6.0	11.2	4.5	2.51	0.23	9.4	3.4	7.9
141	124.0	0.746	51.7	1.5	7.06	10.797	8.841	6.744	12.8	6.0	11.2	4.5	2.51	0.23	9.4	3.4	7.8

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	123.9	0.750	51.7	1.5	7.07	10.878	8.822	6.717	12.7	6.0	11.2	4.5	2.49	0.23	9.4	3.4	7.9
143	123.7	0.755	51.7	1.5	7.08	10.968	8.804	6.690	12.7	6.0	11.2	4.5	2.49	0.23	9.4	3.3	7.8
144	123.7	0.760	51.7	1.5	7.08	11.049	8.804	6.680	12.7	6.0	11.2	4.5	2.48	0.23	9.4	3.3	7.8
145	123.5	0.765	51.7	1.5	7.09	11.140	8.768	6.637	12.7	6.0	11.1	4.5	2.47	0.23	9.3	3.3	7.8
146	123.2	0.770	51.7	1.5	7.10	11.220	8.713	6.578	12.6	6.0	11.1	4.5	2.46	0.23	9.3	3.3	7.8
147	123.4	0.774	51.7	1.5	7.10	11.301	8.749	6.601	12.6	6.0	11.1	4.5	2.47	0.23	9.3	3.3	7.8
148	123.3	0.779	51.7	1.5	7.11	11.381	8.731	6.575	12.6	6.0	11.1	4.5	2.46	0.23	9.3	3.3	7.8
149	122.6	0.783	51.7	1.5	7.12	11.462	8.622	6.468	12.5	6.0	11.0	4.5	2.44	0.23	9.3	3.2	7.7
150	123.1	0.788	51.7	1.5	7.12	11.542	8.695	6.523	12.5	6.0	11.0	4.5	2.45	0.23	9.3	3.3	7.8
151	123.1	0.793	51.7	1.5	7.13	11.623	8.695	6.513	12.5	6.0	11.0	4.5	2.45	0.23	9.3	3.3	7.8
152	122.9	0.797	51.7	1.5	7.14	11.703	8.676	6.488	12.5	6.0	11.0	4.5	2.43	0.23	9.3	3.2	7.8
153	122.8	0.801	51.7	1.5	7.14	11.773	8.658	6.463	12.5	6.0	11.0	4.5	2.43	0.23	9.3	3.2	7.7
154	122.6	0.806	51.7	1.5	7.15	11.854	8.622	6.421	12.4	6.0	10.9	4.5	2.43	0.24	9.2	3.2	7.7
155	122.6	0.810	51.7	1.5	7.16	11.934	8.622	6.411	12.4	6.0	10.9	4.5	2.42	0.24	9.2	3.2	7.7
156	122.4	0.815	51.7	1.5	7.16	12.015	8.585	6.370	12.4	6.0	10.9	4.5	2.41	0.24	9.2	3.2	7.7
157	122.5	0.820	51.7	1.5	7.17	12.095	8.603	6.376	12.4	6.0	10.9	4.5	2.41	0.23	9.2	3.2	7.7
158	122.2	0.824	51.7	1.5	7.18	12.176	8.567	6.334	12.4	6.0	10.9	4.5	2.40	0.24	9.2	3.2	7.7
159	122.5	0.829	51.7	1.5	7.18	12.256	8.603	6.357	12.4	6.0	10.9	4.5	2.40	0.23	9.2	3.2	7.7
160	122.6	0.833	51.7	1.5	7.19	12.337	8.622	6.363	12.4	6.0	10.9	4.5	2.40	0.23	9.2	3.2	7.7
161	122.6	0.838	51.7	1.5	7.20	12.417	8.622	6.353	12.4	6.0	10.9	4.5	2.40	0.23	9.2	3.2	7.7
162	122.7	0.843	51.7	1.5	7.20	12.498	8.640	6.360	12.4	6.0	10.9	4.5	2.40	0.23	9.2	3.2	7.7
163	122.7	0.847	51.7	1.5	7.21	12.578	8.640	6.350	12.4	6.0	10.9	4.5	2.40	0.23	9.2	3.2	7.7
164	122.6	0.851	51.7	1.5	7.21	12.649	8.622	6.326	12.3	6.0	10.9	4.5	2.40	0.24	9.2	3.2	7.7
165	122.5	0.856	51.7	1.5	7.22	12.729	8.603	6.300	12.3	6.0	10.8	4.5	2.39	0.24	9.2	3.2	7.7
166	122.5	0.860	51.7	1.5	7.23	12.800	8.603	6.292	12.3	6.0	10.8	4.5	2.39	0.24	9.2	3.1	7.7
167	122.6	0.864	51.7	1.5	7.23	12.870	8.622	6.299	12.3	6.0	10.8	4.5	2.39	0.24	9.2	3.1	7.7
168	122.8	0.868	51.6	1.5	7.24	12.941	8.658	6.322	12.3	6.0	10.9	4.6	2.39	0.23	9.2	3.2	7.7
169	123.9	0.872	51.7	1.5	7.25	13.021	8.822	6.456	12.5	6.0	11.0	4.5	2.42	0.23	9.3	3.2	7.8
170	124.3	0.876	51.6	1.5	7.25	13.092	8.896	6.511	12.5	6.0	11.1	4.6	2.43	0.22	9.3	3.3	7.8
171	124.7	0.881	51.6	1.5	7.26	13.172	8.950	6.548	12.6	6.0	11.1	4.6	2.44	0.22	9.3	3.3	7.8
172	125.0	0.885	51.6	1.5	7.26	13.243	9.005	6.587	12.6	6.0	11.2	4.6	2.44	0.22	9.3	3.3	7.9
173	124.8	0.890	51.6	1.5	7.27	13.323	8.969	6.545	12.6	6.0	11.1	4.6	2.43	0.22	9.3	3.3	7.8
174	125.1	0.894	51.6	1.5	7.28	13.404	9.023	6.583	12.6	6.0	11.1	4.6	2.44	0.22	9.3	3.3	7.9
175	125.5	0.898	51.6	1.5	7.28	13.474	9.078	6.622	12.6	6.0	11.2	4.6	2.45	0.22	9.3	3.3	7.9
176	125.5	0.903	51.6	1.5	7.29	13.555	9.078	6.612	12.6	6.0	11.2	4.6	2.45	0.22	9.3	3.3	7.9
177	125.7	0.907	51.6	1.5	7.30	13.625	9.115	6.634	12.7	6.0	11.2	4.6	2.45	0.22	9.3	3.3	7.9
178	126.2	0.911	51.6	1.5	7.30	13.706	9.188	6.687	12.7	6.0	11.3	4.6	2.47	0.22	9.4	3.3	7.9
179	126.2	0.915	51.6	1.5	7.31	13.776	9.188	6.679	12.7	6.0	11.2	4.6	2.46	0.22	9.4	3.3	7.9
180	126.4	0.920	51.6	1.5	7.32	13.856	9.224	6.700	12.7	6.0	11.3	4.6	2.47	0.22	9.4	3.3	7.9
181	126.6	0.925	51.6	1.5	7.32	13.937	9.261	6.721	12.7	6.0	11.3	4.6	2.47	0.22	9.4	3.4	7.9
182	127.0	0.929	51.6	1.5	7.33	14.017	9.316	6.758	12.8	6.0	11.3	4.6	2.48	0.22	9.4	3.4	7.9

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	127.2	0.934	51.6	1.5	7.34	14.098	9.352	6.779	12.8	6.0	11.3	4.6	2.49	0.22	9.4	3.4	8.0
184	126.7	0.938	51.6	1.5	7.34	14.178	9.279	6.706	12.7	6.0	11.3	4.6	2.47	0.22	9.4	3.4	7.9
185	127.2	0.943	51.6	1.5	7.35	14.259	9.352	6.759	12.8	6.0	11.3	4.6	2.48	0.22	9.4	3.4	7.9
186	127.3	0.948	51.6	1.4	7.36	14.339	9.370	6.764	12.8	6.0	11.4	4.6	2.47	0.21	9.4	3.4	8.0
187	127.3	0.952	51.6	1.4	7.36	14.420	9.370	6.754	12.8	6.0	11.3	4.6	2.47	0.21	9.4	3.4	8.0
188	127.0	0.957	51.6	1.4	7.37	14.511	9.316	6.695	12.7	6.0	11.3	4.6	2.46	0.21	9.4	3.3	7.9
189	127.0	0.962	51.6	1.4	7.38	14.591	9.316	6.685	12.7	6.0	11.3	4.6	2.46	0.21	9.4	3.3	7.9
190	126.6	0.966	51.6	1.4	7.39	14.672	9.261	6.628	12.7	6.0	11.2	4.6	2.44	0.22	9.3	3.3	7.9
191	126.2	0.972	51.6	1.4	7.39	14.762	9.188	6.554	12.6	6.0	11.1	4.6	2.43	0.22	9.3	3.3	7.9
192	125.8	0.976	51.6	1.4	7.40	14.843	9.133	6.498	12.5	6.0	11.1	4.6	2.41	0.22	9.3	3.2	7.8
193	125.8	0.980	51.6	1.4	7.41	14.913	9.133	6.489	12.5	6.0	11.1	4.6	2.41	0.22	9.3	3.2	7.8
194	126.0	0.985	51.6	1.4	7.41	14.994	9.169	6.510	12.5	6.0	11.1	4.6	2.42	0.22	9.3	3.3	7.8
195	126.3	0.990	51.6	1.4	7.42	15.084	9.206	6.529	12.6	6.0	11.1	4.6	2.42	0.22	9.3	3.3	7.9
196	126.2	0.994	51.6	1.4	7.43	15.155	9.188	6.505	12.5	6.0	11.1	4.6	2.41	0.22	9.3	3.3	7.9
197	125.8	0.998	51.6	1.4	7.43	15.225	9.133	6.450	12.5	6.0	11.1	4.6	2.40	0.22	9.2	3.2	7.8
198	125.7	1.003	51.6	1.4	7.44	15.316	9.115	6.423	12.4	6.0	11.0	4.6	2.39	0.22	9.2	3.2	7.8
199	125.7	1.007	51.6	1.4	7.45	15.386	9.115	6.414	12.4	6.0	11.0	4.6	2.39	0.22	9.2	3.2	7.8
200	126.0	1.012	51.6	1.4	7.45	15.467	9.169	6.450	12.5	6.0	11.1	4.6	2.40	0.22	9.2	3.2	7.8
201	126.2	1.016	51.6	1.4	7.46	15.547	9.188	6.456	12.5	6.0	11.1	4.6	2.40	0.22	9.3	3.2	7.8
202	126.0	1.021	51.5	1.4	7.47	15.628	9.169	6.430	12.5	6.0	11.1	4.7	2.38	0.21	9.2	3.2	7.9
203	125.9	1.026	51.5	1.4	7.48	15.708	9.151	6.405	12.4	6.0	11.1	4.7	2.38	0.21	9.2	3.2	7.9
204	125.7	1.030	51.5	1.4	7.48	15.789	9.115	6.364	12.4	6.0	11.0	4.7	2.37	0.22	9.2	3.2	7.8
205	125.7	1.034	51.5	1.4	7.49	15.859	9.115	6.355	12.4	6.0	11.0	4.7	2.37	0.22	9.2	3.2	7.8
206	125.4	1.039	51.5	1.4	7.50	15.939	9.060	6.299	12.3	6.0	10.9	4.7	2.35	0.22	9.2	3.1	7.8
207	125.1	1.043	51.5	1.4	7.50	16.020	9.023	6.258	12.3	6.0	10.9	4.7	2.35	0.22	9.2	3.1	7.8
208	125.4	1.048	51.5	1.4	7.51	16.100	9.060	6.279	12.3	6.0	10.9	4.7	2.35	0.22	9.2	3.1	7.8
209	125.7	1.052	51.5	1.4	7.52	16.181	9.115	6.315	12.3	6.0	11.0	4.7	2.36	0.22	9.2	3.2	7.8
210	125.8	1.056	51.5	1.4	7.52	16.251	9.133	6.321	12.3	6.0	11.0	4.7	2.36	0.22	9.2	3.2	7.8
211	126.0	1.061	51.5	1.3	7.53	16.322	9.169	6.343	12.4	6.0	11.0	4.7	2.36	0.21	9.2	3.2	7.9
212	126.4	1.065	51.5	1.3	7.54	16.392	9.224	6.380	12.4	6.0	11.1	4.7	2.36	0.21	9.2	3.2	7.9
213	126.4	1.069	51.5	1.3	7.54	16.473	9.224	6.370	12.4	6.0	11.0	4.7	2.36	0.21	9.2	3.2	7.9
214	126.2	1.073	51.5	1.3	7.55	16.543	9.188	6.330	12.4	6.0	11.0	4.7	2.35	0.21	9.2	3.2	7.8
215	126.3	1.078	51.5	1.3	7.56	16.624	9.206	6.336	12.4	6.0	11.0	4.7	2.35	0.21	9.2	3.2	7.8
216	126.5	1.082	51.5	1.3	7.57	16.704	9.243	6.356	12.4	6.0	11.0	4.7	2.36	0.21	9.2	3.2	7.9
217	126.8	1.087	51.5	1.3	7.57	16.785	9.297	6.391	12.4	6.0	11.1	4.7	2.37	0.21	9.2	3.2	7.9
218	127.0	1.091	51.5	1.3	7.58	16.855	9.316	6.398	12.4	6.0	11.1	4.7	2.36	0.21	9.2	3.2	7.9
219	126.8	1.095	51.5	1.3	7.59	16.936	9.297	6.372	12.4	6.0	11.1	4.7	2.35	0.21	9.2	3.2	7.9
220	127.2	1.100	51.5	1.3	7.59	17.006	9.352	6.409	12.4	6.0	11.1	4.7	2.36	0.20	9.2	3.2	7.9
221	127.4	1.104	51.5	1.3	7.60	17.087	9.389	6.429	12.5	6.0	11.1	4.7	2.37	0.20	9.2	3.2	7.9
222	127.8	1.108	51.5	1.3	7.61	17.157	9.443	6.465	12.5	6.0	11.2	4.7	2.37	0.20	9.3	3.2	7.9
223	128.8	1.113	51.5	1.3	7.61	17.238	9.608	6.591	12.6	6.0	11.3	4.7	2.40	0.20	9.3	3.3	8.0

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	129.5	1.117	51.5	1.3	7.62	17.318	9.717	6.671	12.7	6.0	11.4	4.7	2.42	0.20	9.4	3.3	8.0
225	129.8	1.121	51.5	1.3	7.63	17.389	9.772	6.707	12.7	6.0	11.4	4.7	2.42	0.20	9.4	3.4	8.1
226	129.8	1.126	51.5	1.3	7.64	17.479	9.772	6.695	12.7	6.0	11.4	4.7	2.42	0.20	9.4	3.3	8.1
227	129.8	1.130	51.5	1.3	7.64	17.550	9.772	6.686	12.7	6.0	11.4	4.7	2.42	0.20	9.4	3.3	8.1
228	130.2	1.136	51.5	1.3	7.65	17.640	9.827	6.719	12.7	6.0	11.4	4.7	2.43	0.20	9.4	3.4	8.1
229	130.4	1.140	51.5	1.3	7.66	17.711	9.864	6.740	12.8	6.0	11.5	4.7	2.42	0.19	9.4	3.4	8.1
230	129.7	1.144	51.5	1.3	7.67	17.791	9.754	6.639	12.7	6.0	11.4	4.7	2.40	0.19	9.3	3.3	8.1
231	129.4	1.149	51.5	1.3	7.67	17.872	9.699	6.583	12.6	6.0	11.3	4.7	2.39	0.20	9.3	3.3	8.0
232	129.5	1.153	51.5	1.3	7.68	17.952	9.717	6.588	12.6	6.0	11.3	4.7	2.39	0.19	9.3	3.3	8.0
233	129.2	1.159	51.5	1.3	7.69	18.043	9.663	6.531	12.6	6.0	11.3	4.7	2.38	0.20	9.3	3.3	8.0
234	128.8	1.163	51.5	1.3	7.70	18.123	9.608	6.476	12.5	6.0	11.2	4.7	2.37	0.20	9.3	3.2	8.0
235	129.0	1.168	51.5	1.3	7.70	18.204	9.644	6.495	12.5	6.0	11.2	4.7	2.37	0.20	9.3	3.2	8.0
236	129.3	1.172	51.5	1.3	7.71	18.284	9.681	6.515	12.5	6.0	11.3	4.7	2.37	0.20	9.3	3.3	8.0
237	129.4	1.177	51.5	1.3	7.72	18.365	9.699	6.519	12.5	6.0	11.3	4.7	2.38	0.20	9.3	3.3	8.0
238	129.0	1.181	51.5	1.3	7.73	18.435	9.644	6.465	12.5	6.0	11.2	4.7	2.36	0.20	9.3	3.2	8.0
239	129.0	1.186	51.5	1.3	7.73	18.526	9.644	6.453	12.5	6.0	11.2	4.7	2.36	0.20	9.2	3.2	8.0
240	128.7	1.190	51.4	1.3	7.74	18.596	9.590	6.399	12.4	6.0	11.2	4.8	2.34	0.20	9.2	3.2	8.0
241	129.0	1.195	51.4	1.3	7.75	18.677	9.644	6.434	12.5	6.0	11.2	4.8	2.35	0.20	9.2	3.2	8.0
242	129.2	1.199	51.4	1.3	7.76	18.757	9.663	6.438	12.5	6.0	11.2	4.8	2.35	0.19	9.2	3.2	8.0
243	129.3	1.204	51.4	1.3	7.76	18.838	9.681	6.442	12.5	6.0	11.2	4.8	2.35	0.19	9.2	3.2	8.0
244	129.4	1.208	51.4	1.3	7.77	18.908	9.699	6.448	12.5	6.0	11.2	4.8	2.35	0.19	9.2	3.2	8.0
245	129.4	1.213	51.4	1.3	7.78	18.988	9.699	6.437	12.5	6.0	11.2	4.8	2.35	0.19	9.2	3.2	8.0
246	129.0	1.217	51.4	1.3	7.79	19.069	9.644	6.382	12.4	6.0	11.1	4.8	2.34	0.20	9.2	3.2	8.0
247	129.3	1.222	51.4	1.3	7.80	19.160	9.681	6.400	12.4	6.0	11.2	4.8	2.34	0.20	9.2	3.2	8.0
248	129.6	1.226	51.4	1.3	7.80	19.230	9.736	6.435	12.5	6.0	11.2	4.8	2.35	0.20	9.2	3.2	8.0
249	129.3	1.231	51.4	1.3	7.81	19.321	9.681	6.379	12.4	6.0	11.1	4.8	2.34	0.20	9.2	3.2	8.0
250	129.3	1.235	51.4	1.3	7.82	19.391	9.681	6.370	12.4	6.0	11.1	4.8	2.34	0.20	9.2	3.2	8.0
251	129.3	1.241	51.4	1.3	7.83	19.482	9.681	6.358	12.4	6.0	11.1	4.8	2.33	0.20	9.2	3.2	7.9
252	129.6	1.245	51.4	1.3	7.83	19.552	9.736	6.393	12.4	6.0	11.2	4.8	2.34	0.20	9.2	3.2	8.0
253	129.3	1.249	51.4	1.3	7.84	19.622	9.681	6.340	12.4	6.0	11.1	4.8	2.33	0.20	9.2	3.2	7.9
254	129.5	1.253	51.4	1.3	7.85	19.693	9.717	6.360	12.4	6.0	11.1	4.8	2.33	0.20	9.2	3.2	7.9
255	129.8	1.257	51.4	1.2	7.85	19.773	9.772	6.393	12.4	6.0	11.2	4.8	2.33	0.19	9.2	3.2	8.0
256	130.0	1.261	51.4	1.2	7.86	19.844	9.791	6.399	12.4	6.0	11.2	4.8	2.33	0.19	9.2	3.2	8.0
257	130.1	1.266	51.4	1.2	7.87	19.924	9.809	6.403	12.4	6.0	11.2	4.8	2.33	0.19	9.2	3.2	8.0
258	130.8	1.270	51.4	1.2	7.88	19.995	9.918	6.481	12.5	6.0	11.3	4.8	2.35	0.19	9.3	3.2	8.0
259	130.5	1.271	51.4	1.2	7.88	20.015	9.882	6.449	12.5	6.0	11.2	4.8	2.34	0.19	9.2	3.2	8.0

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)

Specimen B Shear Data

CU Triaxial Test

ncdot

File Location
T-5762.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5762
Sample Location: Guilford County (Sta. 404+50)
Sample Description: Reddish-orange colored clay.
Remarks: 30° shear plane with slicken side.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.6570001
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.877	2.850	
Height (in)	6.009	5.978	
Weight (grams)	1097.00		1145.00
Moisture (%)	40.46		46.61
Dry Density (pcf)	76.15	77.99	
Saturation (%)	91.24	100.00	
Void Ratio	1.172	1.121	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 62.400
Effective Confining Stress (psi): 12.0
Corrected Peak Deviator Stress (psi): 32.047 at reading number: 93

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	46.1	0.067	50.4	0.0	6.38	0.000	0.000	0.000	12.0	12.0	12.0	12.0	1.00	0.00	12.0	0.0	12.0
1	67.4	0.071	51.7	1.3	6.39	0.076	3.341	3.309	15.3	12.0	14.0	10.7	1.31	0.40	13.6	1.7	12.3
2	77.7	0.076	52.6	2.2	6.39	0.153	4.958	4.891	16.9	12.0	14.7	9.8	1.50	0.44	14.4	2.4	12.3
3	84.4	0.081	53.2	2.8	6.40	0.239	6.000	5.893	17.9	12.0	15.1	9.2	1.64	0.47	14.9	2.9	12.2
4	90.1	0.086	53.6	3.2	6.40	0.315	6.898	6.755	18.7	12.0	15.6	8.8	1.77	0.47	15.4	3.4	12.2
5	95.1	0.091	53.9	3.5	6.41	0.401	7.688	7.503	19.5	12.0	16.0	8.5	1.89	0.47	15.7	3.8	12.2
6	100.1	0.095	54.2	3.8	6.41	0.478	8.461	8.236	20.2	12.0	16.4	8.2	2.01	0.46	16.1	4.1	12.3
7	104.4	0.100	54.4	4.0	6.42	0.563	9.143	8.874	20.9	12.0	16.8	8.0	2.11	0.45	16.4	4.4	12.4
8	109.0	0.105	54.7	4.3	6.42	0.640	9.862	9.552	21.5	12.0	17.3	7.7	2.24	0.45	16.8	4.8	12.5
9	113.3	0.110	54.8	4.4	6.43	0.716	10.527	10.175	22.2	12.0	17.7	7.6	2.34	0.43	17.1	5.1	12.7
10	117.4	0.115	55.0	4.6	6.43	0.802	11.173	10.774	22.8	12.0	18.2	7.4	2.45	0.43	17.4	5.4	12.8
11	121.7	0.119	55.1	4.7	6.44	0.879	11.856	11.413	23.4	12.0	18.7	7.3	2.57	0.41	17.7	5.7	13.0
12	125.5	0.124	55.2	4.8	6.44	0.955	12.449	11.961	23.9	12.0	19.1	7.2	2.67	0.40	18.0	6.0	13.1
13	129.3	0.129	55.4	5.0	6.45	1.041	13.041	12.504	24.5	12.0	19.5	7.0	2.79	0.40	18.2	6.3	13.3
14	133.1	0.134	55.5	5.1	6.45	1.117	13.634	13.051	25.0	12.0	20.0	6.9	2.89	0.39	18.5	6.5	13.4
15	137.0	0.138	55.6	5.1	6.46	1.194	14.245	13.614	25.6	12.0	20.5	6.8	2.99	0.38	18.8	6.8	13.6
16	140.8	0.143	55.6	5.2	6.46	1.270	14.838	14.159	26.1	12.0	21.0	6.8	3.08	0.37	19.1	7.1	13.9
17	144.6	0.148	55.6	5.2	6.47	1.356	15.431	14.698	26.7	12.0	21.5	6.8	3.17	0.36	19.3	7.3	14.1
18	148.3	0.152	55.7	5.3	6.47	1.433	16.023	15.241	27.2	12.0	22.0	6.7	3.27	0.35	19.6	7.6	14.3

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	151.9	0.157	55.7	5.3	6.48	1.509	16.580	15.748	27.7	12.0	22.4	6.7	3.36	0.34	19.9	7.9	14.6
20	155.4	0.162	55.8	5.3	6.48	1.585	17.137	16.254	28.2	12.0	22.9	6.6	3.45	0.33	20.1	8.1	14.8
21	159.1	0.166	55.8	5.3	6.49	1.662	17.712	16.776	28.8	12.0	23.4	6.6	3.53	0.32	20.4	8.4	15.0
22	162.8	0.171	55.8	5.3	6.50	1.748	18.287	17.293	29.3	12.0	23.9	6.6	3.60	0.31	20.6	8.6	15.3
23	166.4	0.176	55.8	5.3	6.50	1.824	18.862	17.814	29.8	12.0	24.5	6.6	3.68	0.30	20.9	8.9	15.5
24	169.8	0.180	55.8	5.3	6.51	1.901	19.382	18.281	30.3	12.0	24.9	6.6	3.75	0.29	21.1	9.1	15.8
25	173.3	0.185	55.7	5.3	6.51	1.977	19.939	18.782	30.8	12.0	25.5	6.7	3.81	0.28	21.4	9.4	16.1
26	176.6	0.190	55.7	5.3	6.52	2.063	20.460	19.266	31.3	12.0	25.9	6.7	3.88	0.28	21.6	9.6	16.3
27	179.9	0.195	55.7	5.3	6.52	2.139	20.963	19.743	31.7	12.0	26.5	6.7	3.94	0.27	21.9	9.9	16.6
28	183.1	0.199	55.6	5.2	6.53	2.216	21.466	20.219	32.2	12.0	27.0	6.8	3.97	0.26	22.1	10.1	16.9
29	186.6	0.204	55.6	5.1	6.53	2.292	22.023	20.746	32.7	12.0	27.6	6.8	4.03	0.25	22.4	10.4	17.2
30	189.6	0.208	55.5	5.1	6.54	2.368	22.490	21.186	33.2	12.0	28.1	6.9	4.08	0.24	22.6	10.6	17.5
31	192.9	0.213	55.4	5.0	6.54	2.445	23.011	21.677	33.7	12.0	28.6	7.0	4.11	0.23	22.8	10.8	17.8
32	195.9	0.218	55.4	4.9	6.55	2.521	23.478	22.114	34.1	12.0	29.2	7.0	4.14	0.22	23.0	11.1	18.1
33	198.9	0.222	55.3	4.9	6.55	2.598	23.945	22.551	34.5	12.0	29.6	7.1	4.18	0.22	23.3	11.3	18.4
34	201.6	0.227	55.2	4.8	6.56	2.684	24.376	22.950	34.9	12.0	30.1	7.2	4.20	0.21	23.5	11.5	18.6
35	204.6	0.232	55.2	4.7	6.56	2.760	24.843	23.386	35.4	12.0	30.6	7.2	4.23	0.20	23.7	11.7	18.9
36	206.8	0.236	55.7	5.3	6.57	2.836	25.185	23.698	35.7	12.0	30.4	6.7	4.55	0.22	23.8	11.8	18.5
37	209.9	0.241	55.1	4.7	6.57	2.913	25.670	24.150	36.1	12.0	31.5	7.3	4.30	0.19	24.1	12.1	19.4
38	212.5	0.246	54.9	4.5	6.58	2.989	26.083	24.531	36.5	12.0	32.0	7.5	4.28	0.18	24.3	12.3	19.8
39	215.1	0.250	54.8	4.4	6.58	3.066	26.478	24.894	36.9	12.0	32.5	7.6	4.29	0.18	24.4	12.4	20.0
40	217.6	0.255	54.7	4.3	6.59	3.142	26.873	25.257	37.2	12.0	32.9	7.7	4.29	0.17	24.6	12.6	20.3
41	220.1	0.260	54.6	4.2	6.59	3.228	27.268	25.616	37.6	12.0	33.4	7.8	4.30	0.16	24.8	12.8	20.6
42	222.4	0.264	54.6	4.1	6.60	3.304	27.628	25.943	37.9	12.0	33.8	7.8	4.31	0.16	25.0	13.0	20.8
43	224.7	0.269	54.4	4.0	6.60	3.381	27.987	26.269	38.3	12.0	34.2	8.0	4.30	0.15	25.1	13.1	21.1
44	227.0	0.273	54.4	3.9	6.61	3.457	28.346	26.594	38.6	12.0	34.6	8.0	4.30	0.15	25.3	13.3	21.3
45	229.4	0.278	54.3	3.9	6.62	3.534	28.723	26.937	38.9	12.0	35.1	8.1	4.31	0.14	25.5	13.5	21.6
46	231.4	0.283	54.2	3.8	6.62	3.610	29.047	27.226	39.2	12.0	35.4	8.2	4.32	0.14	25.6	13.6	21.8
47	233.5	0.288	54.1	3.7	6.63	3.696	29.370	27.513	39.5	12.0	35.8	8.3	4.30	0.13	25.7	13.8	22.1
48	235.1	0.292	54.0	3.6	6.63	3.772	29.622	27.732	39.7	12.0	36.1	8.4	4.30	0.13	25.9	13.9	22.3
49	237.1	0.297	53.9	3.5	6.64	3.849	29.927	28.003	40.0	12.0	36.5	8.5	4.28	0.12	26.0	14.0	22.5
50	238.7	0.301	53.8	3.4	6.64	3.925	30.178	28.222	40.2	12.0	36.8	8.6	4.28	0.12	26.1	14.1	22.7
51	240.3	0.306	53.7	3.3	6.65	4.002	30.430	28.440	40.4	12.0	37.2	8.7	4.26	0.11	26.2	14.2	23.0
52	241.3	0.311	53.6	3.2	6.65	4.078	30.592	28.572	40.6	12.0	37.4	8.8	4.24	0.11	26.3	14.3	23.1
53	242.8	0.315	53.5	3.1	6.66	4.154	30.825	28.773	40.8	12.0	37.7	8.9	4.24	0.11	26.4	14.4	23.3
54	244.3	0.320	53.4	3.0	6.66	4.240	31.059	28.970	41.0	12.0	37.9	9.0	4.23	0.10	26.5	14.5	23.5
55	245.8	0.324	53.3	2.9	6.67	4.307	31.292	29.173	41.2	12.0	38.3	9.1	4.21	0.10	26.6	14.6	23.7
56	247.5	0.329	53.2	2.8	6.67	4.393	31.562	29.403	41.4	12.0	38.6	9.2	4.21	0.10	26.7	14.7	23.9
57	249.3	0.334	53.1	2.7	6.68	4.470	31.849	29.654	41.6	12.0	38.9	9.3	4.20	0.09	26.8	14.8	24.1
58	250.9	0.339	53.0	2.6	6.69	4.546	32.100	29.869	41.9	12.0	39.2	9.4	4.19	0.09	26.9	14.9	24.3
59	252.0	0.343	52.9	2.5	6.69	4.622	32.262	29.999	42.0	12.0	39.5	9.5	4.17	0.08	27.0	15.0	24.5

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	253.1	0.348	52.9	2.5	6.70	4.699	32.442	30.146	42.1	12.0	39.7	9.5	4.16	0.08	27.1	15.1	24.6
61	254.0	0.352	52.8	2.4	6.70	4.775	32.586	30.258	42.2	12.0	39.9	9.6	4.15	0.08	27.1	15.1	24.7
62	255.1	0.357	52.7	2.3	6.71	4.852	32.747	30.387	42.4	12.0	40.1	9.7	4.13	0.08	27.2	15.2	24.9
63	255.9	0.362	52.6	2.2	6.71	4.938	32.873	30.478	42.5	12.0	40.3	9.8	4.10	0.07	27.2	15.2	25.1
64	256.9	0.367	52.5	2.1	6.72	5.014	33.035	30.606	42.6	12.0	40.5	9.9	4.09	0.07	27.3	15.3	25.2
65	257.8	0.371	52.4	2.0	6.72	5.090	33.178	30.718	42.7	12.0	40.7	10.0	4.08	0.07	27.3	15.4	25.3
66	258.7	0.376	52.3	1.9	6.73	5.167	33.322	30.829	42.8	12.0	40.9	10.1	4.06	0.06	27.4	15.4	25.5
67	259.6	0.380	52.3	1.8	6.73	5.243	33.466	30.939	42.9	12.0	41.1	10.1	4.05	0.06	27.5	15.5	25.6
68	260.2	0.385	52.2	1.8	6.74	5.320	33.556	30.999	43.0	12.0	41.2	10.2	4.03	0.06	27.5	15.5	25.7
69	261.1	0.390	52.1	1.7	6.75	5.405	33.699	31.106	43.1	12.0	41.4	10.3	4.02	0.05	27.5	15.6	25.9
70	261.7	0.395	52.0	1.6	6.75	5.482	33.789	31.165	43.2	12.0	41.5	10.4	4.00	0.05	27.6	15.6	26.0
71	262.4	0.399	52.0	1.6	6.76	5.558	33.897	31.241	43.2	12.0	41.7	10.4	4.00	0.05	27.6	15.6	26.0
72	262.7	0.404	51.9	1.5	6.76	5.635	33.951	31.266	43.3	12.0	41.8	10.5	3.98	0.05	27.6	15.6	26.1
73	263.1	0.408	51.8	1.4	6.77	5.711	34.005	31.291	43.3	12.0	41.9	10.6	3.96	0.04	27.6	15.6	26.2
74	263.7	0.413	51.7	1.3	6.77	5.788	34.094	31.349	43.3	12.0	42.0	10.7	3.94	0.04	27.7	15.7	26.3
75	264.1	0.417	51.7	1.2	6.78	5.864	34.166	31.391	43.4	12.0	42.1	10.7	3.92	0.04	27.7	15.7	26.4
76	264.3	0.422	51.6	1.2	6.78	5.940	34.202	31.399	43.4	12.0	42.2	10.8	3.90	0.04	27.7	15.7	26.5
77	264.7	0.426	51.5	1.1	6.79	6.017	34.256	31.423	43.4	12.0	42.3	10.9	3.89	0.04	27.7	15.7	26.6
78	265.1	0.431	51.5	1.0	6.80	6.093	34.328	31.465	43.5	12.0	42.4	10.9	3.88	0.03	27.7	15.7	26.7
79	265.7	0.436	51.4	1.0	6.80	6.179	34.418	31.519	43.5	12.0	42.5	11.0	3.86	0.03	27.7	15.8	26.8
80	266.5	0.441	51.3	0.9	6.81	6.255	34.544	31.611	43.6	12.0	42.7	11.1	3.86	0.03	27.8	15.8	26.9
81	267.3	0.445	51.3	0.8	6.81	6.332	34.669	31.702	43.7	12.0	42.8	11.1	3.84	0.03	27.8	15.9	27.0
82	267.8	0.450	51.2	0.8	6.82	6.408	34.741	31.743	43.7	12.0	42.9	11.2	3.84	0.03	27.9	15.9	27.1
83	268.5	0.454	51.1	0.7	6.82	6.485	34.849	31.817	43.8	12.0	43.1	11.3	3.82	0.02	27.9	15.9	27.2
84	269.0	0.459	51.1	0.7	6.83	6.561	34.939	31.875	43.9	12.0	43.2	11.3	3.82	0.02	27.9	15.9	27.2
85	269.6	0.464	51.0	0.6	6.84	6.637	35.029	31.932	43.9	12.0	43.3	11.4	3.80	0.02	28.0	16.0	27.4
86	269.7	0.468	51.0	0.6	6.84	6.714	35.046	31.922	43.9	12.0	43.3	11.4	3.79	0.02	27.9	16.0	27.4
87	270.0	0.473	50.9	0.5	6.85	6.800	35.082	31.925	43.9	12.0	43.4	11.5	3.78	0.02	28.0	16.0	27.4
88	270.5	0.477	50.9	0.4	6.85	6.867	35.172	31.985	44.0	12.0	43.5	11.5	3.77	0.01	28.0	16.0	27.5
89	270.8	0.482	50.8	0.4	6.86	6.953	35.208	31.988	44.0	12.0	43.6	11.6	3.76	0.01	28.0	16.0	27.6
90	271.1	0.487	50.8	0.4	6.86	7.029	35.262	32.012	44.0	12.0	43.6	11.6	3.75	0.01	28.0	16.0	27.6
91	271.5	0.492	50.7	0.3	6.87	7.105	35.316	32.035	44.0	12.0	43.7	11.7	3.74	0.01	28.0	16.0	27.7
92	271.6	0.496	50.7	0.2	6.88	7.182	35.334	32.024	44.0	12.0	43.8	11.7	3.73	0.01	28.0	16.0	27.8
93	271.9	0.501	50.6	0.2	6.88	7.258	35.388	32.047	44.0	12.0	43.8	11.8	3.72	0.01	28.0	16.0	27.8
94	272.0	0.505	50.6	0.2	6.89	7.335	35.406	32.037	44.0	12.0	43.9	11.8	3.71	0.01	28.0	16.0	27.8
95	271.8	0.510	50.5	0.1	6.89	7.411	35.370	31.977	44.0	12.0	43.8	11.9	3.69	0.00	28.0	16.0	27.9
96	272.0	0.515	50.5	0.1	6.90	7.497	35.406	31.980	44.0	12.0	43.9	11.9	3.69	0.00	28.0	16.0	27.9
97	271.8	0.520	50.4	0.0	6.90	7.573	35.370	31.919	43.9	12.0	43.9	12.0	3.66	0.00	27.9	16.0	27.9
98	272.1	0.524	50.4	0.0	6.91	7.650	35.424	31.942	43.9	12.0	44.0	12.0	3.66	0.00	28.0	16.0	28.0
99	272.5	0.529	50.3	-0.1	6.92	7.726	35.478	31.965	44.0	12.0	44.0	12.1	3.65	0.00	28.0	16.0	28.1
100	272.1	0.533	50.3	-0.1	6.92	7.803	35.424	31.888	43.9	12.0	44.0	12.1	3.63	0.00	27.9	15.9	28.1

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	272.4	0.538	50.3	-0.2	6.93	7.879	35.460	31.894	43.9	12.0	44.0	12.1	3.63	-0.01	27.9	15.9	28.1
102	271.9	0.543	50.2	-0.2	6.93	7.965	35.388	31.797	43.8	12.0	44.0	12.2	3.61	-0.01	27.9	15.9	28.1
103	272.5	0.548	50.2	-0.2	6.94	8.041	35.478	31.853	43.8	12.0	44.1	12.2	3.60	-0.01	27.9	15.9	28.2
104	272.3	0.552	50.1	-0.3	6.95	8.118	35.442	31.793	43.8	12.0	44.1	12.3	3.59	-0.01	27.9	15.9	28.2
105	272.4	0.557	50.1	-0.3	6.95	8.194	35.460	31.782	43.8	12.0	44.1	12.3	3.58	-0.01	27.9	15.9	28.2
106	272.3	0.561	50.1	-0.4	6.96	8.271	35.442	31.739	43.7	12.0	44.1	12.3	3.57	-0.01	27.9	15.9	28.2
107	272.0	0.566	50.1	-0.4	6.96	8.347	35.406	31.679	43.7	12.0	44.0	12.3	3.57	-0.01	27.8	15.8	28.2
108	271.8	0.570	50.0	-0.4	6.97	8.423	35.370	31.619	43.6	12.0	44.0	12.4	3.55	-0.01	27.8	15.8	28.2
109	271.8	0.575	50.0	-0.4	6.97	8.500	35.370	31.592	43.6	12.0	44.0	12.4	3.54	-0.01	27.8	15.8	28.2
110	272.3	0.580	49.9	-0.5	6.98	8.576	35.442	31.630	43.6	12.0	44.1	12.5	3.54	-0.02	27.8	15.8	28.3
111	272.7	0.585	49.9	-0.5	6.99	8.662	35.514	31.665	43.7	12.0	44.1	12.5	3.54	-0.02	27.8	15.8	28.3
112	273.4	0.589	49.9	-0.5	6.99	8.739	35.621	31.737	43.7	12.0	44.2	12.5	3.54	-0.02	27.9	15.9	28.4
113	273.3	0.594	49.8	-0.6	7.00	8.815	35.603	31.693	43.7	12.0	44.2	12.6	3.53	-0.02	27.8	15.8	28.4
114	273.3	0.598	49.8	-0.6	7.00	8.891	35.603	31.666	43.7	12.0	44.3	12.6	3.51	-0.02	27.8	15.8	28.4
115	273.5	0.603	49.8	-0.6	7.01	8.968	35.639	31.671	43.7	12.0	44.3	12.6	3.51	-0.02	27.8	15.8	28.5
116	273.3	0.607	49.8	-0.6	7.02	9.044	35.603	31.612	43.6	12.0	44.2	12.6	3.50	-0.02	27.8	15.8	28.4
117	273.2	0.612	49.7	-0.7	7.02	9.121	35.585	31.568	43.6	12.0	44.2	12.7	3.49	-0.02	27.8	15.8	28.5
118	273.1	0.617	49.7	-0.7	7.03	9.197	35.567	31.524	43.5	12.0	44.2	12.7	3.48	-0.02	27.8	15.8	28.5
119	273.1	0.621	49.7	-0.7	7.03	9.273	35.567	31.497	43.5	12.0	44.2	12.7	3.48	-0.02	27.7	15.7	28.5
120	272.9	0.626	49.6	-0.8	7.04	9.350	35.549	31.454	43.4	12.0	44.2	12.8	3.47	-0.02	27.7	15.7	28.5
121	272.6	0.631	49.6	-0.8	7.05	9.436	35.496	31.374	43.4	12.0	44.2	12.8	3.45	-0.03	27.7	15.7	28.5
122	272.1	0.635	49.6	-0.8	7.05	9.512	35.424	31.282	43.3	12.0	44.1	12.8	3.44	-0.03	27.6	15.6	28.5
123	271.7	0.640	49.6	-0.8	7.06	9.589	35.352	31.190	43.2	12.0	44.0	12.8	3.43	-0.03	27.6	15.6	28.4
124	271.1	0.645	49.5	-0.9	7.06	9.665	35.262	31.082	43.1	12.0	44.0	12.9	3.41	-0.03	27.5	15.5	28.4
125	270.3	0.649	49.5	-0.9	7.07	9.741	35.136	30.942	42.9	12.0	43.9	12.9	3.40	-0.03	27.5	15.5	28.4
126	269.2	0.654	49.5	-0.9	7.08	9.818	34.957	30.753	42.7	12.0	43.7	12.9	3.38	-0.03	27.4	15.4	28.3
127	267.8	0.658	49.5	-0.9	7.08	9.894	34.741	30.532	42.5	12.0	43.4	12.9	3.36	-0.03	27.3	15.3	28.2
128	266.6	0.663	49.5	-0.9	7.09	9.980	34.561	30.340	42.3	12.0	43.3	12.9	3.35	-0.03	27.2	15.2	28.1
129	265.4	0.667	49.5	-0.9	7.09	10.047	34.364	30.140	42.1	12.0	43.1	12.9	3.33	-0.03	27.1	15.1	28.0
130	264.0	0.673	49.5	-0.9	7.10	10.133	34.148	29.916	41.9	12.0	42.8	12.9	3.32	-0.03	26.9	15.0	27.8
131	262.9	0.677	49.5	-0.9	7.11	10.209	33.969	29.729	41.7	12.0	42.6	12.9	3.31	-0.03	26.9	14.9	27.7
132	261.7	0.682	49.6	-0.8	7.11	10.286	33.789	29.542	41.5	12.0	42.4	12.8	3.30	-0.03	26.8	14.8	27.6
133	260.8	0.687	49.6	-0.8	7.12	10.372	33.645	29.384	41.4	12.0	42.2	12.8	3.29	-0.03	26.7	14.7	27.5
134	259.8	0.691	49.6	-0.8	7.13	10.448	33.484	29.213	41.2	12.0	42.0	12.8	3.28	-0.03	26.6	14.6	27.4
135	259.0	0.696	49.6	-0.8	7.13	10.524	33.358	29.075	41.1	12.0	41.9	12.8	3.27	-0.03	26.5	14.5	27.3
136	257.8	0.701	49.6	-0.8	7.14	10.601	33.178	28.889	40.9	12.0	41.6	12.8	3.27	-0.03	26.4	14.4	27.2
137	256.8	0.705	49.6	-0.8	7.14	10.677	33.017	28.720	40.7	12.0	41.5	12.8	3.25	-0.03	26.3	14.4	27.1
138	255.7	0.710	49.6	-0.8	7.15	10.763	32.855	28.547	40.5	12.0	41.3	12.8	3.24	-0.03	26.3	14.3	27.0
139	254.6	0.714	49.7	-0.7	7.16	10.830	32.675	28.365	40.4	12.0	41.1	12.7	3.23	-0.03	26.2	14.2	26.9
140	253.2	0.719	49.7	-0.7	7.16	10.907	32.460	28.148	40.1	12.0	40.9	12.7	3.21	-0.03	26.1	14.1	26.8
141	251.8	0.724	49.7	-0.7	7.17	10.992	32.244	27.928	39.9	12.0	40.6	12.7	3.20	-0.03	26.0	14.0	26.7

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	250.6	0.729	49.7	-0.7	7.18	11.069	32.047	27.728	39.7	12.0	40.4	12.7	3.19	-0.02	25.9	13.9	26.5
143	249.3	0.733	49.7	-0.7	7.18	11.145	31.849	27.528	39.5	12.0	40.2	12.7	3.17	-0.02	25.8	13.8	26.4
144	248.0	0.738	49.7	-0.7	7.19	11.222	31.633	27.312	39.3	12.0	40.0	12.7	3.16	-0.03	25.6	13.7	26.3
145	246.8	0.742	49.8	-0.6	7.19	11.298	31.454	27.128	39.1	12.0	39.8	12.6	3.15	-0.02	25.6	13.6	26.2
146	245.5	0.747	49.8	-0.6	7.20	11.374	31.256	26.929	38.9	12.0	39.6	12.6	3.13	-0.02	25.5	13.5	26.1
147	244.4	0.751	49.8	-0.6	7.21	11.451	31.077	26.746	38.7	12.0	39.4	12.6	3.12	-0.02	25.4	13.4	26.0
148	243.3	0.756	49.8	-0.6	7.21	11.527	30.897	26.564	38.6	12.0	39.2	12.6	3.10	-0.02	25.3	13.3	25.9
149	242.3	0.761	49.8	-0.6	7.22	11.613	30.753	26.410	38.4	12.0	39.0	12.6	3.10	-0.02	25.2	13.2	25.8
150	241.4	0.766	49.8	-0.6	7.23	11.690	30.610	26.260	38.2	12.0	38.9	12.6	3.09	-0.02	25.1	13.1	25.7
151	240.3	0.770	49.8	-0.6	7.23	11.766	30.430	26.078	38.1	12.0	38.7	12.6	3.07	-0.02	25.0	13.0	25.6
152	239.2	0.775	49.8	-0.6	7.24	11.842	30.268	25.912	37.9	12.0	38.5	12.6	3.06	-0.02	24.9	13.0	25.5
153	238.1	0.779	49.8	-0.6	7.25	11.919	30.089	25.731	37.7	12.0	38.3	12.6	3.05	-0.02	24.9	12.9	25.4
154	236.9	0.784	49.8	-0.6	7.25	11.995	29.909	25.550	37.5	12.0	38.1	12.6	3.04	-0.02	24.8	12.8	25.3
155	235.9	0.788	49.8	-0.6	7.26	12.072	29.747	25.385	37.4	12.0	37.9	12.6	3.02	-0.02	24.7	12.7	25.2
156	234.8	0.794	49.8	-0.6	7.26	12.158	29.568	25.201	37.2	12.0	37.8	12.6	3.01	-0.02	24.6	12.6	25.2
157	233.6	0.798	49.8	-0.6	7.27	12.234	29.388	25.021	37.0	12.0	37.6	12.6	2.99	-0.02	24.5	12.5	25.1
158	232.1	0.803	49.8	-0.6	7.28	12.310	29.155	24.794	36.8	12.0	37.3	12.6	2.98	-0.02	24.4	12.4	24.9
159	230.8	0.807	49.8	-0.6	7.28	12.387	28.939	24.583	36.6	12.0	37.1	12.6	2.96	-0.02	24.3	12.3	24.8
160	229.6	0.812	49.8	-0.6	7.29	12.463	28.759	24.403	36.4	12.0	37.0	12.6	2.94	-0.02	24.2	12.2	24.8
161	228.2	0.816	49.8	-0.6	7.30	12.540	28.544	24.193	36.2	12.0	36.7	12.6	2.93	-0.02	24.1	12.1	24.6
162	226.9	0.821	49.8	-0.6	7.30	12.616	28.328	23.983	36.0	12.0	36.5	12.6	2.91	-0.02	24.0	12.0	24.5
163	226.2	0.826	49.8	-0.6	7.31	12.702	28.220	23.864	35.9	12.0	36.4	12.6	2.90	-0.02	23.9	11.9	24.5
164	225.3	0.831	49.8	-0.6	7.32	12.778	28.077	23.717	35.7	12.0	36.3	12.6	2.89	-0.02	23.8	11.9	24.4
165	224.0	0.835	49.8	-0.6	7.32	12.855	27.879	23.524	35.5	12.0	36.1	12.6	2.87	-0.02	23.7	11.8	24.3
166	222.8	0.840	49.8	-0.6	7.33	12.931	27.699	23.346	35.3	12.0	35.9	12.6	2.86	-0.02	23.7	11.7	24.2
167	221.7	0.844	49.8	-0.6	7.34	13.008	27.520	23.168	35.2	12.0	35.7	12.6	2.85	-0.02	23.6	11.6	24.1
168	220.8	0.849	49.8	-0.6	7.34	13.084	27.376	23.022	35.0	12.0	35.6	12.6	2.83	-0.02	23.5	11.5	24.1
169	219.5	0.854	49.8	-0.6	7.35	13.170	27.179	22.827	34.8	12.0	35.4	12.6	2.82	-0.02	23.4	11.4	24.0
170	218.4	0.858	49.8	-0.6	7.36	13.237	26.999	22.653	34.6	12.0	35.2	12.6	2.80	-0.02	23.3	11.3	23.9
171	217.5	0.863	49.8	-0.6	7.36	13.323	26.855	22.506	34.5	12.0	35.1	12.6	2.79	-0.03	23.2	11.3	23.8
172	217.0	0.868	49.8	-0.6	7.37	13.399	26.783	22.423	34.4	12.0	35.0	12.6	2.79	-0.03	23.2	11.2	23.8
173	216.1	0.872	49.8	-0.6	7.38	13.476	26.640	22.278	34.3	12.0	34.8	12.6	2.78	-0.03	23.1	11.1	23.7
174	214.9	0.877	49.8	-0.6	7.38	13.552	26.460	22.102	34.1	12.0	34.7	12.6	2.76	-0.03	23.0	11.1	23.6
175	214.1	0.882	49.8	-0.6	7.39	13.628	26.334	21.974	34.0	12.0	34.6	12.6	2.75	-0.03	23.0	11.0	23.6
176	213.2	0.886	49.8	-0.6	7.39	13.705	26.191	21.829	33.8	12.0	34.4	12.6	2.73	-0.03	22.9	10.9	23.5
177	212.2	0.891	49.8	-0.6	7.40	13.791	26.029	21.668	33.7	12.0	34.3	12.6	2.72	-0.03	22.8	10.8	23.4
178	211.4	0.896	49.8	-0.6	7.41	13.867	25.903	21.539	33.5	12.0	34.1	12.6	2.71	-0.03	22.8	10.8	23.4
179	210.6	0.900	49.8	-0.6	7.42	13.944	25.777	21.411	33.4	12.0	34.0	12.6	2.70	-0.03	22.7	10.7	23.3
180	209.7	0.905	49.8	-0.6	7.42	14.020	25.634	21.268	33.3	12.0	33.9	12.6	2.69	-0.03	22.6	10.6	23.2
181	208.5	0.910	49.8	-0.6	7.43	14.096	25.454	21.094	33.1	12.0	33.7	12.6	2.67	-0.03	22.5	10.5	23.2
182	207.5	0.915	49.8	-0.6	7.44	14.182	25.292	20.934	32.9	12.0	33.6	12.6	2.66	-0.03	22.5	10.5	23.1

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	206.9	0.919	49.8	-0.6	7.44	14.259	25.203	20.837	32.8	12.0	33.5	12.6	2.65	-0.03	22.4	10.4	23.0
184	206.1	0.924	49.7	-0.7	7.45	14.335	25.077	20.710	32.7	12.0	33.4	12.7	2.63	-0.03	22.3	10.4	23.0
185	205.3	0.928	49.7	-0.7	7.46	14.411	24.951	20.583	32.6	12.0	33.3	12.7	2.62	-0.03	22.3	10.3	23.0
186	204.3	0.933	49.7	-0.7	7.46	14.488	24.789	20.426	32.4	12.0	33.1	12.7	2.61	-0.03	22.2	10.2	22.9
187	203.6	0.937	49.7	-0.7	7.47	14.564	24.682	20.315	32.3	12.0	33.0	12.7	2.60	-0.03	22.1	10.2	22.8
188	202.9	0.943	49.7	-0.7	7.48	14.650	24.574	20.202	32.2	12.0	32.9	12.7	2.59	-0.03	22.1	10.1	22.8
189	202.0	0.947	49.7	-0.7	7.48	14.727	24.430	20.061	32.0	12.0	32.7	12.7	2.58	-0.03	22.0	10.0	22.7
190	201.3	0.952	49.7	-0.7	7.49	14.803	24.322	19.950	31.9	12.0	32.6	12.7	2.57	-0.03	22.0	10.0	22.6
191	200.5	0.956	49.7	-0.7	7.50	14.879	24.197	19.824	31.8	12.0	32.5	12.7	2.56	-0.03	21.9	9.9	22.6
192	199.6	0.961	49.7	-0.7	7.50	14.956	24.053	19.684	31.7	12.0	32.4	12.7	2.55	-0.04	21.8	9.8	22.6
193	199.3	0.965	49.7	-0.7	7.51	15.032	24.017	19.635	31.6	12.0	32.3	12.7	2.54	-0.04	21.8	9.8	22.5
194	198.5	0.970	49.7	-0.7	7.52	15.109	23.891	19.510	31.5	12.0	32.2	12.7	2.53	-0.04	21.7	9.8	22.5
195	198.2	0.975	49.7	-0.7	7.52	15.195	23.837	19.444	31.4	12.0	32.2	12.7	2.53	-0.04	21.7	9.7	22.4
196	197.2	0.979	49.7	-0.7	7.53	15.261	23.676	19.291	31.3	12.0	32.0	12.7	2.52	-0.04	21.6	9.6	22.4
197	196.8	0.984	49.7	-0.7	7.54	15.347	23.622	19.225	31.2	12.0	31.9	12.7	2.51	-0.04	21.6	9.6	22.3
198	196.3	0.989	49.7	-0.7	7.55	15.424	23.532	19.131	31.1	12.0	31.8	12.7	2.50	-0.04	21.6	9.6	22.3
199	195.6	0.993	49.6	-0.8	7.55	15.500	23.424	19.022	31.0	12.0	31.8	12.8	2.49	-0.04	21.5	9.5	22.3
200	195.0	0.998	49.6	-0.8	7.56	15.577	23.334	18.928	30.9	12.0	31.7	12.8	2.48	-0.04	21.5	9.5	22.2
201	194.4	1.003	49.6	-0.8	7.57	15.653	23.245	18.834	30.8	12.0	31.6	12.8	2.48	-0.04	21.4	9.4	22.2
202	193.8	1.007	49.6	-0.8	7.57	15.729	23.155	18.741	30.7	12.0	31.5	12.8	2.47	-0.04	21.4	9.4	22.1
203	193.2	1.012	49.6	-0.8	7.58	15.806	23.047	18.632	30.6	12.0	31.4	12.8	2.46	-0.04	21.3	9.3	22.1
204	192.8	1.016	49.6	-0.8	7.59	15.882	22.993	18.569	30.6	12.0	31.4	12.8	2.45	-0.04	21.3	9.3	22.1
205	192.6	1.021	49.6	-0.8	7.59	15.959	22.957	18.522	30.5	12.0	31.3	12.8	2.45	-0.04	21.2	9.3	22.1
206	185.2	1.027	49.6	-0.8	7.60	16.054	21.808	17.535	29.5	12.0	30.3	12.8	2.37	-0.05	20.8	8.8	21.6
207	186.6	1.031	49.7	-0.7	7.61	16.131	22.023	17.699	29.7	12.0	30.4	12.7	2.39	-0.04	20.8	8.8	21.6
208	186.7	1.036	49.6	-0.8	7.62	16.207	22.041	17.697	29.7	12.0	30.4	12.8	2.39	-0.04	20.8	8.8	21.6
209	187.7	1.040	49.6	-0.8	7.62	16.283	22.185	17.801	29.8	12.0	30.6	12.8	2.40	-0.04	20.9	8.9	21.7
210	187.8	1.045	49.6	-0.8	7.63	16.360	22.203	17.799	29.8	12.0	30.6	12.8	2.39	-0.05	20.9	8.9	21.7
211	187.8	1.049	49.6	-0.8	7.64	16.436	22.203	17.782	29.8	12.0	30.6	12.8	2.39	-0.05	20.9	8.9	21.7
212	188.0	1.054	49.6	-0.8	7.64	16.513	22.239	17.795	29.8	12.0	30.6	12.8	2.39	-0.05	20.9	8.9	21.7
213	187.7	1.059	49.6	-0.8	7.65	16.589	22.185	17.733	29.7	12.0	30.5	12.8	2.39	-0.05	20.9	8.9	21.7
214	187.7	1.063	49.6	-0.8	7.66	16.665	22.185	17.716	29.7	12.0	30.5	12.8	2.38	-0.05	20.8	8.9	21.7
215	187.7	1.068	49.6	-0.8	7.66	16.742	22.185	17.699	29.7	12.0	30.5	12.8	2.38	-0.05	20.8	8.8	21.7
216	187.8	1.072	49.6	-0.8	7.67	16.818	22.203	17.697	29.7	12.0	30.5	12.8	2.38	-0.05	20.8	8.8	21.7
217	187.7	1.077	49.6	-0.8	7.68	16.895	22.185	17.665	29.7	12.0	30.5	12.8	2.38	-0.05	20.8	8.8	21.7
218	185.6	1.081	49.6	-0.8	7.69	16.971	21.861	17.379	29.4	12.0	30.2	12.8	2.35	-0.05	20.7	8.7	21.5
219	186.0	1.086	49.6	-0.8	7.69	17.047	21.933	17.422	29.4	12.0	30.3	12.8	2.36	-0.05	20.7	8.7	21.5
220	185.9	1.090	49.5	-0.9	7.70	17.124	21.915	17.391	29.4	12.0	30.3	12.9	2.35	-0.05	20.7	8.7	21.6
221	185.8	1.095	49.5	-0.9	7.71	17.200	21.897	17.359	29.3	12.0	30.2	12.9	2.35	-0.05	20.7	8.7	21.6
222	185.5	1.100	49.5	-0.9	7.71	17.277	21.843	17.298	29.3	12.0	30.2	12.9	2.34	-0.05	20.6	8.6	21.5
223	185.4	1.104	49.5	-0.9	7.72	17.353	21.825	17.266	29.3	12.0	30.1	12.9	2.34	-0.05	20.6	8.6	21.5

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	185.2	1.109	49.5	-0.9	7.73	17.429	21.808	17.235	29.2	12.0	30.1	12.9	2.34	-0.05	20.6	8.6	21.5
225	183.5	1.114	49.5	-0.9	7.74	17.515	21.538	16.994	29.0	12.0	29.9	12.9	2.32	-0.05	20.5	8.5	21.4
226	184.8	1.118	49.5	-0.9	7.74	17.592	21.736	17.140	29.1	12.0	30.1	12.9	2.33	-0.05	20.6	8.6	21.5
227	185.4	1.123	49.5	-0.9	7.75	17.668	21.825	17.198	29.2	12.0	30.1	12.9	2.33	-0.05	20.6	8.6	21.5
228	185.8	1.128	49.5	-0.9	7.76	17.745	21.897	17.240	29.2	12.0	30.2	12.9	2.34	-0.05	20.6	8.6	21.5
229	185.9	1.133	49.5	-0.9	7.77	17.831	21.915	17.236	29.2	12.0	30.1	12.9	2.33	-0.05	20.6	8.6	21.5
230	185.7	1.137	49.5	-0.9	7.77	17.907	21.879	17.190	29.2	12.0	30.1	12.9	2.33	-0.05	20.6	8.6	21.5
231	185.9	1.142	49.5	-0.9	7.78	17.983	21.915	17.202	29.2	12.0	30.1	12.9	2.33	-0.05	20.6	8.6	21.5
232	183.8	1.146	49.4	-1.0	7.79	18.060	21.574	16.906	28.9	12.0	29.9	13.0	2.31	-0.06	20.4	8.5	21.4
233	184.7	1.151	49.4	-1.0	7.80	18.136	21.718	17.007	29.0	12.0	30.0	13.0	2.31	-0.06	20.5	8.5	21.5
234	185.0	1.156	49.4	-1.0	7.80	18.213	21.772	17.035	29.0	12.0	30.0	13.0	2.32	-0.06	20.5	8.5	21.5
235	185.0	1.160	49.4	-1.0	7.81	18.289	21.772	17.018	29.0	12.0	30.0	13.0	2.31	-0.06	20.5	8.5	21.5
236	185.1	1.165	49.4	-1.0	7.82	18.365	21.790	17.016	29.0	12.0	30.0	13.0	2.31	-0.06	20.5	8.5	21.5
237	185.1	1.169	49.4	-1.0	7.82	18.442	21.790	16.999	29.0	12.0	30.0	13.0	2.31	-0.06	20.5	8.5	21.5
238	185.1	1.174	49.4	-1.0	7.83	18.518	21.790	16.983	29.0	12.0	30.0	13.0	2.31	-0.06	20.5	8.5	21.5
239	183.3	1.178	49.4	-1.0	7.84	18.595	21.502	16.732	28.7	12.0	29.7	13.0	2.29	-0.06	20.4	8.4	21.4
240	183.8	1.184	49.4	-1.0	7.85	18.680	21.574	16.772	28.8	12.0	29.8	13.0	2.29	-0.06	20.4	8.4	21.4
241	184.4	1.188	49.4	-1.0	7.85	18.747	21.682	16.845	28.8	12.0	29.9	13.0	2.29	-0.06	20.4	8.4	21.5
242	184.7	1.193	49.4	-1.0	7.86	18.833	21.718	16.856	28.8	12.0	29.9	13.0	2.29	-0.06	20.4	8.4	21.5
243	184.8	1.197	49.4	-1.0	7.87	18.910	21.736	16.854	28.8	12.0	29.9	13.0	2.29	-0.06	20.4	8.4	21.5
244	185.1	1.202	49.4	-1.0	7.88	18.986	21.790	16.881	28.9	12.0	29.9	13.0	2.30	-0.06	20.4	8.4	21.5
245	185.1	1.206	49.3	-1.1	7.88	19.063	21.790	16.864	28.9	12.0	29.9	13.1	2.29	-0.06	20.4	8.4	21.5
246	183.4	1.211	49.3	-1.1	7.89	19.139	21.520	16.630	28.6	12.0	29.7	13.1	2.27	-0.07	20.3	8.3	21.4
247	184.1	1.216	49.3	-1.1	7.90	19.215	21.628	16.700	28.7	12.0	29.8	13.1	2.28	-0.06	20.3	8.4	21.4
248	184.4	1.220	49.3	-1.1	7.91	19.292	21.682	16.727	28.7	12.0	29.8	13.1	2.28	-0.06	20.4	8.4	21.4
249	185.0	1.225	49.3	-1.1	7.91	19.368	21.772	16.783	28.8	12.0	29.9	13.1	2.28	-0.07	20.4	8.4	21.5
250	185.0	1.229	49.3	-1.1	7.92	19.445	21.772	16.766	28.8	12.0	29.9	13.1	2.28	-0.07	20.4	8.4	21.5
251	184.9	1.234	49.3	-1.1	7.93	19.521	21.754	16.735	28.7	12.0	29.8	13.1	2.28	-0.07	20.4	8.4	21.5
252	185.0	1.238	49.3	-1.1	7.94	19.597	21.772	16.733	28.7	12.0	29.8	13.1	2.28	-0.07	20.4	8.4	21.5
253	182.5	1.243	49.2	-1.2	7.94	19.674	21.376	16.399	28.4	12.0	29.6	13.2	2.25	-0.07	20.2	8.2	21.4
254	183.6	1.248	49.2	-1.2	7.95	19.750	21.556	16.527	28.5	12.0	29.7	13.2	2.26	-0.07	20.3	8.3	21.4
255	184.2	1.252	49.2	-1.2	7.96	19.827	21.646	16.582	28.6	12.0	29.7	13.2	2.26	-0.07	20.3	8.3	21.4
256	184.2	1.257	49.2	-1.2	7.97	19.903	21.646	16.566	28.6	12.0	29.7	13.2	2.26	-0.07	20.3	8.3	21.4
257	184.3	1.261	49.2	-1.2	7.97	19.979	21.664	16.564	28.6	12.0	29.8	13.2	2.26	-0.07	20.3	8.3	21.5
258	184.6	1.265	49.2	-1.2	7.98	20.037	21.700	16.580	28.6	12.0	29.8	13.2	2.26	-0.07	20.3	8.3	21.5

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)

Failure Photographs

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. U-2412B

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project 39406.1.1 **County** GUILFORD **Owner**

Date: Sampled 3/13/13 **Received** 10/11/13 **Reported** 10/15/13

Sampled from ROADWAY **By** N ROBERSON

Submitted by M HURT 1995 **Standard Specifications**

787858 TO 787860
10/22/13

TEST RESULTS

Proj. Sample No.		ST-11#1	ST-11#2	ST-11#3			
Lab. Sample No.		787858	787859	787860			
Retained #4 Sieve	%	-	-	-			
Passing #10 Sieve	%	100	100	100			
Passing #40 Sieve	%	99	99	100			
Passing #200 Sieve	%	81	83	84			

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	3.7	3.2	3.2			
Fine Sand Ret - #270	%	24.5	22.7	20.1			
Silt 0.05 - 0.005 mm	%	49.5	49.7	50.3			
Clay < 0.005 mm	%	22.3	24.3	26.4			
T-#		T-5764	T-5764	T-5764			
Specific Gravity		2.723	2.709	2.733			

L. L.		56	62	60			
P. I.		12	17	17			
AASHTO Classification		A-7-5(14)	A-7-5(20)	A-7-5(20)			
Station		404+50	404+50	404+50			
Offset		3 RT	3 RT	3 RT			
Alignment		L	L	L			
Location							
Depth (Ft)		19.50	19.50	19.50			
	to	21.50	21.50	21.50			
Final Moisture	%	59.52	58.38	55.38			

cc: N ROBERSON
GREG BODENHEIMER
MASON HURT

Soils Engineer

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	45.03	43.77	**Plastic Limits:**	0	
Dry Density (pcf):	64.70	80.11	**Plasticity Index (%):**	0	
Saturation (%):	75.39	106.33			
Void Ratio:	1.6221	1.1176	**Specific Gravity:**	2.720	Measured

Soil Description: Tannish-orange colored clay.

Project Number: 39406.1.1 **Depth:** 19.5 - 21.5 ft

Sample Number: ST-11 **Boring Number:**

Project: U-2412B

Client: T-5764

Location: Guilford County (Sta. 404+50)

Remarks: Solid height is 0.38184 inches; Blow/ft. = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	45.03	43.77	**Plastic Limits:**	0	
Dry Density (pcf):	64.70	80.11	**Plasticity Index (%):**	0	
Saturation (%):	75.39	106.33			
Void Ratio:	1.6221	1.1176	**Specific Gravity:**	2.720	Measured

Soil Description: Tannish-orange colored clay.

Project Number: 39406.1.1 **Depth:** 19.5 - 21.5 ft

Sample Number: ST-11 **Boring Number:**

Project: U-2412B

Client: T-5764

Location: Guilford County (Sta. 404+50)

Remarks: Solid height is 0.38184 inches; Blow/ft. = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	45.03	43.77	**Plastic Limits:**	0	
Dry Density (pcf):	64.70	80.11	**Plasticity Index (%):**	0	
Saturation (%):	75.39	106.33			
Void Ratio:	1.6221	1.1176	**Specific Gravity:**	2.720	Measured

Soil Description: Tannish-orange colored clay.

Project Number: 39406.1.1 **Depth:** 19.5 - 21.5 ft **Remarks:**

Sample Number: ST-11 **Boring Number:** Solid height is 0.38184 inches; Blow/ft. = NA

Project: U-2412B

Client: T-5764

Location: Guilford County (Sta. 404+50)

Consolidation Test Results
Summary

Project: U-2412B
Location: Guilford County (Sta. 404+50)
Job Number: T-5764

Project Number: 39406.1.1

Sample Number: ST-11
Boring Number:
Depth: 19.5 - 21.5 ft
Sample Type: Undisturbed

Soil Description:
Tannish-orange colored clay.
Remarks:
Solid height is 0.38184 inches; Blow/ft. = NA

Test Number:
Test Date:

Index	Load Sequence (tsf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	1.0010	0.6192	0.00	1.6221	0.000		0.000	
1	0.063	0.0021	0.9989	0.6171	0.21	1.6166	0.106		7283.950	
2	0.125	0.0048	0.9962	0.6144	0.48	1.6096	0.064		11998.912	
3	0.250	0.0094	0.9916	0.6098	0.94	1.5975	0.391		1945.921	
4	0.500	0.0162	0.9848	0.6030	1.62	1.5797	0.250		3001.822	
5	1.000	0.0247	0.9763	0.5945	2.47	1.5574	0.160		4609.729	
6	2.000	0.0412	0.9598	0.5780	4.12	1.5142	0.123		5819.079	
7	4.000	0.0964	0.9046	0.5228	9.63	1.3696	0.073		8685.894	
8	2.000	0.0923	0.9087	0.5269	9.22	1.3804	0.000		0.000	
9	1.000	0.0872	0.9138	0.5320	8.71	1.3937	0.000		0.000	
10	0.500	0.0810	0.9200	0.5382	8.09	1.4100	0.000		0.000	
11	1.000	0.0830	0.9180	0.5362	8.29	1.4047	0.000		0.000	
12	2.000	0.0883	0.9127	0.5309	8.82	1.3908	0.000		0.000	
13	4.000	0.1032	0.8978	0.5160	10.31	1.3518	0.000		0.000	
14	8.000	0.1862	0.8148	0.4330	18.60	1.1344	0.063		8219.605	
15	16.000	0.2801	0.7209	0.3391	27.98	0.8884	0.185		2173.739	
16	4.000	0.2685	0.7325	0.3507	26.82	0.9188	0.000		0.000	
17	0.016	0.1926	0.8084	0.4266	19.24	1.1176	0.000		0.000	

Tested By:

Checked By:

Consolidation Test
Consolidation Specimen Information

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County (Sta. 404+50)
Job Number: T-5764 **Test Date:**

Sample Number: ST-11 **Soil Description:**
Boring Number: Tannish-orange colored clay.
Depth: 19.5 - 21.5 ft **Remarks:**
Sample Type: Undisturbed Solid height is 0.38184 inches; Blow/ft. = NA

Test Number:
Liquid Limit: 0.0000 **Initial Void Ratio:** 1.6221 **Initial Height (in):** 1.0010
Plastic Limit: 0.0000 **Plasticity Index (%):** 0.0000 **Initial Diameter (in):** 2.4998
Specific Gravity: 2.7200 Measured **Weight of Ring (g):** 110.9800

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	121.00	119.95
Dry Soil + Container (g)	83.43	83.43
Weight of Container (g)	0.00	0.00
Moisture Content (%)	45.03	43.77
Void Ratio	1.6221	1.1176
Saturation (%)	75.39	106.33
Dry Density (pcf)	64.70	80.11

Tested By: **Checked By:**

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Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date

Tested By:

Effective Stress at Maximum Deviator Stress Criterion

Deviator Stress Vs. Axial Strain

Initial	Specimen A	B	C	D
Water Content (%)	46.4	47.0	48.3	
Dry Density (pcf)	65.5	66.0	67.2	
Saturation (%)	79.05	81.59	85.75	
Void Ratio	1.590	1.554	1.533	
Diameter (in)	2.858	2.858	2.859	
Height (in)	6.005	6.005	6.000	
Specific Gravity	2.72	2.71	2.73	
Liquid Limit	0	0	0	
Plastic Limit	0	0	0	
After Consolidation	**A**	**B**	**C**	**D**
B-Value	0.00	0.00	0.00	
Water Content (%)	46.7	48.5	51.2	
Dry Density (pcf)	66.20	68.30	70.38	
Saturation (%)	100.00	100.00	100.00	
Void Ratio	1.568	1.476	1.424	
Effective Stress (psi)	6.0	12.0	24.0	
Back Press. (psi)	59.8	60.1	60.4	
Rate of Strain	0.009	0.009	0.009	

Maximium Deviator Stress Criterion		After Shear	A	B	C	D
C (psi)	0.0	σ'1 at Failure (psi)	13.64	18.17	30.13	
C' (psi)	0.0	σ'3 at Failure (psi)	5.14	7.29	9.92	
Ø (deg)	0.0					
Ø' (deg)	0.0					

Project:	U-2412B	N/A	N/A	N/A	N/A
Location:	Guilford County (Sta. 404+50)				
Project Number:	39406.1.1				
Boring Number:					
Sample Number:	ST-11				
Depth:	19.50 - 21.50 ft				
Sample Type:	Undisturbed	Failure Photographs			
Description:					
Test Type	Consolidated Undrained				
Remarks	Research				

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Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date:

Tested By:

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)

Change in Pore Pressure vs. Axial Strain

Deviator Stress vs. Axial Strain

Principal Stress Ratio vs. Axial Strain

Change in Pore Pressure vs. Axial Strain
Change in Pore Pressure (psi)
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
0.000
5.000
10.000
15.000
20.000
25.000
Axial Strain (%)
Specimen A
Specimen B
Specimen C
Specimen D

Mohr Stress Circles at Maximum Deviator Stress Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at Maximum Principal Stress Ratio Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at 15% Axial Strain Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)
30.0
20.0
10.0
0.0
Q (psi)
0.0
10.0
20.0
30.0
P' (psi)
Specimen A
Specimen B
Specimen C
Specimen D
Tangent Line

Stress Paths (Total)
(C' = 0.0 Ø' = 0.0)
40.0
30.0
20.0
10.0
0.0
Q (psi)
0.0
10.0
20.0
30.0
40.0
P (psi)

Specimen A Shear Data

CU Triaxial Test

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File Location
T-5764.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5764
Sample Location: Guilford County (Sta. 404+50)
Sample Description: Reddish-orange colored clay.
Remarks: 15° shear plane.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.723
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.858	2.850	
Height (in)	6.005	5.972	
Weight (grams)	969.00		1056.00
Moisture (%)	46.37		59.52
Dry Density (pcf)	65.45	66.20	
Saturation (%)	79.05	100.00	
Void Ratio	1.590	1.568	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 65.800
Effective Confining Stress (psi): 6.0
Corrected Peak Deviator Stress (psi): 8.497 at reading number: 142

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	70.3	0.064	59.8	0.0	6.38	0.000	0.000	0.000	6.0	6.0	6.0	6.0	1.00	0.00	6.0	0.0	6.0
1	92.2	0.069	60.5	0.7	6.38	0.085	3.431	3.395	9.4	6.0	8.7	5.3	1.64	0.21	7.7	1.7	7.0
2	98.7	0.073	60.8	1.0	6.39	0.154	4.448	4.381	10.4	6.0	9.3	5.0	1.88	0.23	8.2	2.2	7.2
3	103.8	0.077	61.0	1.2	6.39	0.231	5.246	5.145	11.1	6.0	9.9	4.8	2.08	0.23	8.6	2.6	7.4
4	107.1	0.082	61.1	1.3	6.40	0.308	5.773	5.636	11.6	6.0	10.3	4.7	2.20	0.23	8.8	2.8	7.5
5	109.2	0.086	61.2	1.4	6.40	0.378	6.099	5.931	11.9	6.0	10.5	4.6	2.29	0.23	9.0	3.0	7.6
6	110.9	0.091	61.2	1.4	6.41	0.455	6.372	6.167	12.2	6.0	10.7	4.6	2.36	0.23	9.1	3.1	7.6
7	112.9	0.095	61.3	1.5	6.41	0.524	6.680	6.443	12.4	6.0	11.0	4.5	2.43	0.23	9.2	3.2	7.7
8	114.2	0.099	61.3	1.5	6.42	0.601	6.880	6.607	12.6	6.0	11.1	4.5	2.47	0.23	9.3	3.3	7.8
9	115.2	0.104	61.3	1.5	6.42	0.670	7.043	6.737	12.7	6.0	11.2	4.5	2.50	0.22	9.4	3.4	7.9
10	116.3	0.108	61.3	1.5	6.43	0.740	7.207	6.868	12.9	6.0	11.3	4.5	2.54	0.22	9.4	3.4	7.9
11	117.0	0.112	61.3	1.5	6.43	0.817	7.316	6.941	12.9	6.0	11.4	4.5	2.56	0.22	9.5	3.5	7.9
12	118.2	0.117	61.3	1.5	6.44	0.894	7.515	7.103	13.1	6.0	11.6	4.5	2.59	0.22	9.5	3.6	8.0
13	118.0	0.121	61.3	1.5	6.44	0.963	7.479	7.035	13.0	6.0	11.5	4.5	2.58	0.22	9.5	3.5	8.0
14	118.2	0.126	61.3	1.5	6.45	1.040	7.515	7.036	13.0	6.0	11.5	4.5	2.58	0.22	9.5	3.5	8.0
15	118.8	0.130	61.3	1.5	6.45	1.117	7.606	7.090	13.1	6.0	11.6	4.5	2.59	0.22	9.5	3.5	8.0
16	119.0	0.134	61.3	1.5	6.46	1.187	7.642	7.094	13.1	6.0	11.6	4.5	2.59	0.22	9.5	3.5	8.0
17	119.7	0.139	61.3	1.5	6.46	1.256	7.751	7.169	13.2	6.0	11.6	4.5	2.61	0.21	9.6	3.6	8.0
18	119.5	0.143	61.3	1.5	6.47	1.333	7.715	7.098	13.1	6.0	11.6	4.5	2.59	0.22	9.5	3.5	8.0

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	119.7	0.147	61.3	1.5	6.47	1.402	7.751	7.101	13.1	6.0	11.6	4.5	2.59	0.22	9.5	3.6	8.0
20	119.7	0.152	61.3	1.5	6.47	1.479	7.751	7.066	13.1	6.0	11.5	4.5	2.58	0.22	9.5	3.5	8.0
21	120.8	0.156	61.3	1.5	6.48	1.549	7.915	7.194	13.2	6.0	11.7	4.5	2.60	0.21	9.6	3.6	8.1
22	120.4	0.161	61.3	1.5	6.48	1.626	7.860	7.105	13.1	6.0	11.6	4.5	2.58	0.21	9.5	3.6	8.0
23	121.0	0.165	61.3	1.5	6.49	1.703	7.951	7.158	13.1	6.0	11.6	4.5	2.59	0.21	9.6	3.6	8.1
24	121.9	0.169	61.3	1.5	6.49	1.772	8.096	7.269	13.3	6.0	11.8	4.5	2.62	0.21	9.6	3.6	8.1
25	121.8	0.174	61.3	1.5	6.50	1.849	8.078	7.215	13.2	6.0	11.7	4.5	2.60	0.20	9.6	3.6	8.1
26	121.7	0.178	61.3	1.5	6.50	1.919	8.060	7.165	13.2	6.0	11.7	4.5	2.58	0.21	9.6	3.6	8.1
27	123.1	0.183	61.3	1.5	6.51	1.996	8.278	7.342	13.3	6.0	11.9	4.5	2.62	0.20	9.7	3.7	8.2
28	123.0	0.187	61.3	1.5	6.51	2.073	8.260	7.317	13.3	6.0	11.8	4.5	2.62	0.20	9.6	3.7	8.2
29	123.1	0.192	61.3	1.5	6.52	2.150	8.278	7.328	13.3	6.0	11.8	4.5	2.62	0.20	9.7	3.7	8.2
30	122.5	0.197	61.2	1.4	6.52	2.227	8.187	7.233	13.2	6.0	11.8	4.6	2.59	0.20	9.6	3.6	8.2
31	123.6	0.201	61.2	1.4	6.53	2.296	8.350	7.387	13.4	6.0	11.9	4.6	2.62	0.20	9.7	3.7	8.2
32	123.2	0.205	61.2	1.4	6.53	2.373	8.296	7.327	13.3	6.0	11.9	4.6	2.61	0.20	9.7	3.7	8.2
33	123.7	0.210	61.2	1.4	6.54	2.450	8.369	7.392	13.4	6.0	11.9	4.6	2.62	0.19	9.7	3.7	8.2
34	123.9	0.214	61.2	1.4	6.54	2.527	8.405	7.421	13.4	6.0	12.0	4.6	2.62	0.19	9.7	3.7	8.3
35	124.4	0.219	61.2	1.4	6.55	2.597	8.478	7.485	13.5	6.0	12.1	4.6	2.63	0.19	9.7	3.7	8.3
36	125.2	0.223	61.2	1.4	6.55	2.674	8.605	7.603	13.6	6.0	12.2	4.6	2.66	0.19	9.8	3.8	8.4
37	124.0	0.227	61.2	1.4	6.56	2.743	8.423	7.420	13.4	6.0	12.0	4.6	2.62	0.19	9.7	3.7	8.3
38	124.3	0.232	61.2	1.4	6.56	2.820	8.459	7.449	13.4	6.0	12.1	4.6	2.62	0.19	9.7	3.7	8.3
39	124.3	0.237	61.2	1.4	6.57	2.897	8.459	7.442	13.4	6.0	12.1	4.6	2.61	0.19	9.7	3.7	8.3
40	125.5	0.241	61.2	1.4	6.57	2.974	8.659	7.630	13.6	6.0	12.2	4.6	2.66	0.18	9.8	3.8	8.4
41	125.2	0.246	61.2	1.4	6.58	3.051	8.605	7.570	13.6	6.0	12.2	4.6	2.64	0.18	9.8	3.8	8.4
42	125.5	0.250	61.2	1.4	6.58	3.121	8.659	7.617	13.6	6.0	12.2	4.6	2.65	0.18	9.8	3.8	8.4
43	126.3	0.254	61.2	1.4	6.59	3.198	8.786	7.733	13.7	6.0	12.4	4.6	2.67	0.17	9.9	3.9	8.5
44	126.3	0.259	61.2	1.4	6.60	3.275	8.786	7.726	13.7	6.0	12.4	4.6	2.67	0.18	9.9	3.9	8.5
45	125.9	0.264	61.2	1.4	6.60	3.352	8.714	7.650	13.6	6.0	12.3	4.6	2.65	0.18	9.8	3.8	8.5
46	126.3	0.268	61.2	1.4	6.61	3.429	8.786	7.713	13.7	6.0	12.4	4.6	2.66	0.18	9.8	3.9	8.5
47	126.9	0.272	61.1	1.3	6.61	3.498	8.877	7.794	13.8	6.0	12.5	4.7	2.67	0.17	9.9	3.9	8.6
48	126.8	0.277	61.1	1.3	6.62	3.575	8.859	7.770	13.8	6.0	12.4	4.7	2.66	0.17	9.9	3.9	8.6
49	126.9	0.281	61.1	1.3	6.62	3.645	8.877	7.781	13.8	6.0	12.4	4.7	2.67	0.17	9.9	3.9	8.6
50	127.0	0.286	61.1	1.3	6.63	3.722	8.895	7.792	13.8	6.0	12.5	4.7	2.67	0.17	9.9	3.9	8.6
51	127.4	0.290	61.1	1.3	6.63	3.799	8.950	7.838	13.8	6.0	12.5	4.7	2.68	0.17	9.9	3.9	8.6
52	126.9	0.295	61.1	1.3	6.64	3.868	8.877	7.762	13.8	6.0	12.4	4.7	2.66	0.17	9.9	3.9	8.5
53	127.6	0.299	61.1	1.3	6.64	3.945	8.986	7.859	13.9	6.0	12.6	4.7	2.67	0.16	9.9	3.9	8.6
54	127.0	0.304	61.1	1.3	6.65	4.022	8.895	7.765	13.8	6.0	12.5	4.7	2.65	0.17	9.9	3.9	8.6
55	128.3	0.308	61.1	1.3	6.65	4.092	9.095	7.951	13.9	6.0	12.6	4.7	2.69	0.16	10.0	4.0	8.7
56	127.0	0.312	61.1	1.3	6.66	4.169	8.895	7.752	13.7	6.0	12.4	4.7	2.65	0.17	9.9	3.9	8.6
57	129.3	0.317	61.1	1.3	6.66	4.238	9.258	8.094	14.1	6.0	12.8	4.7	2.71	0.16	10.0	4.0	8.8
58	127.5	0.321	61.1	1.3	6.67	4.315	8.968	7.809	13.8	6.0	12.5	4.7	2.65	0.16	9.9	3.9	8.6
59	127.8	0.325	61.1	1.3	6.67	4.384	9.022	7.855	13.8	6.0	12.6	4.7	2.66	0.16	9.9	3.9	8.7

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	128.2	0.330	61.1	1.3	6.68	4.462	9.077	7.900	13.9	6.0	12.6	4.7	2.67	0.16	9.9	3.9	8.7
61	128.1	0.334	61.1	1.3	6.68	4.531	9.058	7.876	13.9	6.0	12.6	4.7	2.67	0.16	9.9	3.9	8.7
62	128.2	0.339	61.0	1.2	6.69	4.608	9.077	7.886	13.9	6.0	12.6	4.8	2.66	0.16	9.9	3.9	8.7
63	127.3	0.343	61.0	1.2	6.69	4.677	8.931	7.742	13.7	6.0	12.5	4.8	2.63	0.16	9.9	3.9	8.6
64	127.6	0.347	61.0	1.2	6.70	4.754	8.986	7.787	13.8	6.0	12.5	4.8	2.64	0.16	9.9	3.9	8.6
65	127.5	0.352	61.0	1.2	6.70	4.831	8.968	7.762	13.8	6.0	12.5	4.8	2.63	0.16	9.9	3.9	8.6
66	128.1	0.356	61.0	1.2	6.71	4.901	9.058	7.843	13.8	6.0	12.6	4.8	2.65	0.16	9.9	3.9	8.7
67	128.2	0.361	61.0	1.2	6.71	4.978	9.077	7.853	13.8	6.0	12.6	4.8	2.64	0.15	9.9	3.9	8.7
68	128.4	0.365	61.0	1.2	6.72	5.047	9.113	7.881	13.9	6.0	12.7	4.8	2.65	0.15	9.9	3.9	8.7
69	128.2	0.370	61.0	1.2	6.72	5.124	9.077	7.840	13.8	6.0	12.6	4.8	2.64	0.15	9.9	3.9	8.7
70	128.0	0.374	61.0	1.2	6.73	5.201	9.040	7.798	13.8	6.0	12.6	4.8	2.63	0.15	9.9	3.9	8.7
71	128.4	0.378	61.0	1.2	6.73	5.271	9.113	7.861	13.9	6.0	12.6	4.8	2.64	0.15	9.9	3.9	8.7
72	128.5	0.383	61.0	1.2	6.74	5.348	9.131	7.871	13.9	6.0	12.7	4.8	2.63	0.15	9.9	3.9	8.8
73	128.0	0.387	61.0	1.2	6.75	5.425	9.040	7.778	13.8	6.0	12.6	4.8	2.62	0.15	9.9	3.9	8.7
74	128.3	0.392	61.0	1.2	6.75	5.502	9.095	7.822	13.8	6.0	12.6	4.8	2.62	0.15	9.9	3.9	8.7
75	128.7	0.396	61.0	1.2	6.76	5.571	9.149	7.868	13.9	6.0	12.7	4.8	2.63	0.15	9.9	3.9	8.7
76	128.3	0.401	61.0	1.2	6.76	5.648	9.095	7.809	13.8	6.0	12.6	4.8	2.62	0.15	9.9	3.9	8.7
77	128.2	0.405	61.0	1.2	6.77	5.725	9.077	7.785	13.8	6.0	12.6	4.8	2.62	0.15	9.9	3.9	8.7
78	128.8	0.410	61.0	1.2	6.77	5.802	9.167	7.863	13.9	6.0	12.7	4.8	2.63	0.15	9.9	3.9	8.7
79	129.3	0.415	61.0	1.1	6.78	5.879	9.258	7.942	13.9	6.0	12.8	4.8	2.64	0.14	10.0	4.0	8.8
80	130.9	0.419	61.0	1.1	6.78	5.956	9.494	8.157	14.1	6.0	13.0	4.8	2.68	0.14	10.1	4.1	8.9
81	131.2	0.424	61.0	1.1	6.79	6.033	9.549	8.201	14.2	6.0	13.0	4.8	2.69	0.14	10.1	4.1	8.9
82	131.1	0.428	61.0	1.1	6.79	6.103	9.530	8.177	14.2	6.0	13.0	4.8	2.69	0.14	10.1	4.1	8.9
83	131.0	0.433	61.0	1.1	6.80	6.180	9.512	8.152	14.1	6.0	13.0	4.8	2.68	0.14	10.1	4.1	8.9
84	131.2	0.437	60.9	1.1	6.80	6.257	9.549	8.179	14.2	6.0	13.1	4.9	2.68	0.14	10.1	4.1	9.0
85	131.3	0.442	60.9	1.1	6.81	6.334	9.567	8.189	14.2	6.0	13.1	4.9	2.68	0.14	10.1	4.1	9.0
86	131.2	0.446	60.9	1.1	6.82	6.403	9.549	8.165	14.2	6.0	13.0	4.9	2.68	0.14	10.1	4.1	9.0
87	132.2	0.451	60.9	1.1	6.82	6.480	9.712	8.311	14.3	6.0	13.2	4.9	2.71	0.13	10.1	4.2	9.0
88	132.2	0.455	60.9	1.1	6.83	6.557	9.712	8.303	14.3	6.0	13.2	4.9	2.70	0.13	10.1	4.2	9.0
89	132.0	0.460	60.9	1.1	6.83	6.635	9.676	8.262	14.3	6.0	13.2	4.9	2.68	0.13	10.1	4.1	9.0
90	132.2	0.464	60.9	1.1	6.84	6.712	9.712	8.288	14.3	6.0	13.2	4.9	2.69	0.13	10.1	4.1	9.0
91	131.8	0.469	60.9	1.1	6.84	6.789	9.639	8.213	14.2	6.0	13.1	4.9	2.68	0.13	10.1	4.1	9.0
92	132.1	0.474	60.9	1.1	6.85	6.866	9.694	8.256	14.2	6.0	13.2	4.9	2.68	0.13	10.1	4.1	9.0
93	132.5	0.478	60.9	1.1	6.85	6.935	9.748	8.300	14.3	6.0	13.2	4.9	2.69	0.13	10.1	4.2	9.1
94	132.5	0.482	60.9	1.1	6.86	7.012	9.748	8.293	14.3	6.0	13.2	4.9	2.69	0.13	10.1	4.1	9.0
95	132.8	0.487	60.9	1.1	6.87	7.089	9.803	8.336	14.3	6.0	13.2	4.9	2.70	0.13	10.2	4.2	9.1
96	132.5	0.491	60.9	1.1	6.87	7.158	9.748	8.278	14.3	6.0	13.2	4.9	2.68	0.13	10.1	4.1	9.1
97	132.6	0.496	60.9	1.1	6.88	7.236	9.766	8.288	14.3	6.0	13.2	4.9	2.68	0.13	10.1	4.1	9.1
98	133.1	0.500	60.9	1.1	6.88	7.313	9.839	8.348	14.3	6.0	13.3	4.9	2.69	0.13	10.2	4.2	9.1
99	132.9	0.504	60.9	1.1	6.89	7.382	9.821	8.324	14.3	6.0	13.3	4.9	2.69	0.13	10.2	4.2	9.1
100	132.9	0.509	60.9	1.1	6.89	7.459	9.821	8.316	14.3	6.0	13.2	4.9	2.69	0.13	10.1	4.2	9.1

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	132.9	0.513	60.8	1.0	6.90	7.528	9.821	8.310	14.3	6.0	13.3	5.0	2.67	0.12	10.1	4.2	9.1
102	132.4	0.518	60.8	1.0	6.90	7.605	9.730	8.218	14.2	6.0	13.2	5.0	2.66	0.13	10.1	4.1	9.1
103	132.8	0.522	60.8	1.0	6.91	7.675	9.803	8.278	14.3	6.0	13.2	5.0	2.67	0.12	10.1	4.1	9.1
104	132.8	0.526	60.8	1.0	6.92	7.752	9.803	8.271	14.3	6.0	13.2	5.0	2.67	0.12	10.1	4.1	9.1
105	132.6	0.531	60.8	1.0	6.92	7.821	9.766	8.231	14.2	6.0	13.2	5.0	2.66	0.13	10.1	4.1	9.1
106	133.5	0.535	60.8	1.0	6.93	7.898	9.912	8.357	14.3	6.0	13.3	5.0	2.68	0.12	10.2	4.2	9.1
107	133.2	0.539	60.8	1.0	6.93	7.968	9.857	8.300	14.3	6.0	13.3	5.0	2.66	0.12	10.1	4.1	9.1
108	132.9	0.544	60.8	1.0	6.94	8.045	9.821	8.259	14.3	6.0	13.3	5.0	2.65	0.12	10.1	4.1	9.1
109	132.9	0.548	60.8	1.0	6.94	8.114	9.821	8.252	14.2	6.0	13.2	5.0	2.65	0.12	10.1	4.1	9.1
110	132.9	0.553	60.8	1.0	6.95	8.191	9.821	8.244	14.2	6.0	13.2	5.0	2.65	0.12	10.1	4.1	9.1
111	133.1	0.557	60.8	1.0	6.95	8.260	9.839	8.254	14.2	6.0	13.2	5.0	2.65	0.12	10.1	4.1	9.1
112	133.8	0.561	60.8	1.0	6.96	8.337	9.948	8.347	14.3	6.0	13.3	5.0	2.67	0.12	10.2	4.2	9.2
113	133.3	0.566	60.8	1.0	6.97	8.415	9.875	8.272	14.3	6.0	13.3	5.0	2.66	0.12	10.1	4.1	9.1
114	132.6	0.570	60.8	1.0	6.97	8.484	9.766	8.166	14.2	6.0	13.2	5.0	2.63	0.12	10.1	4.1	9.1
115	133.1	0.575	60.8	1.0	6.98	8.561	9.839	8.225	14.2	6.0	13.2	5.0	2.64	0.12	10.1	4.1	9.1
116	133.3	0.579	60.8	1.0	6.98	8.638	9.875	8.250	14.2	6.0	13.3	5.0	2.64	0.12	10.1	4.1	9.1
117	133.2	0.584	60.8	1.0	6.99	8.707	9.857	8.227	14.2	6.0	13.2	5.0	2.64	0.12	10.1	4.1	9.1
118	133.2	0.588	60.8	1.0	6.99	8.784	9.857	8.219	14.2	6.0	13.2	5.0	2.64	0.12	10.1	4.1	9.1
119	133.4	0.593	60.8	1.0	7.00	8.861	9.893	8.245	14.2	6.0	13.3	5.0	2.64	0.12	10.1	4.1	9.1
120	133.1	0.597	60.7	0.9	7.01	8.938	9.839	8.188	14.2	6.0	13.2	5.1	2.62	0.11	10.1	4.1	9.1
121	132.0	0.602	60.7	0.9	7.01	9.016	9.676	8.031	14.0	6.0	13.1	5.1	2.59	0.12	10.0	4.0	9.1
122	132.1	0.606	60.7	0.9	7.02	9.085	9.694	8.041	14.0	6.0	13.1	5.1	2.59	0.12	10.0	4.0	9.1
123	132.8	0.611	60.7	0.9	7.02	9.162	9.803	8.133	14.1	6.0	13.2	5.1	2.61	0.12	10.1	4.1	9.1
124	132.5	0.615	60.7	0.9	7.03	9.239	9.748	8.076	14.1	6.0	13.1	5.1	2.60	0.12	10.0	4.0	9.1
125	132.8	0.620	60.7	0.9	7.03	9.316	9.803	8.118	14.1	6.0	13.2	5.1	2.61	0.12	10.0	4.1	9.1
126	133.2	0.624	60.7	0.9	7.04	9.385	9.857	8.160	14.2	6.0	13.2	5.1	2.62	0.12	10.1	4.1	9.1
127	133.4	0.629	60.7	0.9	7.05	9.462	9.893	8.185	14.2	6.0	13.3	5.1	2.61	0.11	10.1	4.1	9.2
128	133.8	0.633	60.7	0.9	7.05	9.532	9.948	8.228	14.2	6.0	13.3	5.1	2.62	0.11	10.1	4.1	9.2
129	133.9	0.637	60.7	0.9	7.06	9.609	9.966	8.237	14.2	6.0	13.3	5.1	2.62	0.11	10.1	4.1	9.2
130	133.9	0.642	60.7	0.9	7.06	9.686	9.966	8.229	14.2	6.0	13.3	5.1	2.62	0.11	10.1	4.1	9.2
131	134.3	0.647	60.7	0.9	7.07	9.763	10.039	8.287	14.3	6.0	13.4	5.1	2.63	0.11	10.1	4.1	9.2
132	134.2	0.651	60.7	0.9	7.08	9.840	10.021	8.263	14.3	6.0	13.3	5.1	2.63	0.11	10.1	4.1	9.2
133	134.0	0.655	60.7	0.9	7.08	9.909	9.984	8.223	14.2	6.0	13.3	5.1	2.61	0.11	10.1	4.1	9.2
134	134.1	0.660	60.7	0.9	7.09	9.994	10.002	8.231	14.2	6.0	13.3	5.1	2.61	0.11	10.1	4.1	9.2
135	134.4	0.665	60.7	0.9	7.09	10.064	10.057	8.273	14.3	6.0	13.4	5.1	2.62	0.11	10.1	4.1	9.2
136	136.1	0.669	60.7	0.9	7.10	10.141	10.311	8.493	14.5	6.0	13.6	5.1	2.66	0.10	10.2	4.2	9.4
137	135.8	0.673	60.7	0.9	7.10	10.210	10.275	8.454	14.4	6.0	13.6	5.1	2.65	0.10	10.2	4.2	9.3
138	135.5	0.678	60.7	0.9	7.11	10.287	10.220	8.397	14.4	6.0	13.5	5.1	2.64	0.11	10.2	4.2	9.3
139	135.0	0.682	60.7	0.9	7.12	10.364	10.148	8.324	14.3	6.0	13.4	5.1	2.63	0.11	10.2	4.2	9.3
140	136.2	0.687	60.7	0.9	7.12	10.433	10.329	8.480	14.5	6.0	13.6	5.1	2.65	0.10	10.2	4.2	9.4
141	136.0	0.691	60.7	0.9	7.13	10.503	10.293	8.440	14.4	6.0	13.6	5.1	2.64	0.10	10.2	4.2	9.4

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	136.4	0.695	60.7	0.9	7.13	10.580	10.365	8.497	14.5	6.0	13.6	5.1	2.65	0.10	10.2	4.2	9.4
143	135.5	0.699	60.7	0.9	7.14	10.649	10.220	8.360	14.4	6.0	13.5	5.1	2.63	0.10	10.2	4.2	9.3
144	136.0	0.704	60.7	0.9	7.15	10.726	10.293	8.417	14.4	6.0	13.6	5.1	2.64	0.10	10.2	4.2	9.3
145	136.1	0.708	60.7	0.9	7.15	10.796	10.311	8.426	14.4	6.0	13.6	5.1	2.64	0.10	10.2	4.2	9.4
146	134.9	0.713	60.7	0.9	7.16	10.873	10.129	8.256	14.2	6.0	13.4	5.1	2.61	0.10	10.1	4.1	9.3
147	135.1	0.717	60.7	0.9	7.16	10.942	10.166	8.282	14.3	6.0	13.4	5.1	2.61	0.10	10.1	4.1	9.3
148	135.6	0.722	60.6	0.8	7.17	11.019	10.238	8.338	14.3	6.0	13.5	5.2	2.61	0.10	10.2	4.2	9.3
149	134.7	0.726	60.6	0.8	7.17	11.088	10.093	8.202	14.2	6.0	13.4	5.2	2.59	0.10	10.1	4.1	9.3
150	135.8	0.730	60.6	0.8	7.18	11.158	10.275	8.356	14.3	6.0	13.5	5.2	2.62	0.10	10.2	4.2	9.3
151	135.3	0.734	60.6	0.8	7.19	11.235	10.184	8.268	14.3	6.0	13.4	5.2	2.60	0.10	10.1	4.1	9.3
152	135.1	0.739	60.6	0.8	7.19	11.304	10.166	8.245	14.2	6.0	13.4	5.2	2.60	0.10	10.1	4.1	9.3
153	135.3	0.743	60.6	0.8	7.20	11.381	10.184	8.253	14.2	6.0	13.4	5.2	2.60	0.10	10.1	4.1	9.3
154	135.5	0.748	60.6	0.8	7.20	11.458	10.220	8.277	14.3	6.0	13.4	5.2	2.60	0.10	10.1	4.1	9.3
155	135.4	0.752	60.6	0.8	7.21	11.535	10.202	8.253	14.2	6.0	13.4	5.2	2.60	0.10	10.1	4.1	9.3
156	134.7	0.757	60.6	0.8	7.22	11.605	10.093	8.150	14.1	6.0	13.3	5.2	2.58	0.10	10.1	4.1	9.2
157	133.3	0.761	60.6	0.8	7.22	11.682	9.875	7.950	13.9	6.0	13.1	5.2	2.53	0.10	10.0	4.0	9.2
158	133.6	0.765	60.6	0.8	7.23	11.751	9.930	7.991	14.0	6.0	13.2	5.2	2.54	0.10	10.0	4.0	9.2
159	134.7	0.770	60.6	0.8	7.23	11.828	10.093	8.127	14.1	6.0	13.3	5.2	2.56	0.10	10.1	4.1	9.3
160	133.6	0.774	60.6	0.8	7.24	11.897	9.930	7.576	13.6	6.0	12.8	5.2	2.46	0.10	9.8	3.8	9.0
161	134.7	0.779	60.6	0.8	7.25	11.974	10.093	8.113	14.1	6.0	13.3	5.2	2.56	0.10	10.0	4.1	9.3
162	135.4	0.783	60.6	0.8	7.25	12.052	10.202	8.201	14.2	6.0	13.4	5.2	2.58	0.10	10.1	4.1	9.3
163	135.6	0.788	60.6	0.8	7.26	12.129	10.238	8.225	14.2	6.0	13.4	5.2	2.58	0.10	10.1	4.1	9.3
164	134.8	0.792	60.6	0.8	7.27	12.198	10.111	7.695	13.7	6.0	12.9	5.2	2.48	0.10	9.8	3.8	9.0
165	134.6	0.797	60.6	0.8	7.27	12.275	10.075	7.653	13.6	6.0	12.9	5.2	2.47	0.10	9.8	3.8	9.0
166	134.8	0.801	60.6	0.8	7.28	12.352	10.111	7.674	13.7	6.0	12.9	5.2	2.47	0.10	9.8	3.8	9.1
167	135.1	0.805	60.6	0.8	7.28	12.421	10.166	7.713	13.7	6.0	12.9	5.2	2.48	0.10	9.8	3.9	9.1
168	135.5	0.810	60.6	0.8	7.29	12.498	10.220	7.750	13.7	6.0	13.0	5.2	2.48	0.10	9.9	3.9	9.1
169	136.1	0.815	60.6	0.8	7.30	12.576	10.311	7.819	13.8	6.0	13.0	5.2	2.50	0.10	9.9	3.9	9.1
170	135.1	0.819	60.6	0.8	7.30	12.645	10.166	7.682	13.7	6.0	12.9	5.2	2.47	0.10	9.8	3.8	9.1
171	135.7	0.823	60.6	0.8	7.31	12.722	10.257	7.751	13.7	6.0	13.0	5.2	2.48	0.10	9.9	3.9	9.1
172	135.4	0.828	60.6	0.8	7.32	12.799	10.202	7.693	13.7	6.0	12.9	5.2	2.47	0.10	9.8	3.8	9.1
173	136.1	0.832	60.6	0.8	7.32	12.876	10.311	7.778	13.8	6.0	13.0	5.2	2.49	0.10	9.9	3.9	9.1
174	136.0	0.837	60.6	0.8	7.33	12.945	10.293	7.752	13.7	6.0	13.0	5.2	2.48	0.10	9.9	3.9	9.1
175	136.1	0.841	60.6	0.8	7.33	13.022	10.311	7.758	13.7	6.0	13.0	5.2	2.48	0.10	9.9	3.9	9.1
176	135.5	0.846	60.6	0.8	7.34	13.100	10.220	7.668	13.7	6.0	12.9	5.2	2.47	0.10	9.8	3.8	9.1
177	135.3	0.850	60.6	0.8	7.35	13.177	10.184	7.626	13.6	6.0	12.9	5.2	2.46	0.10	9.8	3.8	9.0
178	136.1	0.855	60.5	0.7	7.35	13.254	10.311	7.726	13.7	6.0	13.0	5.3	2.47	0.10	9.9	3.9	9.1
179	135.0	0.860	60.6	0.8	7.36	13.331	10.148	7.574	13.6	6.0	12.8	5.2	2.45	0.10	9.8	3.8	9.0
180	135.7	0.864	60.6	0.8	7.37	13.400	10.257	7.659	13.6	6.0	12.9	5.2	2.47	0.10	9.8	3.8	9.1
181	135.4	0.868	60.6	0.8	7.37	13.477	10.202	7.601	13.6	6.0	12.8	5.2	2.45	0.10	9.8	3.8	9.0
182	135.6	0.873	60.5	0.7	7.38	13.554	10.238	7.622	13.6	6.0	12.9	5.3	2.45	0.10	9.8	3.8	9.1

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	135.5	0.878	60.5	0.7	7.39	13.631	10.220	7.596	13.6	6.0	12.9	5.3	2.45	0.10	9.8	3.8	9.1
184	135.7	0.882	60.5	0.7	7.39	13.708	10.257	7.617	13.6	6.0	12.9	5.3	2.45	0.10	9.8	3.8	9.1
185	135.4	0.886	60.5	0.7	7.40	13.778	10.202	7.560	13.6	6.0	12.8	5.3	2.44	0.10	9.8	3.8	9.0
186	135.7	0.891	60.5	0.7	7.41	13.855	10.257	7.597	13.6	6.0	12.9	5.3	2.45	0.10	9.8	3.8	9.1
187	134.8	0.895	60.5	0.7	7.41	13.924	10.111	7.462	13.5	6.0	12.7	5.3	2.42	0.10	9.7	3.7	9.0
188	135.7	0.900	60.5	0.7	7.42	14.001	10.257	7.577	13.6	6.0	12.8	5.3	2.44	0.10	9.8	3.8	9.0
189	135.6	0.904	60.5	0.7	7.42	14.070	10.238	7.552	13.5	6.0	12.8	5.3	2.44	0.10	9.8	3.8	9.0
190	135.5	0.908	60.5	0.7	7.43	14.147	10.220	7.526	13.5	6.0	12.8	5.3	2.43	0.10	9.8	3.8	9.0
191	135.8	0.913	60.5	0.7	7.44	14.217	10.275	7.563	13.6	6.0	12.8	5.3	2.44	0.10	9.8	3.8	9.0
192	136.5	0.917	60.5	0.7	7.44	14.294	10.384	7.646	13.6	6.0	12.9	5.3	2.45	0.09	9.8	3.8	9.1
193	137.1	0.921	60.5	0.7	7.45	14.363	10.474	7.714	13.7	6.0	13.0	5.3	2.46	0.09	9.8	3.9	9.1
194	137.2	0.926	60.5	0.7	7.46	14.440	10.493	7.719	13.7	6.0	13.0	5.3	2.47	0.10	9.9	3.9	9.1
195	136.8	0.930	60.5	0.7	7.46	14.510	10.420	7.647	13.6	6.0	12.9	5.3	2.45	0.09	9.8	3.8	9.1
196	136.4	0.935	60.5	0.7	7.47	14.587	10.365	7.590	13.6	6.0	12.8	5.3	2.44	0.10	9.8	3.8	9.1
197	137.2	0.939	60.5	0.7	7.47	14.656	10.493	7.689	13.7	6.0	13.0	5.3	2.45	0.09	9.8	3.8	9.1
198	136.5	0.943	60.5	0.7	7.48	14.733	10.384	7.586	13.6	6.0	12.9	5.3	2.44	0.09	9.8	3.8	9.1
199	136.4	0.948	60.5	0.7	7.49	14.802	10.365	7.561	13.6	6.0	12.8	5.3	2.43	0.09	9.8	3.8	9.1
200	136.5	0.952	60.5	0.7	7.49	14.879	10.384	7.565	13.6	6.0	12.9	5.3	2.43	0.09	9.8	3.8	9.1
201	136.6	0.956	60.5	0.7	7.50	14.949	10.402	7.571	13.6	6.0	12.9	5.3	2.43	0.09	9.8	3.8	9.1
202	136.3	0.961	60.5	0.7	7.51	15.026	10.347	7.514	13.5	6.0	12.8	5.3	2.43	0.10	9.7	3.8	9.0
203	136.4	0.965	60.5	0.7	7.51	15.095	10.365	7.520	13.5	6.0	12.8	5.3	2.42	0.09	9.8	3.8	9.0
204	136.6	0.970	60.5	0.7	7.52	15.172	10.402	7.541	13.5	6.0	12.8	5.3	2.43	0.09	9.8	3.8	9.1
205	136.0	0.974	60.5	0.7	7.53	15.242	10.293	7.439	13.4	6.0	12.7	5.3	2.41	0.09	9.7	3.7	9.0
206	136.4	0.978	60.5	0.7	7.53	15.319	10.365	7.490	13.5	6.0	12.8	5.3	2.42	0.09	9.7	3.7	9.0
207	136.3	0.983	60.5	0.7	7.54	15.396	10.347	7.464	13.5	6.0	12.7	5.3	2.41	0.09	9.7	3.7	9.0
208	136.4	0.988	60.5	0.7	7.55	15.473	10.365	7.468	13.5	6.0	12.8	5.3	2.41	0.09	9.7	3.7	9.0
209	136.3	0.992	60.5	0.7	7.55	15.550	10.347	7.443	13.4	6.0	12.7	5.3	2.41	0.09	9.7	3.7	9.0
210	136.5	0.996	60.5	0.7	7.56	15.619	10.384	7.464	13.5	6.0	12.7	5.3	2.41	0.09	9.7	3.7	9.0
211	137.1	1.001	60.5	0.7	7.57	15.696	10.474	7.530	13.5	6.0	12.8	5.3	2.42	0.09	9.8	3.8	9.1
212	136.8	1.006	60.5	0.7	7.57	15.773	10.420	7.473	13.5	6.0	12.8	5.3	2.41	0.09	9.7	3.7	9.0
213	137.5	1.010	60.5	0.7	7.58	15.843	10.529	7.555	13.5	6.0	12.8	5.3	2.43	0.09	9.8	3.8	9.1
214	136.9	1.014	60.5	0.7	7.59	15.920	10.438	7.468	13.5	6.0	12.8	5.3	2.41	0.09	9.7	3.7	9.0
215	137.3	1.019	60.5	0.7	7.59	15.997	10.511	7.519	13.5	6.0	12.8	5.3	2.42	0.09	9.8	3.8	9.0
216	136.5	1.023	60.5	0.7	7.60	16.074	10.384	7.401	13.4	6.0	12.7	5.3	2.40	0.10	9.7	3.7	9.0
217	137.3	1.028	60.5	0.7	7.61	16.143	10.511	7.498	13.5	6.0	12.8	5.3	2.42	0.09	9.7	3.7	9.0
218	138.4	1.032	60.5	0.7	7.61	16.220	10.674	7.624	13.6	6.0	12.9	5.3	2.44	0.09	9.8	3.8	9.1
219	137.9	1.037	60.5	0.7	7.62	16.297	10.601	7.553	13.5	6.0	12.8	5.3	2.43	0.09	9.8	3.8	9.1
220	137.2	1.041	60.5	0.7	7.63	16.367	10.493	7.452	13.4	6.0	12.7	5.3	2.41	0.09	9.7	3.7	9.0
221	137.2	1.046	60.5	0.7	7.63	16.444	10.493	7.441	13.4	6.0	12.7	5.3	2.41	0.09	9.7	3.7	9.0
222	137.3	1.050	60.5	0.7	7.64	16.513	10.511	7.447	13.4	6.0	12.7	5.3	2.41	0.09	9.7	3.7	9.0
223	137.5	1.054	60.5	0.7	7.65	16.590	10.529	7.451	13.4	6.0	12.7	5.3	2.41	0.09	9.7	3.7	9.0

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	137.7	1.059	60.5	0.7	7.65	16.667	10.565	7.471	13.5	6.0	12.8	5.3	2.41	0.09	9.7	3.7	9.0
225	137.6	1.063	60.5	0.7	7.66	16.737	10.547	7.446	13.4	6.0	12.7	5.3	2.41	0.09	9.7	3.7	9.0
226	137.6	1.068	60.5	0.7	7.67	16.814	10.547	7.435	13.4	6.0	12.7	5.3	2.41	0.09	9.7	3.7	9.0
227	138.3	1.072	60.5	0.7	7.68	16.891	10.656	7.515	13.5	6.0	12.8	5.3	2.42	0.09	9.7	3.8	9.0
228	137.7	1.076	60.5	0.7	7.68	16.960	10.565	7.430	13.4	6.0	12.7	5.3	2.41	0.09	9.7	3.7	9.0
229	138.0	1.081	60.5	0.7	7.69	17.037	10.620	7.465	13.5	6.0	12.7	5.3	2.41	0.09	9.7	3.7	9.0
230	137.1	1.086	60.5	0.7	7.70	17.114	10.474	7.333	13.3	6.0	12.6	5.3	2.39	0.10	9.7	3.7	9.0
231	138.0	1.090	60.5	0.7	7.70	17.183	10.620	7.444	13.4	6.0	12.7	5.3	2.41	0.09	9.7	3.7	9.0
232	136.1	1.094	60.5	0.7	7.71	17.261	10.311	7.178	13.2	6.0	12.5	5.3	2.36	0.10	9.6	3.6	8.9
233	136.2	1.098	60.5	0.7	7.72	17.330	10.329	7.183	13.2	6.0	12.5	5.3	2.36	0.10	9.6	3.6	8.9
234	136.8	1.103	60.5	0.7	7.72	17.407	10.420	7.248	13.2	6.0	12.5	5.3	2.37	0.10	9.6	3.6	8.9
235	136.4	1.107	60.5	0.7	7.73	17.476	10.365	7.193	13.2	6.0	12.5	5.3	2.36	0.10	9.6	3.6	8.9
236	136.6	1.112	60.5	0.7	7.74	17.553	10.402	7.213	13.2	6.0	12.5	5.3	2.36	0.10	9.6	3.6	8.9
237	136.6	1.116	60.5	0.7	7.74	17.623	10.402	7.203	13.2	6.0	12.5	5.3	2.36	0.10	9.6	3.6	8.9
238	136.0	1.121	60.5	0.7	7.75	17.700	10.293	7.103	13.1	6.0	12.4	5.3	2.34	0.10	9.5	3.6	8.8
239	136.1	1.125	60.5	0.7	7.76	17.769	10.311	7.108	13.1	6.0	12.4	5.3	2.34	0.10	9.5	3.6	8.8
240	136.3	1.129	60.5	0.7	7.76	17.846	10.347	7.128	13.1	6.0	12.4	5.3	2.35	0.10	9.6	3.6	8.8
241	136.5	1.133	60.5	0.7	7.77	17.915	10.384	7.148	13.1	6.0	12.4	5.3	2.35	0.10	9.6	3.6	8.9
242	135.5	1.138	60.5	0.7	7.78	17.993	10.220	7.003	13.0	6.0	12.3	5.3	2.33	0.10	9.5	3.5	8.8
243	136.0	1.143	60.5	0.7	7.79	18.070	10.293	7.052	13.0	6.0	12.3	5.3	2.33	0.10	9.5	3.5	8.8
244	136.1	1.147	60.5	0.7	7.79	18.139	10.311	7.058	13.0	6.0	12.4	5.3	2.33	0.10	9.5	3.5	8.8
245	135.7	1.151	60.5	0.7	7.80	18.208	10.257	7.004	13.0	6.0	12.3	5.3	2.33	0.10	9.5	3.5	8.8
246	135.7	1.156	60.5	0.7	7.81	18.285	10.257	6.993	13.0	6.0	12.3	5.3	2.32	0.10	9.5	3.5	8.8
247	136.4	1.160	60.5	0.7	7.81	18.355	10.365	7.073	13.1	6.0	12.4	5.3	2.34	0.10	9.5	3.5	8.8
248	136.6	1.164	60.5	0.7	7.82	18.432	10.402	7.092	13.1	6.0	12.4	5.3	2.34	0.10	9.5	3.5	8.8
249	137.0	1.169	60.5	0.7	7.83	18.509	10.456	7.125	13.1	6.0	12.4	5.3	2.35	0.10	9.6	3.6	8.8
250	136.2	1.173	60.5	0.7	7.84	18.586	10.329	7.011	13.0	6.0	12.3	5.3	2.33	0.10	9.5	3.5	8.8
251	136.8	1.178	60.5	0.7	7.84	18.655	10.420	7.076	13.1	6.0	12.4	5.3	2.34	0.10	9.5	3.5	8.8
252	136.1	1.182	60.5	0.7	7.85	18.732	10.311	6.977	13.0	6.0	12.3	5.3	2.31	0.10	9.5	3.5	8.8
253	136.1	1.187	60.5	0.7	7.86	18.809	10.311	6.966	13.0	6.0	12.3	5.3	2.32	0.10	9.5	3.5	8.8
254	136.2	1.191	60.5	0.7	7.86	18.886	10.329	6.970	13.0	6.0	12.3	5.3	2.31	0.10	9.5	3.5	8.8
255	136.5	1.196	60.5	0.7	7.87	18.963	10.384	7.004	13.0	6.0	12.3	5.3	2.33	0.10	9.5	3.5	8.8
256	136.5	1.200	60.5	0.7	7.88	19.033	10.384	6.994	13.0	6.0	12.3	5.3	2.32	0.10	9.5	3.5	8.8
257	136.4	1.205	60.5	0.7	7.89	19.118	10.365	6.968	13.0	6.0	12.3	5.3	2.32	0.10	9.5	3.5	8.8
258	136.5	1.209	60.5	0.7	7.89	19.187	10.384	6.973	13.0	6.0	12.3	5.3	2.32	0.10	9.5	3.5	8.8
259	136.4	1.214	60.5	0.7	7.90	19.264	10.365	6.948	12.9	6.0	12.3	5.3	2.31	0.10	9.5	3.5	8.8
260	136.9	1.219	60.5	0.7	7.91	19.341	10.438	6.996	13.0	6.0	12.3	5.3	2.32	0.10	9.5	3.5	8.8
261	136.8	1.223	60.5	0.7	7.92	19.410	10.420	6.972	13.0	6.0	12.3	5.3	2.31	0.10	9.5	3.5	8.8
262	136.9	1.228	60.5	0.7	7.92	19.495	10.438	6.975	13.0	6.0	12.3	5.3	2.31	0.10	9.5	3.5	8.8
263	137.1	1.232	60.5	0.7	7.93	19.564	10.474	6.994	13.0	6.0	12.3	5.3	2.32	0.10	9.5	3.5	8.8
264	136.1	1.237	60.5	0.7	7.94	19.642	10.311	6.852	12.8	6.0	12.1	5.3	2.30	0.10	9.4	3.4	8.7

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
265	136.4	1.241	60.5	0.7	7.95	19.719	10.365	6.885	12.9	6.0	12.2	5.3	2.30	0.10	9.4	3.4	8.8
266	137.6	1.246	60.5	0.7	7.95	19.796	10.547	7.020	13.0	6.0	12.3	5.3	2.33	0.10	9.5	3.5	8.8
267	137.8	1.250	60.5	0.7	7.96	19.873	10.583	7.039	13.0	6.0	12.4	5.3	2.32	0.10	9.5	3.5	8.8
268	137.2	1.254	60.5	0.7	7.97	19.942	10.493	6.956	12.9	6.0	12.3	5.3	2.31	0.10	9.5	3.5	8.8
269	137.2	1.258	60.5	0.7	7.97	20.004	10.493	6.948	12.9	6.0	12.3	5.3	2.31	0.10	9.5	3.5	8.8

Specimen B Shear Data

CU Triaxial Test

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File Location
T-5764.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5764
Sample Location: Guilford County (Sta. 404+50)
Sample Description: Reddish-orange colored clay.
Remarks: 25° shear plane.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.7090001
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.858	2.823	
Height (in)	6.005	5.954	
Weight (grams)	982.00		1058.00
Moisture (%)	47.01		58.38
Dry Density (pcf)	66.04	68.30	
Saturation (%)	81.59	100.00	
Void Ratio	1.554	1.476	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 72.100
Effective Confining Stress (psi): 12.0
Corrected Peak Deviator Stress (psi): 10.880 at reading number: 156

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	75.1	0.087	60.1	0.0	6.26	0.000	0.000	0.000	12.0	12.0	12.0	12.0	1.00	0.00	12.0	0.0	12.0
1	95.2	0.090	61.1	1.0	6.26	0.048	3.219	3.199	15.2	12.0	14.2	11.0	1.29	0.31	13.6	1.6	12.6
2	99.2	0.092	61.4	1.3	6.26	0.077	3.863	3.830	15.8	12.0	14.5	10.7	1.36	0.35	13.9	1.9	12.6
3	104.6	0.095	61.9	1.8	6.27	0.135	4.728	4.669	16.6	12.0	14.9	10.2	1.46	0.38	14.3	2.3	12.6
4	108.7	0.099	62.2	2.1	6.27	0.193	5.371	5.286	17.3	12.0	15.2	9.9	1.53	0.39	14.6	2.6	12.5
5	112.6	0.103	62.5	2.4	6.27	0.260	5.997	5.880	17.9	12.0	15.5	9.6	1.61	0.41	14.9	2.9	12.5
6	114.0	0.106	62.7	2.6	6.28	0.308	6.218	6.078	18.1	12.0	15.5	9.4	1.65	0.43	15.0	3.0	12.4
7	115.1	0.107	62.8	2.7	6.28	0.337	6.402	6.249	18.2	12.0	15.5	9.3	1.68	0.44	15.1	3.1	12.4
8	116.0	0.108	63.0	2.8	6.28	0.356	6.549	6.387	18.4	12.0	15.5	9.1	1.70	0.45	15.2	3.2	12.3
9	118.4	0.110	63.0	2.9	6.28	0.385	6.935	6.758	18.7	12.0	15.8	9.1	1.75	0.43	15.4	3.4	12.4
10	120.2	0.112	63.2	3.0	6.28	0.414	7.211	7.020	19.0	12.0	16.0	8.9	1.79	0.43	15.5	3.5	12.4
11	122.8	0.115	63.3	3.2	6.29	0.462	7.634	7.419	19.4	12.0	16.2	8.8	1.84	0.43	15.7	3.7	12.5
12	126.0	0.119	63.4	3.3	6.29	0.530	8.149	7.900	19.9	12.0	16.6	8.7	1.91	0.42	15.9	3.9	12.6
13	127.5	0.122	63.6	3.4	6.29	0.588	8.388	8.110	20.1	12.0	16.6	8.5	1.95	0.43	16.0	4.1	12.6
14	129.7	0.126	63.7	3.6	6.30	0.655	8.738	8.425	20.4	12.0	16.8	8.4	2.01	0.43	16.2	4.2	12.6
15	131.5	0.130	63.8	3.7	6.30	0.722	9.014	8.667	20.6	12.0	17.0	8.3	2.05	0.43	16.3	4.3	12.6
16	132.9	0.134	63.9	3.8	6.31	0.790	9.253	8.872	20.9	12.0	17.0	8.2	2.09	0.43	16.4	4.4	12.6
17	134.1	0.138	64.0	3.9	6.31	0.857	9.437	9.022	21.0	12.0	17.1	8.1	2.12	0.44	16.5	4.5	12.6
18	135.3	0.143	64.2	4.0	6.32	0.934	9.621	9.167	21.1	12.0	17.1	7.9	2.16	0.44	16.6	4.6	12.5

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	136.6	0.147	64.2	4.1	6.32	1.002	9.842	9.353	21.3	12.0	17.2	7.9	2.19	0.44	16.7	4.7	12.6
20	137.7	0.151	64.3	4.2	6.33	1.079	10.007	9.479	21.5	12.0	17.3	7.8	2.21	0.44	16.7	4.7	12.6
21	138.5	0.156	64.4	4.2	6.33	1.156	10.136	9.568	21.5	12.0	17.3	7.7	2.24	0.44	16.8	4.8	12.5
22	139.2	0.160	64.4	4.3	6.33	1.223	10.246	9.644	21.6	12.0	17.3	7.7	2.25	0.44	16.8	4.8	12.5
23	140.2	0.165	64.5	4.4	6.34	1.300	10.412	9.770	21.7	12.0	17.4	7.6	2.28	0.45	16.9	4.9	12.5
24	141.0	0.169	64.5	4.4	6.34	1.377	10.541	9.859	21.8	12.0	17.4	7.6	2.30	0.45	16.9	4.9	12.5
25	141.7	0.174	64.6	4.4	6.35	1.455	10.651	9.929	21.9	12.0	17.5	7.5	2.32	0.45	16.9	5.0	12.5
26	142.6	0.179	64.6	4.5	6.36	1.541	10.798	10.031	22.0	12.0	17.5	7.5	2.35	0.45	17.0	5.0	12.5
27	142.7	0.184	64.7	4.6	6.36	1.618	10.817	10.011	22.0	12.0	17.4	7.4	2.35	0.46	17.0	5.0	12.4
28	143.0	0.189	64.7	4.6	6.37	1.705	10.853	10.004	22.0	12.0	17.4	7.4	2.35	0.46	17.0	5.0	12.4
29	143.4	0.194	64.7	4.6	6.37	1.792	10.927	10.033	22.0	12.0	17.4	7.4	2.36	0.46	17.0	5.0	12.4
30	144.0	0.199	64.8	4.6	6.38	1.878	11.019	10.080	22.1	12.0	17.4	7.3	2.38	0.46	17.0	5.0	12.4
31	144.2	0.204	64.8	4.6	6.38	1.955	11.056	10.077	22.1	12.0	17.4	7.3	2.37	0.46	17.0	5.0	12.4
32	143.4	0.209	64.8	4.7	6.39	2.042	10.927	9.924	21.9	12.0	17.2	7.3	2.36	0.47	16.9	5.0	12.3
33	143.9	0.213	64.8	4.7	6.39	2.119	11.000	9.988	22.0	12.0	17.2	7.3	2.38	0.47	17.0	5.0	12.2
34	143.8	0.218	64.9	4.8	6.40	2.196	10.982	9.961	21.9	12.0	17.2	7.2	2.38	0.48	17.0	5.0	12.2
35	143.9	0.223	64.9	4.8	6.40	2.273	11.000	9.971	22.0	12.0	17.2	7.2	2.38	0.48	17.0	5.0	12.2
36	143.4	0.227	64.9	4.8	6.41	2.341	10.927	9.892	21.9	12.0	17.1	7.2	2.37	0.48	16.9	4.9	12.2
37	143.4	0.231	64.9	4.8	6.41	2.418	10.927	9.883	21.9	12.0	17.1	7.2	2.37	0.48	16.9	4.9	12.2
38	143.7	0.236	64.9	4.8	6.42	2.495	10.964	9.911	21.9	12.0	17.1	7.2	2.38	0.49	16.9	5.0	12.1
39	143.7	0.240	64.9	4.8	6.42	2.562	10.964	9.903	21.9	12.0	17.1	7.2	2.38	0.49	16.9	5.0	12.1
40	143.8	0.244	65.0	4.8	6.43	2.639	10.982	9.913	21.9	12.0	17.0	7.1	2.39	0.49	16.9	5.0	12.1
41	144.0	0.249	65.0	4.8	6.43	2.726	11.019	9.939	21.9	12.0	17.1	7.1	2.39	0.49	16.9	5.0	12.1
42	144.2	0.254	65.0	4.9	6.44	2.803	11.056	9.966	21.9	12.0	17.1	7.1	2.41	0.49	17.0	5.0	12.1
43	144.6	0.258	65.0	4.9	6.44	2.871	11.111	10.012	22.0	12.0	17.1	7.1	2.41	0.49	17.0	5.0	12.1
44	144.6	0.263	65.0	4.9	6.45	2.948	11.111	10.004	22.0	12.0	17.1	7.1	2.41	0.49	17.0	5.0	12.1
45	144.5	0.268	65.0	4.9	6.45	3.034	11.092	9.976	22.0	12.0	17.1	7.1	2.41	0.49	17.0	5.0	12.1
46	144.0	0.274	65.0	4.9	6.46	3.131	11.019	9.894	21.9	12.0	17.0	7.1	2.40	0.49	16.9	4.9	12.0
47	143.2	0.279	65.1	4.9	6.47	3.217	10.890	9.760	21.7	12.0	16.8	7.0	2.38	0.51	16.9	4.9	11.9
48	143.3	0.283	65.0	4.9	6.47	3.285	10.909	9.771	21.8	12.0	16.9	7.1	2.38	0.50	16.9	4.9	12.0
49	143.4	0.287	65.1	4.9	6.48	3.362	10.927	9.780	21.8	12.0	16.8	7.0	2.39	0.50	16.9	4.9	11.9
50	143.4	0.291	65.1	4.9	6.48	3.429	10.927	9.773	21.8	12.0	16.8	7.0	2.39	0.50	16.9	4.9	11.9
51	143.8	0.295	65.1	4.9	6.48	3.497	10.982	9.819	21.8	12.0	16.9	7.0	2.39	0.50	16.9	4.9	12.0
52	143.9	0.299	65.1	4.9	6.49	3.564	11.000	9.829	21.8	12.0	16.9	7.0	2.39	0.50	16.9	4.9	12.0
53	144.8	0.303	65.1	4.9	6.49	3.632	11.148	9.963	21.9	12.0	17.0	7.0	2.41	0.49	17.0	5.0	12.0
54	144.9	0.307	65.1	4.9	6.50	3.689	11.166	9.975	22.0	12.0	17.0	7.0	2.41	0.49	17.0	5.0	12.0
55	145.2	0.311	65.1	4.9	6.50	3.757	11.203	10.003	22.0	12.0	17.1	7.0	2.42	0.49	17.0	5.0	12.1
56	145.7	0.315	65.1	4.9	6.51	3.824	11.295	10.083	22.1	12.0	17.1	7.0	2.43	0.49	17.0	5.0	12.1
57	145.8	0.319	65.1	4.9	6.51	3.901	11.313	10.092	22.1	12.0	17.1	7.0	2.43	0.49	17.0	5.0	12.1
58	146.8	0.323	65.1	4.9	6.52	3.969	11.460	10.226	22.2	12.0	17.3	7.0	2.45	0.48	17.1	5.1	12.2
59	146.8	0.328	65.1	5.0	6.52	4.036	11.460	10.218	22.2	12.0	17.2	7.0	2.46	0.49	17.1	5.1	12.1

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	147.1	0.332	65.1	5.0	6.53	4.113	11.516	10.262	22.2	12.0	17.3	7.0	2.46	0.48	17.1	5.1	12.1
61	147.7	0.336	65.1	5.0	6.53	4.181	11.608	10.343	22.3	12.0	17.4	7.0	2.48	0.48	17.2	5.2	12.2
62	148.0	0.341	65.1	4.9	6.54	4.258	11.663	10.387	22.4	12.0	17.4	7.0	2.47	0.47	17.2	5.2	12.2
63	148.3	0.345	65.1	4.9	6.54	4.325	11.700	10.414	22.4	12.0	17.5	7.0	2.48	0.47	17.2	5.2	12.3
64	148.5	0.349	65.1	4.9	6.55	4.402	11.736	10.440	22.4	12.0	17.5	7.0	2.48	0.47	17.2	5.2	12.3
65	148.8	0.354	65.1	4.9	6.55	4.479	11.791	10.484	22.5	12.0	17.5	7.0	2.49	0.47	17.2	5.2	12.3
66	149.3	0.358	65.1	4.9	6.56	4.547	11.865	10.546	22.5	12.0	17.6	7.0	2.50	0.47	17.3	5.3	12.3
67	149.2	0.362	65.1	5.0	6.56	4.624	11.847	10.519	22.5	12.0	17.5	7.0	2.50	0.47	17.2	5.3	12.3
68	148.9	0.368	65.1	5.0	6.57	4.710	11.810	10.474	22.5	12.0	17.5	7.0	2.49	0.47	17.2	5.2	12.2
69	149.2	0.372	65.1	5.0	6.57	4.788	11.847	10.500	22.5	12.0	17.5	7.0	2.50	0.47	17.2	5.3	12.3
70	149.1	0.377	65.1	5.0	6.58	4.865	11.828	10.473	22.5	12.0	17.5	7.0	2.49	0.47	17.2	5.2	12.2
71	148.8	0.382	65.1	4.9	6.58	4.951	11.791	10.428	22.4	12.0	17.5	7.0	2.48	0.47	17.2	5.2	12.3
72	148.7	0.387	65.1	4.9	6.59	5.038	11.773	10.401	22.4	12.0	17.5	7.0	2.48	0.47	17.2	5.2	12.3
73	148.8	0.392	65.1	4.9	6.59	5.115	11.791	10.409	22.4	12.0	17.5	7.0	2.48	0.47	17.2	5.2	12.3
74	148.5	0.397	65.1	4.9	6.60	5.202	11.736	10.346	22.3	12.0	17.4	7.0	2.47	0.48	17.2	5.2	12.2
75	148.1	0.402	65.1	4.9	6.61	5.288	11.681	10.284	22.3	12.0	17.3	7.0	2.46	0.48	17.1	5.1	12.2
76	148.1	0.407	65.1	5.0	6.61	5.365	11.681	10.275	22.3	12.0	17.3	7.0	2.47	0.48	17.1	5.1	12.1
77	147.9	0.411	65.1	5.0	6.62	5.443	11.644	10.231	22.2	12.0	17.2	7.0	2.46	0.49	17.1	5.1	12.1
78	147.7	0.416	65.1	5.0	6.62	5.520	11.608	10.187	22.2	12.0	17.2	7.0	2.45	0.49	17.1	5.1	12.1
79	147.7	0.420	65.1	4.9	6.63	5.597	11.608	10.178	22.2	12.0	17.2	7.0	2.44	0.48	17.1	5.1	12.1
80	147.7	0.424	65.1	4.9	6.63	5.664	11.608	10.171	22.2	12.0	17.2	7.0	2.44	0.48	17.1	5.1	12.1
81	147.3	0.429	65.1	4.9	6.64	5.741	11.552	10.110	22.1	12.0	17.2	7.0	2.43	0.49	17.0	5.1	12.1
82	147.2	0.434	65.1	4.9	6.64	5.818	11.534	10.083	22.1	12.0	17.1	7.0	2.43	0.49	17.0	5.0	12.1
83	147.0	0.438	65.1	4.9	6.65	5.895	11.497	10.040	22.0	12.0	17.1	7.0	2.42	0.49	17.0	5.0	12.1
84	147.2	0.443	65.1	4.9	6.65	5.972	11.534	10.066	22.0	12.0	17.1	7.0	2.43	0.49	17.0	5.0	12.1
85	147.7	0.447	65.1	4.9	6.66	6.049	11.608	10.126	22.1	12.0	17.2	7.0	2.44	0.49	17.0	5.1	12.1
86	147.9	0.451	65.1	4.9	6.67	6.117	11.644	10.153	22.1	12.0	17.2	7.0	2.44	0.49	17.1	5.1	12.1
87	148.1	0.456	65.1	4.9	6.67	6.194	11.681	10.178	22.2	12.0	17.2	7.0	2.44	0.48	17.1	5.1	12.1
88	148.5	0.461	65.0	4.9	6.68	6.271	11.736	10.221	22.2	12.0	17.3	7.1	2.44	0.48	17.1	5.1	12.2
89	148.4	0.466	65.0	4.9	6.68	6.358	11.718	10.194	22.2	12.0	17.3	7.1	2.44	0.48	17.1	5.1	12.2
90	147.9	0.471	65.0	4.9	6.69	6.444	11.644	10.115	22.1	12.0	17.2	7.1	2.43	0.48	17.0	5.1	12.1
91	147.7	0.476	65.0	4.9	6.69	6.531	11.608	10.070	22.0	12.0	17.2	7.1	2.42	0.49	17.0	5.0	12.1
92	147.6	0.481	65.0	4.9	6.70	6.618	11.589	10.043	22.0	12.0	17.1	7.1	2.42	0.49	17.0	5.0	12.1
93	147.8	0.485	65.1	4.9	6.71	6.685	11.626	10.069	22.0	12.0	17.1	7.0	2.43	0.49	17.0	5.0	12.1
94	147.6	0.490	65.1	4.9	6.71	6.762	11.589	10.026	22.0	12.0	17.1	7.0	2.42	0.49	17.0	5.0	12.1
95	147.9	0.494	65.1	4.9	6.72	6.830	11.644	10.070	22.0	12.0	17.1	7.0	2.43	0.49	17.0	5.0	12.1
96	148.5	0.498	65.0	4.9	6.72	6.897	11.736	10.147	22.1	12.0	17.2	7.1	2.43	0.48	17.1	5.1	12.2
97	148.8	0.502	65.0	4.9	6.73	6.965	11.791	10.191	22.2	12.0	17.3	7.1	2.44	0.48	17.1	5.1	12.2
98	148.9	0.505	65.0	4.9	6.73	7.022	11.810	10.201	22.2	12.0	17.3	7.1	2.44	0.48	17.1	5.1	12.2
99	149.9	0.509	65.0	4.9	6.73	7.090	11.957	10.330	22.3	12.0	17.4	7.1	2.46	0.47	17.1	5.2	12.3
100	150.9	0.513	65.0	4.8	6.74	7.157	12.123	10.476	22.5	12.0	17.6	7.1	2.47	0.46	17.2	5.2	12.4

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	151.1	0.518	65.0	4.8	6.75	7.234	12.159	10.500	22.5	12.0	17.6	7.1	2.47	0.46	17.2	5.3	12.4
102	151.4	0.522	65.0	4.9	6.75	7.302	12.196	10.526	22.5	12.0	17.6	7.1	2.48	0.46	17.2	5.3	12.4
103	151.8	0.526	65.0	4.9	6.76	7.369	12.270	10.586	22.6	12.0	17.7	7.1	2.49	0.46	17.3	5.3	12.4
104	151.8	0.530	65.0	4.9	6.76	7.437	12.270	10.578	22.6	12.0	17.7	7.1	2.49	0.46	17.3	5.3	12.4
105	152.1	0.535	65.0	4.8	6.77	7.514	12.307	10.602	22.6	12.0	17.7	7.1	2.49	0.46	17.3	5.3	12.4
106	151.8	0.539	65.0	4.8	6.77	7.581	12.270	10.560	22.5	12.0	17.7	7.1	2.48	0.46	17.3	5.3	12.4
107	152.2	0.543	65.0	4.8	6.78	7.648	12.325	10.603	22.6	12.0	17.7	7.1	2.49	0.46	17.3	5.3	12.4
108	152.2	0.547	65.0	4.8	6.78	7.726	12.325	10.593	22.6	12.0	17.7	7.1	2.49	0.46	17.3	5.3	12.4
109	152.4	0.552	65.0	4.8	6.79	7.803	12.362	10.618	22.6	12.0	17.7	7.1	2.49	0.46	17.3	5.3	12.4
110	152.6	0.556	65.0	4.8	6.79	7.880	12.399	10.642	22.6	12.0	17.8	7.1	2.49	0.46	17.3	5.3	12.5
111	152.6	0.561	65.0	4.8	6.80	7.957	12.399	10.633	22.6	12.0	17.8	7.1	2.49	0.46	17.3	5.3	12.4
112	152.7	0.566	65.0	4.8	6.80	8.034	12.417	10.640	22.6	12.0	17.8	7.1	2.49	0.46	17.3	5.3	12.5
113	152.9	0.570	65.0	4.8	6.81	8.111	12.435	10.647	22.6	12.0	17.8	7.1	2.49	0.46	17.3	5.3	12.5
114	152.7	0.575	64.9	4.8	6.82	8.198	12.417	10.620	22.6	12.0	17.8	7.2	2.48	0.45	17.3	5.3	12.5
115	152.5	0.580	64.9	4.8	6.82	8.284	12.380	10.575	22.6	12.0	17.7	7.2	2.47	0.45	17.3	5.3	12.5
116	152.3	0.585	64.9	4.8	6.83	8.361	12.343	10.532	22.5	12.0	17.7	7.2	2.47	0.46	17.2	5.3	12.4
117	152.2	0.590	64.9	4.8	6.83	8.448	12.325	10.504	22.5	12.0	17.7	7.2	2.47	0.46	17.2	5.3	12.4
118	151.9	0.595	64.9	4.8	6.84	8.525	12.288	10.461	22.4	12.0	17.6	7.2	2.46	0.46	17.2	5.2	12.4
119	151.9	0.600	65.0	4.8	6.85	8.612	12.288	10.451	22.4	12.0	17.6	7.1	2.47	0.46	17.2	5.2	12.4
120	152.2	0.605	65.0	4.8	6.85	8.689	12.325	10.475	22.5	12.0	17.6	7.1	2.47	0.46	17.2	5.2	12.4
121	152.1	0.609	65.0	4.8	6.86	8.766	12.307	10.448	22.4	12.0	17.6	7.1	2.47	0.46	17.2	5.2	12.4
122	151.8	0.614	64.9	4.8	6.86	8.843	12.270	10.405	22.4	12.0	17.6	7.2	2.45	0.46	17.2	5.2	12.4
123	151.7	0.618	64.9	4.8	6.87	8.910	12.251	10.380	22.4	12.0	17.6	7.2	2.45	0.46	17.2	5.2	12.4
124	152.2	0.622	64.9	4.8	6.88	8.987	12.325	10.438	22.4	12.0	17.6	7.2	2.46	0.46	17.2	5.2	12.4
125	151.4	0.627	64.9	4.8	6.88	9.065	12.196	10.311	22.3	12.0	17.5	7.2	2.44	0.47	17.1	5.2	12.3
126	151.1	0.631	64.9	4.8	6.89	9.142	12.159	10.268	22.2	12.0	17.4	7.2	2.43	0.47	17.1	5.1	12.3
127	151.3	0.636	64.9	4.8	6.89	9.219	12.178	10.276	22.3	12.0	17.5	7.2	2.43	0.46	17.1	5.1	12.3
128	151.4	0.640	64.9	4.8	6.90	9.286	12.196	10.284	22.3	12.0	17.5	7.2	2.43	0.47	17.1	5.1	12.3
129	151.3	0.645	64.9	4.8	6.90	9.363	12.178	10.258	22.2	12.0	17.4	7.2	2.43	0.47	17.1	5.1	12.3
130	151.8	0.649	64.9	4.8	6.91	9.440	12.270	10.332	22.3	12.0	17.5	7.2	2.44	0.47	17.1	5.2	12.3
131	151.6	0.654	64.9	4.8	6.92	9.517	12.233	10.289	22.3	12.0	17.5	7.2	2.43	0.46	17.1	5.1	12.4
132	151.7	0.658	64.9	4.8	6.92	9.594	12.251	10.297	22.3	12.0	17.5	7.2	2.43	0.46	17.1	5.1	12.4
133	151.4	0.663	64.9	4.8	6.93	9.671	12.196	10.237	22.2	12.0	17.4	7.2	2.42	0.47	17.1	5.1	12.3
134	151.6	0.668	64.9	4.8	6.93	9.758	12.233	10.260	22.2	12.0	17.5	7.2	2.42	0.46	17.1	5.1	12.3
135	151.3	0.673	64.8	4.7	6.94	9.845	12.178	10.200	22.2	12.0	17.4	7.3	2.41	0.46	17.1	5.1	12.4
136	151.4	0.678	64.9	4.8	6.95	9.922	12.196	10.207	22.2	12.0	17.4	7.2	2.42	0.47	17.1	5.1	12.3
137	151.4	0.682	64.9	4.8	6.95	9.989	12.196	10.198	22.2	12.0	17.4	7.2	2.41	0.47	17.1	5.1	12.3
138	151.7	0.686	64.9	4.8	6.96	10.057	12.251	10.240	22.2	12.0	17.5	7.2	2.42	0.47	17.1	5.1	12.3
139	151.9	0.690	64.8	4.7	6.96	10.124	12.288	10.265	22.2	12.0	17.5	7.3	2.42	0.46	17.1	5.1	12.4
140	151.9	0.695	64.8	4.7	6.97	10.201	12.288	10.255	22.2	12.0	17.5	7.3	2.41	0.46	17.1	5.1	12.4
141	152.1	0.699	64.8	4.7	6.97	10.269	12.307	10.263	22.2	12.0	17.5	7.3	2.42	0.46	17.1	5.1	12.4

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	153.2	0.703	64.8	4.7	6.98	10.336	12.491	10.420	22.4	12.0	17.7	7.3	2.44	0.45	17.2	5.2	12.5
143	153.8	0.707	64.8	4.7	6.98	10.403	12.582	10.494	22.5	12.0	17.7	7.3	2.45	0.45	17.2	5.2	12.5
144	153.8	0.711	64.8	4.7	6.99	10.471	12.582	10.486	22.5	12.0	17.8	7.3	2.44	0.45	17.2	5.2	12.5
145	154.1	0.715	64.8	4.7	7.00	10.548	12.638	10.525	22.5	12.0	17.8	7.3	2.45	0.45	17.2	5.3	12.5
146	154.4	0.719	64.8	4.7	7.00	10.615	12.674	10.550	22.5	12.0	17.8	7.3	2.46	0.45	17.3	5.3	12.5
147	155.1	0.723	64.8	4.7	7.01	10.683	12.785	10.640	22.6	12.0	17.9	7.3	2.47	0.44	17.3	5.3	12.6
148	155.5	0.728	64.8	4.7	7.01	10.760	12.858	10.695	22.7	12.0	18.0	7.3	2.47	0.44	17.3	5.3	12.6
149	155.5	0.732	64.8	4.7	7.02	10.827	12.858	10.687	22.7	12.0	18.0	7.3	2.47	0.44	17.3	5.3	12.6
150	156.1	0.736	64.8	4.7	7.02	10.904	12.950	10.759	22.7	12.0	18.0	7.3	2.48	0.44	17.4	5.4	12.7
151	156.5	0.740	64.8	4.7	7.03	10.972	13.024	10.816	22.8	12.0	18.1	7.3	2.48	0.43	17.4	5.4	12.7
152	156.7	0.745	64.8	4.7	7.03	11.049	13.042	10.822	22.8	12.0	18.1	7.3	2.48	0.43	17.4	5.4	12.7
153	156.9	0.750	64.8	4.7	7.04	11.126	13.079	10.845	22.8	12.0	18.1	7.3	2.49	0.43	17.4	5.4	12.7
154	156.9	0.754	64.8	4.7	7.05	11.203	13.079	10.834	22.8	12.0	18.1	7.3	2.49	0.44	17.4	5.4	12.7
155	157.0	0.759	64.8	4.7	7.05	11.280	13.098	10.841	22.8	12.0	18.1	7.3	2.49	0.43	17.4	5.4	12.7
156	157.4	0.763	64.8	4.7	7.06	11.357	13.153	10.880	22.9	12.0	18.2	7.3	2.49	0.43	17.4	5.4	12.7
157	157.4	0.769	64.8	4.6	7.07	11.444	13.153	10.868	22.8	12.0	18.2	7.3	2.48	0.43	17.4	5.4	12.8
158	156.9	0.773	64.8	4.6	7.07	11.521	13.079	10.793	22.8	12.0	18.1	7.3	2.47	0.43	17.4	5.4	12.7
159	157.1	0.778	64.8	4.6	7.08	11.608	13.116	10.814	22.8	12.0	18.1	7.3	2.48	0.43	17.4	5.4	12.7
160	156.0	0.783	64.8	4.6	7.09	11.685	12.932	10.642	22.6	12.0	18.0	7.3	2.45	0.44	17.3	5.3	12.7
161	156.0	0.788	64.8	4.6	7.09	11.771	12.932	10.630	22.6	12.0	18.0	7.3	2.45	0.44	17.3	5.3	12.6
162	155.9	0.793	64.8	4.7	7.10	11.848	12.914	10.604	22.6	12.0	17.9	7.3	2.45	0.44	17.3	5.3	12.6
163	155.6	0.798	64.8	4.7	7.11	11.935	12.877	10.561	22.5	12.0	17.9	7.3	2.45	0.44	17.3	5.3	12.6
164	155.6	0.802	64.8	4.6	7.11	12.012	12.877	10.551	22.5	12.0	17.9	7.3	2.44	0.44	17.3	5.3	12.6
165	155.1	0.807	64.8	4.6	7.12	12.089	12.785	10.460	22.4	12.0	17.8	7.3	2.43	0.44	17.2	5.2	12.6
166	155.7	0.812	64.7	4.6	7.12	12.166	12.895	10.547	22.5	12.0	17.9	7.4	2.43	0.44	17.3	5.3	12.6
167	155.1	0.816	64.7	4.6	7.13	12.234	12.785	10.441	22.4	12.0	17.8	7.4	2.42	0.44	17.2	5.2	12.6
168	154.8	0.820	64.7	4.6	7.14	12.311	12.748	10.399	22.4	12.0	17.8	7.4	2.41	0.44	17.2	5.2	12.6
169	155.4	0.825	64.7	4.6	7.14	12.388	12.840	10.470	22.4	12.0	17.8	7.4	2.42	0.44	17.2	5.2	12.6
170	155.4	0.829	64.8	4.6	7.15	12.465	12.840	10.460	22.4	12.0	17.8	7.3	2.43	0.44	17.2	5.2	12.6
171	154.7	0.833	64.8	4.6	7.15	12.532	12.730	10.355	22.3	12.0	17.7	7.3	2.41	0.45	17.2	5.2	12.5
172	155.5	0.838	64.8	4.6	7.16	12.609	12.858	10.458	22.4	12.0	17.8	7.3	2.43	0.44	17.2	5.2	12.6
173	155.3	0.843	64.7	4.6	7.17	12.686	12.822	10.416	22.4	12.0	17.8	7.4	2.41	0.44	17.2	5.2	12.6
174	155.4	0.847	64.7	4.6	7.17	12.764	12.840	10.422	22.4	12.0	17.8	7.4	2.41	0.44	17.2	5.2	12.6
175	155.5	0.852	64.7	4.6	7.18	12.841	12.858	10.428	22.4	12.0	17.8	7.4	2.41	0.44	17.2	5.2	12.6
176	154.9	0.856	64.7	4.6	7.19	12.918	12.766	10.338	22.3	12.0	17.7	7.4	2.40	0.45	17.1	5.2	12.5
177	155.1	0.861	64.7	4.6	7.19	12.995	12.785	10.344	22.3	12.0	17.7	7.4	2.40	0.45	17.2	5.2	12.5
178	154.7	0.866	64.8	4.6	7.20	13.072	12.730	10.286	22.3	12.0	17.6	7.3	2.40	0.45	17.1	5.1	12.5
179	154.8	0.870	64.8	4.6	7.20	13.149	12.748	10.292	22.3	12.0	17.6	7.3	2.40	0.45	17.1	5.1	12.5
180	155.1	0.875	64.7	4.6	7.21	13.236	12.785	10.313	22.3	12.0	17.7	7.4	2.40	0.45	17.1	5.2	12.5
181	154.9	0.879	64.7	4.6	7.22	13.303	12.766	10.289	22.3	12.0	17.7	7.4	2.40	0.45	17.1	5.1	12.5
182	154.7	0.883	64.7	4.6	7.22	13.370	12.730	10.248	22.2	12.0	17.6	7.4	2.39	0.45	17.1	5.1	12.5

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	155.3	0.887	64.7	4.6	7.23	13.438	12.822	10.319	22.3	12.0	17.7	7.4	2.40	0.45	17.1	5.2	12.5
184	156.3	0.892	64.7	4.6	7.24	13.515	12.987	10.453	22.4	12.0	17.8	7.4	2.42	0.44	17.2	5.2	12.6
185	156.2	0.896	64.8	4.6	7.24	13.582	12.969	10.428	22.4	12.0	17.8	7.3	2.42	0.45	17.2	5.2	12.5
186	156.3	0.900	64.8	4.6	7.25	13.659	12.987	10.434	22.4	12.0	17.8	7.3	2.42	0.45	17.2	5.2	12.5
187	156.1	0.905	64.7	4.6	7.25	13.727	12.950	10.393	22.4	12.0	17.8	7.4	2.41	0.44	17.2	5.2	12.6
188	155.7	0.909	64.7	4.6	7.26	13.804	12.895	10.336	22.3	12.0	17.7	7.4	2.40	0.45	17.1	5.2	12.5
189	156.4	0.913	64.7	4.6	7.27	13.871	13.006	10.422	22.4	12.0	17.8	7.4	2.41	0.44	17.2	5.2	12.6
190	156.7	0.917	64.7	4.6	7.27	13.939	13.042	10.445	22.4	12.0	17.9	7.4	2.41	0.44	17.2	5.2	12.6
191	156.3	0.922	64.7	4.6	7.28	14.016	12.987	10.388	22.4	12.0	17.8	7.4	2.40	0.44	17.2	5.2	12.6
192	158.5	0.926	64.7	4.6	7.28	14.083	13.337	10.679	22.7	12.0	18.0	7.4	2.45	0.43	17.3	5.3	12.7
193	156.8	0.930	64.7	4.6	7.29	14.160	13.061	10.432	22.4	12.0	17.8	7.4	2.42	0.44	17.2	5.2	12.6
194	156.9	0.934	64.7	4.6	7.30	14.228	13.079	10.439	22.4	12.0	17.8	7.4	2.42	0.44	17.2	5.2	12.6
195	157.2	0.939	64.7	4.6	7.30	14.305	13.134	10.476	22.5	12.0	17.8	7.4	2.42	0.44	17.2	5.2	12.6
196	157.9	0.944	64.7	4.6	7.31	14.382	13.245	10.560	22.5	12.0	18.0	7.4	2.43	0.43	17.3	5.3	12.7
197	158.5	0.948	64.7	4.6	7.32	14.459	13.337	10.629	22.6	12.0	18.0	7.4	2.43	0.43	17.3	5.3	12.7
198	158.4	0.953	64.7	4.6	7.32	14.536	13.318	10.603	22.6	12.0	18.0	7.4	2.43	0.43	17.3	5.3	12.7
199	158.4	0.957	64.7	4.6	7.33	14.613	13.318	10.593	22.6	12.0	18.0	7.4	2.43	0.43	17.3	5.3	12.7
200	158.5	0.962	64.7	4.6	7.33	14.690	13.337	10.598	22.6	12.0	18.0	7.4	2.44	0.43	17.3	5.3	12.7
201	158.4	0.966	64.7	4.6	7.34	14.767	13.318	10.572	22.6	12.0	17.9	7.4	2.43	0.44	17.3	5.3	12.7
202	158.3	0.972	64.7	4.6	7.35	14.854	13.300	10.545	22.5	12.0	17.9	7.4	2.43	0.44	17.3	5.3	12.6
203	158.6	0.976	64.7	4.6	7.36	14.931	13.355	10.582	22.6	12.0	18.0	7.4	2.43	0.43	17.3	5.3	12.7
204	158.0	0.981	64.7	4.6	7.36	15.018	13.263	10.492	22.5	12.0	17.9	7.4	2.42	0.44	17.2	5.2	12.7
205	158.4	0.986	64.7	4.6	7.37	15.095	13.318	10.529	22.5	12.0	17.9	7.4	2.42	0.43	17.2	5.3	12.7
206	158.3	0.991	64.7	4.6	7.38	15.172	13.300	10.503	22.5	12.0	17.9	7.4	2.42	0.44	17.2	5.3	12.7
207	158.3	0.996	64.7	4.6	7.38	15.258	13.300	10.491	22.5	12.0	17.9	7.4	2.42	0.44	17.2	5.2	12.7
208	157.8	1.000	64.7	4.6	7.39	15.335	13.226	9.897	21.9	12.0	17.3	7.4	2.34	0.47	16.9	4.9	12.3
209	157.2	1.005	64.7	4.6	7.40	15.413	13.134	9.806	21.8	12.0	17.2	7.4	2.33	0.47	16.9	4.9	12.3
210	157.0	1.009	64.7	4.6	7.40	15.480	13.098	9.764	21.7	12.0	17.2	7.4	2.32	0.47	16.9	4.9	12.3
211	157.1	1.013	64.7	4.6	7.41	15.557	13.116	9.767	21.7	12.0	17.2	7.4	2.32	0.47	16.9	4.9	12.3
212	157.4	1.018	64.7	4.6	7.42	15.634	13.153	9.785	21.8	12.0	17.2	7.4	2.32	0.47	16.9	4.9	12.3
213	157.1	1.022	64.7	4.6	7.42	15.702	13.116	9.743	21.7	12.0	17.2	7.4	2.31	0.47	16.9	4.9	12.3
214	156.9	1.027	64.7	4.6	7.43	15.779	13.079	9.699	21.7	12.0	17.1	7.4	2.31	0.47	16.8	4.8	12.3
215	157.7	1.031	64.7	4.6	7.44	15.856	13.208	9.795	21.8	12.0	17.2	7.4	2.33	0.47	16.9	4.9	12.3
216	156.4	1.035	64.7	4.6	7.44	15.923	13.006	9.614	21.6	12.0	17.0	7.4	2.30	0.48	16.8	4.8	12.2
217	156.7	1.040	64.7	4.6	7.45	16.000	13.042	9.632	21.6	12.0	17.0	7.4	2.31	0.48	16.8	4.8	12.2
218	155.9	1.044	64.7	4.6	7.46	16.077	12.914	9.511	21.5	12.0	16.9	7.4	2.28	0.48	16.7	4.8	12.2
219	156.5	1.049	64.7	4.6	7.46	16.154	13.024	9.591	21.6	12.0	17.0	7.4	2.29	0.48	16.8	4.8	12.2
220	155.6	1.054	64.7	4.6	7.47	16.231	12.877	9.455	21.4	12.0	16.9	7.4	2.28	0.48	16.7	4.7	12.1
221	155.2	1.058	64.7	4.6	7.48	16.308	12.803	9.381	21.4	12.0	16.8	7.4	2.27	0.49	16.7	4.7	12.1
222	155.3	1.063	64.7	4.6	7.48	16.395	12.822	9.382	21.4	12.0	16.8	7.4	2.27	0.49	16.7	4.7	12.1
223	155.7	1.068	64.7	4.6	7.49	16.472	12.895	9.431	21.4	12.0	16.8	7.4	2.28	0.49	16.7	4.7	12.1

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	155.2	1.073	64.7	4.6	7.50	16.549	12.803	9.342	21.3	12.0	16.7	7.4	2.27	0.49	16.7	4.7	12.0
225	155.3	1.077	64.7	4.6	7.50	16.617	12.822	9.347	21.3	12.0	16.8	7.4	2.26	0.49	16.7	4.7	12.1
226	155.2	1.081	64.7	4.6	7.51	16.694	12.803	9.319	21.3	12.0	16.7	7.4	2.26	0.49	16.6	4.7	12.1
227	155.2	1.085	64.7	4.6	7.52	16.761	12.803	9.308	21.3	12.0	16.7	7.4	2.26	0.49	16.6	4.7	12.1
228	155.5	1.089	64.6	4.5	7.52	16.829	12.858	9.343	21.3	12.0	16.8	7.5	2.25	0.48	16.7	4.7	12.1
229	155.3	1.093	64.6	4.5	7.53	16.896	12.822	9.301	21.3	12.0	16.8	7.5	2.25	0.49	16.6	4.7	12.1
230	156.0	1.098	64.7	4.6	7.54	16.973	12.932	9.380	21.4	12.0	16.8	7.4	2.27	0.49	16.7	4.7	12.1
231	156.9	1.102	64.7	4.6	7.54	17.041	13.079	9.491	21.5	12.0	16.9	7.4	2.29	0.49	16.7	4.7	12.1
232	156.4	1.106	64.7	4.6	7.55	17.118	13.006	9.418	21.4	12.0	16.8	7.4	2.28	0.49	16.7	4.7	12.1
233	156.4	1.110	64.7	4.6	7.56	17.185	13.006	9.407	21.4	12.0	16.8	7.4	2.27	0.49	16.7	4.7	12.1
234	156.2	1.115	64.6	4.5	7.56	17.262	12.969	9.364	21.3	12.0	16.8	7.5	2.26	0.48	16.7	4.7	12.1
235	155.2	1.119	64.7	4.6	7.57	17.329	12.803	9.216	21.2	12.0	16.6	7.4	2.24	0.50	16.6	4.6	12.0
236	156.9	1.124	64.7	4.6	7.58	17.407	13.079	9.431	21.4	12.0	16.8	7.4	2.27	0.48	16.7	4.7	12.1
237	156.8	1.128	64.6	4.5	7.58	17.474	13.061	9.405	21.4	12.0	16.9	7.5	2.26	0.48	16.7	4.7	12.2
238	156.5	1.132	64.7	4.6	7.59	17.541	13.024	9.363	21.3	12.0	16.7	7.4	2.27	0.49	16.7	4.7	12.1
239	156.5	1.136	64.7	4.6	7.60	17.618	13.024	9.351	21.3	12.0	16.7	7.4	2.27	0.49	16.7	4.7	12.0
240	156.9	1.141	64.7	4.6	7.60	17.696	13.079	9.383	21.4	12.0	16.8	7.4	2.27	0.49	16.7	4.7	12.1
241	157.1	1.145	64.7	4.6	7.61	17.773	13.116	9.401	21.4	12.0	16.8	7.4	2.27	0.49	16.7	4.7	12.1
242	156.9	1.150	64.6	4.5	7.62	17.850	13.079	9.358	21.3	12.0	16.8	7.5	2.26	0.48	16.7	4.7	12.1
243	157.0	1.155	64.6	4.5	7.62	17.927	13.098	9.360	21.3	12.0	16.8	7.5	2.26	0.48	16.7	4.7	12.1
244	156.7	1.159	64.6	4.5	7.63	18.004	13.042	9.303	21.3	12.0	16.8	7.5	2.25	0.49	16.6	4.7	12.1
245	156.4	1.164	64.6	4.5	7.64	18.081	13.006	9.260	21.2	12.0	16.7	7.5	2.24	0.49	16.6	4.6	12.1
246	156.4	1.169	64.7	4.6	7.65	18.168	13.006	9.245	21.2	12.0	16.6	7.4	2.25	0.50	16.6	4.6	12.0
247	156.4	1.174	64.7	4.6	7.65	18.245	13.006	9.233	21.2	12.0	16.6	7.4	2.25	0.49	16.6	4.6	12.0
248	155.9	1.179	64.7	4.6	7.66	18.331	12.914	9.143	21.1	12.0	16.6	7.4	2.23	0.50	16.6	4.6	12.0
249	155.9	1.183	64.6	4.5	7.67	18.408	12.914	9.131	21.1	12.0	16.6	7.5	2.23	0.50	16.5	4.6	12.0
250	155.6	1.188	64.6	4.5	7.68	18.485	12.877	9.088	21.1	12.0	16.5	7.5	2.22	0.50	16.5	4.5	12.0
251	155.6	1.192	64.6	4.5	7.68	18.562	12.877	9.076	21.1	12.0	16.5	7.5	2.22	0.50	16.5	4.5	12.0
252	155.9	1.197	64.6	4.5	7.69	18.640	12.914	9.093	21.1	12.0	16.5	7.5	2.22	0.50	16.5	4.5	12.0
253	156.1	1.202	64.6	4.5	7.70	18.717	12.950	9.111	21.1	12.0	16.6	7.5	2.22	0.50	16.5	4.6	12.0
254	156.3	1.206	64.7	4.6	7.71	18.794	12.987	9.128	21.1	12.0	16.5	7.4	2.23	0.50	16.5	4.6	12.0
255	156.3	1.211	64.7	4.6	7.71	18.871	12.987	9.115	21.1	12.0	16.5	7.4	2.23	0.50	16.5	4.6	12.0
256	156.1	1.215	64.6	4.5	7.72	18.938	12.950	9.074	21.1	12.0	16.5	7.5	2.22	0.50	16.5	4.5	12.0
257	156.2	1.219	64.6	4.5	7.73	19.015	12.969	9.077	21.1	12.0	16.5	7.5	2.22	0.50	16.5	4.5	12.0
258	156.0	1.223	64.6	4.5	7.73	19.083	12.932	9.036	21.0	12.0	16.5	7.5	2.21	0.50	16.5	4.5	12.0
259	156.1	1.228	64.6	4.5	7.74	19.160	12.950	9.038	21.0	12.0	16.5	7.5	2.21	0.50	16.5	4.5	12.0
260	155.9	1.233	64.6	4.5	7.75	19.237	12.914	8.996	21.0	12.0	16.4	7.5	2.21	0.50	16.5	4.5	11.9
261	156.1	1.237	64.7	4.6	7.76	19.314	12.950	9.013	21.0	12.0	16.4	7.4	2.22	0.51	16.5	4.5	11.9
262	156.0	1.242	64.7	4.6	7.76	19.391	12.932	8.985	21.0	12.0	16.4	7.4	2.21	0.51	16.5	4.5	11.9
263	155.7	1.246	64.7	4.6	7.77	19.468	12.895	8.943	20.9	12.0	16.4	7.4	2.21	0.51	16.5	4.5	11.9
264	155.6	1.251	64.6	4.5	7.78	19.545	12.877	8.916	20.9	12.0	16.4	7.5	2.20	0.51	16.4	4.5	11.9

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
265	154.9	1.256	64.6	4.5	7.78	19.622	12.766	8.815	20.8	12.0	16.3	7.5	2.18	0.51	16.4	4.4	11.9
266	154.9	1.260	64.6	4.5	7.79	19.699	12.766	8.802	20.8	12.0	16.3	7.5	2.18	0.51	16.4	4.4	11.9
267	155.2	1.265	64.6	4.5	7.80	19.776	12.803	8.819	20.8	12.0	16.3	7.5	2.18	0.51	16.4	4.4	11.9
268	155.4	1.269	64.6	4.5	7.81	19.853	12.840	8.836	20.8	12.0	16.3	7.5	2.19	0.51	16.4	4.4	11.9
269	155.7	1.274	64.7	4.6	7.81	19.930	12.895	8.868	20.8	12.0	16.3	7.4	2.20	0.52	16.4	4.4	11.8
270	156.1	1.278	64.7	4.6	7.82	19.998	12.950	8.901	20.9	12.0	16.3	7.4	2.20	0.51	16.4	4.5	11.9
271	155.5	1.279	64.7	4.6	7.82	20.017	12.858	8.824	20.8	12.0	16.2	7.4	2.19	0.52	16.4	4.4	11.8

Specimen C Shear Data

CU Triaxial Test

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File Location
T-5764.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5764
Sample Location: Guilford County (Sta. 404+50)
Sample Description: Reddish-orange colored clay.
Remarks:

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.733
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.859	2.806	
Height (in)	6.000	5.943	
Weight (grams)	1007.00		1055.00
Moisture (%)	48.31		55.38
Dry Density (pcf)	67.18	70.38	
Saturation (%)	85.75	100.00	
Void Ratio	1.533	1.424	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 84.400
Effective Confining Stress (psi): 24.0
Corrected Peak Deviator Stress (psi): 20.212 at reading number: 44

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	27.4	0.086	60.4	0.0	6.18	0.000	0.000	0.000	24.0	24.0	24.0	24.0	1.00	0.00	24.0	0.0	24.0
1	53.5	0.090	61.9	1.4	6.19	0.077	4.226	4.193	28.2	24.0	26.7	22.5	1.19	0.34	26.1	2.1	24.6
2	68.4	0.095	63.2	2.7	6.19	0.154	6.636	6.565	30.5	24.0	27.8	21.2	1.31	0.42	27.3	3.3	24.5
3	79.8	0.100	64.2	3.7	6.20	0.240	8.471	8.356	32.3	24.0	28.6	20.2	1.41	0.45	28.2	4.2	24.4
4	88.7	0.106	65.0	4.6	6.21	0.336	9.917	9.752	33.7	24.0	29.1	19.4	1.50	0.47	28.9	4.9	24.2
5	97.1	0.111	65.8	5.4	6.21	0.423	11.270	11.057	35.0	24.0	29.6	18.6	1.60	0.49	29.5	5.5	24.1
6	103.9	0.115	66.5	6.1	6.22	0.500	12.364	12.106	36.1	24.0	30.0	17.9	1.68	0.50	30.0	6.1	23.9
7	110.3	0.120	67.2	6.7	6.22	0.586	13.402	13.093	37.1	24.0	30.3	17.2	1.76	0.52	30.5	6.5	23.8
8	115.8	0.125	67.7	7.3	6.23	0.663	14.291	13.937	37.9	24.0	30.6	16.7	1.84	0.52	30.9	7.0	23.6
9	120.5	0.130	68.2	7.8	6.23	0.749	15.051	14.645	38.6	24.0	30.8	16.2	1.90	0.53	31.3	7.3	23.5
10	124.4	0.135	68.7	8.3	6.24	0.826	15.681	15.228	39.2	24.0	30.9	15.7	1.97	0.54	31.6	7.6	23.3
11	128.3	0.139	69.1	8.7	6.24	0.903	16.312	15.810	39.8	24.0	31.1	15.3	2.04	0.55	31.9	7.9	23.2
12	131.5	0.144	69.5	9.1	6.25	0.980	16.831	16.282	40.3	24.0	31.1	14.9	2.10	0.56	32.1	8.1	23.0
13	134.7	0.149	69.9	9.4	6.25	1.066	17.350	16.747	40.7	24.0	31.3	14.5	2.15	0.56	32.4	8.4	22.9
14	137.8	0.154	70.2	9.8	6.26	1.143	17.850	17.198	41.2	24.0	31.4	14.2	2.21	0.57	32.6	8.6	22.8
15	140.3	0.158	70.5	10.1	6.26	1.220	18.258	17.557	41.5	24.0	31.4	13.9	2.27	0.58	32.8	8.8	22.6
16	141.9	0.163	70.8	10.4	6.27	1.307	18.517	17.763	41.7	24.0	31.3	13.6	2.31	0.59	32.9	8.9	22.5
17	143.5	0.168	71.1	10.7	6.27	1.383	18.777	17.975	42.0	24.0	31.3	13.3	2.35	0.59	33.0	9.0	22.3
18	144.9	0.172	71.3	10.9	6.28	1.460	18.999	18.150	42.1	24.0	31.2	13.1	2.39	0.60	33.1	9.1	22.1

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	146.4	0.177	71.6	11.2	6.28	1.537	19.240	18.342	42.3	24.0	31.2	12.8	2.43	0.61	33.1	9.2	22.0
20	147.6	0.182	71.8	11.4	6.29	1.624	19.444	18.492	42.5	24.0	31.1	12.6	2.47	0.61	33.2	9.2	21.9
21	148.8	0.187	72.0	11.6	6.29	1.700	19.630	18.629	42.6	24.0	31.0	12.4	2.50	0.62	33.3	9.3	21.7
22	149.9	0.191	72.2	11.8	6.30	1.777	19.815	18.766	42.7	24.0	31.0	12.2	2.54	0.63	33.4	9.4	21.6
23	150.9	0.196	72.4	11.9	6.30	1.854	19.963	18.866	42.8	24.0	30.9	12.0	2.57	0.63	33.4	9.4	21.5
24	151.7	0.200	72.6	12.1	6.31	1.931	20.093	18.948	42.9	24.0	30.8	11.8	2.60	0.64	33.5	9.5	21.3
25	152.2	0.205	72.7	12.3	6.31	2.008	20.186	18.996	43.0	24.0	30.7	11.7	2.63	0.65	33.5	9.5	21.2
26	152.9	0.210	72.8	12.4	6.32	2.085	20.297	19.090	43.1	24.0	30.7	11.6	2.65	0.65	33.5	9.5	21.1
27	154.1	0.215	73.0	12.6	6.32	2.171	20.482	19.254	43.2	24.0	30.7	11.4	2.69	0.65	33.6	9.6	21.0
28	155.2	0.219	73.1	12.7	6.33	2.248	20.668	19.419	43.4	24.0	30.7	11.3	2.72	0.65	33.7	9.7	21.0
29	156.4	0.224	73.2	12.8	6.33	2.325	20.853	19.584	43.6	24.0	30.7	11.2	2.75	0.65	33.8	9.8	21.0
30	157.3	0.228	73.4	12.9	6.34	2.402	21.001	19.713	43.7	24.0	30.8	11.0	2.79	0.66	33.8	9.9	20.9
31	157.7	0.234	73.5	13.1	6.34	2.488	21.075	19.767	43.7	24.0	30.7	10.9	2.81	0.66	33.9	9.9	20.8
32	158.2	0.238	73.6	13.2	6.35	2.565	21.150	19.823	43.8	24.0	30.6	10.8	2.84	0.66	33.9	9.9	20.7
33	158.5	0.243	73.7	13.3	6.35	2.642	21.205	19.861	43.8	24.0	30.6	10.7	2.85	0.67	33.9	9.9	20.7
34	158.8	0.247	73.8	13.4	6.36	2.719	21.242	19.881	43.9	24.0	30.5	10.6	2.88	0.67	33.9	9.9	20.5
35	158.9	0.252	73.9	13.5	6.36	2.796	21.261	19.882	43.9	24.0	30.4	10.5	2.89	0.68	33.9	9.9	20.5
36	159.1	0.256	74.0	13.5	6.37	2.873	21.298	19.902	43.9	24.0	30.3	10.4	2.91	0.68	33.9	10.0	20.4
37	159.0	0.261	74.0	13.6	6.37	2.959	21.279	19.866	43.8	24.0	30.2	10.4	2.92	0.69	33.9	9.9	20.3
38	159.5	0.266	74.1	13.7	6.38	3.036	21.354	19.921	43.9	24.0	30.2	10.3	2.94	0.69	33.9	10.0	20.2
39	159.9	0.271	74.2	13.8	6.38	3.113	21.428	19.977	44.0	24.0	30.2	10.2	2.96	0.69	34.0	10.0	20.2
40	160.1	0.275	74.3	13.9	6.39	3.190	21.465	19.996	44.0	24.0	30.1	10.1	2.98	0.69	34.0	10.0	20.1
41	160.9	0.280	74.4	13.9	6.39	3.266	21.594	20.105	44.1	24.0	30.1	10.0	3.00	0.69	34.0	10.1	20.1
42	161.1	0.285	74.4	14.0	6.40	3.353	21.613	20.104	44.1	24.0	30.1	10.0	3.01	0.70	34.0	10.1	20.0
43	161.6	0.289	74.4	14.0	6.40	3.430	21.706	20.177	44.2	24.0	30.1	10.0	3.03	0.69	34.1	10.1	20.0
44	162.0	0.295	74.5	14.1	6.41	3.516	21.761	20.212	44.2	24.0	30.1	9.9	3.04	0.70	34.1	10.1	20.0
45	161.7	0.299	74.6	14.1	6.41	3.593	21.724	20.160	44.1	24.0	30.0	9.8	3.05	0.70	34.1	10.1	19.9
46	162.0	0.304	74.6	14.2	6.42	3.670	21.761	20.179	44.2	24.0	30.0	9.8	3.06	0.70	34.1	10.1	19.9
47	162.2	0.308	74.7	14.3	6.43	3.747	21.798	20.198	44.2	24.0	29.9	9.7	3.08	0.71	34.1	10.1	19.8
48	162.2	0.313	74.7	14.3	6.43	3.833	21.798	20.179	44.2	24.0	29.9	9.7	3.09	0.71	34.1	10.1	19.8
49	161.9	0.318	74.8	14.3	6.44	3.910	21.743	20.109	44.1	24.0	29.7	9.6	3.09	0.71	34.0	10.1	19.7
50	162.0	0.323	74.8	14.4	6.44	3.987	21.761	20.110	44.1	24.0	29.7	9.6	3.10	0.72	34.0	10.1	19.7
51	162.1	0.327	74.8	14.4	6.45	4.064	21.780	20.111	44.1	24.0	29.7	9.6	3.10	0.72	34.0	10.1	19.6
52	162.2	0.332	74.9	14.5	6.45	4.141	21.798	20.112	44.1	24.0	29.6	9.5	3.11	0.72	34.0	10.1	19.6
53	162.3	0.336	74.9	14.5	6.46	4.218	21.817	20.113	44.1	24.0	29.6	9.5	3.12	0.72	34.0	10.1	19.5
54	162.3	0.341	75.0	14.5	6.46	4.294	21.817	20.096	44.1	24.0	29.5	9.4	3.13	0.72	34.0	10.0	19.5
55	162.7	0.346	75.0	14.6	6.47	4.381	21.873	20.130	44.1	24.0	29.5	9.4	3.14	0.72	34.0	10.1	19.5
57	162.8	0.355	75.1	14.7	6.48	4.525	21.891	20.116	44.1	24.0	29.4	9.3	3.16	0.73	34.0	10.1	19.4
58	162.7	0.359	75.1	14.7	6.48	4.602	21.873	20.082	44.1	24.0	29.4	9.3	3.17	0.73	34.0	10.0	19.3
59	162.9	0.364	75.2	14.7	6.49	4.688	21.910	20.098	44.1	24.0	29.3	9.2	3.18	0.73	34.0	10.0	19.3
60	162.9	0.369	75.2	14.7	6.49	4.765	21.910	20.082	44.1	24.0	29.3	9.2	3.17	0.73	34.0	10.0	19.3

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
61	162.8	0.373	75.2	14.8	6.50	4.842	21.891	20.047	44.0	24.0	29.2	9.2	3.18	0.74	34.0	10.0	19.2
62	162.8	0.378	75.2	14.8	6.50	4.919	21.891	20.030	44.0	24.0	29.2	9.2	3.18	0.74	34.0	10.0	19.2
63	162.7	0.383	75.2	14.8	6.51	4.996	21.873	19.996	44.0	24.0	29.1	9.2	3.18	0.74	34.0	10.0	19.2
64	162.9	0.387	75.2	14.8	6.51	5.073	21.910	20.014	44.0	24.0	29.2	9.2	3.19	0.74	34.0	10.0	19.2
65	162.8	0.392	75.3	14.9	6.52	5.149	21.891	19.980	44.0	24.0	29.1	9.1	3.19	0.74	34.0	10.0	19.1
66	162.8	0.396	75.3	14.9	6.53	5.226	21.891	19.963	43.9	24.0	29.0	9.1	3.20	0.75	34.0	10.0	19.1
67	163.2	0.401	75.4	14.9	6.53	5.303	21.965	20.016	44.0	24.0	29.0	9.0	3.22	0.75	34.0	10.0	19.0
68	163.1	0.406	75.4	14.9	6.54	5.390	21.947	19.980	44.0	24.0	29.0	9.0	3.21	0.75	34.0	10.0	19.0
69	163.7	0.411	75.4	14.9	6.54	5.467	22.039	20.051	44.0	24.0	29.1	9.0	3.22	0.75	34.0	10.0	19.1
70	163.6	0.415	75.4	15.0	6.55	5.543	22.021	20.016	44.0	24.0	29.0	9.0	3.23	0.75	34.0	10.0	19.0
71	163.4	0.420	75.4	15.0	6.55	5.620	21.984	19.964	43.9	24.0	29.0	9.0	3.22	0.75	34.0	10.0	19.0
72	163.4	0.424	75.4	15.0	6.56	5.697	21.984	19.947	43.9	24.0	28.9	9.0	3.23	0.75	34.0	10.0	18.9
73	163.1	0.429	75.4	15.0	6.56	5.774	21.947	19.895	43.9	24.0	28.8	9.0	3.22	0.76	33.9	9.9	18.9
74	163.1	0.434	75.5	15.1	6.57	5.860	21.947	19.876	43.9	24.0	28.8	8.9	3.23	0.76	33.9	9.9	18.9
75	163.0	0.438	75.5	15.1	6.57	5.937	21.928	19.842	43.8	24.0	28.8	8.9	3.23	0.76	33.9	9.9	18.8
76	163.2	0.443	75.5	15.1	6.58	6.014	21.965	19.860	43.8	24.0	28.7	8.9	3.24	0.76	33.9	9.9	18.8
77	163.5	0.448	75.5	15.1	6.59	6.091	22.002	19.878	43.9	24.0	28.8	8.9	3.24	0.76	33.9	9.9	18.8
79	163.4	0.457	75.5	15.1	6.60	6.245	21.984	19.827	43.8	24.0	28.7	8.9	3.23	0.76	33.9	9.9	18.8
80	163.1	0.462	75.6	15.1	6.60	6.331	21.947	19.773	43.8	24.0	28.6	8.8	3.24	0.77	33.9	9.9	18.7
81	163.4	0.466	75.6	15.1	6.61	6.408	21.984	19.791	43.8	24.0	28.6	8.8	3.24	0.77	33.9	9.9	18.7
82	163.6	0.471	75.6	15.1	6.61	6.485	22.021	19.809	43.8	24.0	28.6	8.8	3.24	0.76	33.9	9.9	18.7
83	164.6	0.476	75.6	15.2	6.62	6.562	22.188	19.948	43.9	24.0	28.7	8.8	3.27	0.76	34.0	10.0	18.8
84	165.4	0.480	75.6	15.2	6.62	6.639	22.317	20.052	44.0	24.0	28.8	8.8	3.28	0.76	34.0	10.0	18.8
85	165.5	0.485	75.6	15.2	6.63	6.715	22.336	20.052	44.0	24.0	28.8	8.8	3.29	0.76	34.0	10.0	18.8
86	165.8	0.490	75.6	15.2	6.64	6.802	22.373	20.067	44.0	24.0	28.8	8.8	3.29	0.76	34.0	10.0	18.8
87	165.8	0.494	75.6	15.2	6.64	6.879	22.373	20.050	44.0	24.0	28.8	8.8	3.29	0.76	34.0	10.0	18.8
88	165.8	0.499	75.6	15.2	6.65	6.956	22.373	20.033	44.0	24.0	28.8	8.8	3.29	0.76	34.0	10.0	18.8
89	165.6	0.504	75.6	15.2	6.65	7.033	22.354	19.998	44.0	24.0	28.8	8.8	3.28	0.76	34.0	10.0	18.8
90	165.6	0.508	75.7	15.3	6.66	7.109	22.354	19.981	44.0	24.0	28.7	8.7	3.29	0.76	34.0	10.0	18.7
91	165.9	0.513	75.7	15.3	6.66	7.186	22.392	19.998	44.0	24.0	28.7	8.7	3.30	0.76	34.0	10.0	18.7
92	166.0	0.517	75.7	15.3	6.67	7.263	22.410	19.998	44.0	24.0	28.7	8.7	3.31	0.77	34.0	10.0	18.7
93	166.2	0.522	75.7	15.3	6.67	7.350	22.447	20.013	44.0	24.0	28.7	8.7	3.31	0.76	34.0	10.0	18.7
94	166.6	0.527	75.7	15.3	6.68	7.426	22.503	20.048	44.0	24.0	28.7	8.7	3.31	0.76	34.0	10.0	18.7
95	166.6	0.532	75.7	15.3	6.69	7.503	22.503	20.030	44.0	24.0	28.7	8.7	3.31	0.76	34.0	10.0	18.7
96	166.6	0.536	75.7	15.3	6.69	7.580	22.503	20.013	44.0	24.0	28.7	8.7	3.31	0.76	34.0	10.0	18.7
97	166.7	0.541	75.7	15.3	6.70	7.667	22.521	20.011	44.0	24.0	28.7	8.7	3.31	0.76	34.0	10.0	18.7
98	166.7	0.546	75.7	15.3	6.70	7.743	22.521	19.993	44.0	24.0	28.7	8.7	3.31	0.77	34.0	10.0	18.7
99	166.7	0.550	75.7	15.3	6.71	7.820	22.521	19.976	44.0	24.0	28.6	8.7	3.30	0.77	34.0	10.0	18.7
100	166.7	0.555	75.8	15.3	6.71	7.897	22.521	19.959	43.9	24.0	28.6	8.6	3.31	0.77	34.0	10.0	18.6
101	166.8	0.560	75.8	15.3	6.72	7.974	22.540	19.958	43.9	24.0	28.6	8.6	3.31	0.77	34.0	10.0	18.6
102	166.9	0.564	75.8	15.3	6.73	8.051	22.558	19.958	43.9	24.0	28.6	8.6	3.31	0.77	34.0	10.0	18.6

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
103	167.0	0.569	75.8	15.3	6.73	8.137	22.577	19.956	43.9	24.0	28.6	8.6	3.31	0.77	34.0	10.0	18.6
104	167.0	0.574	75.8	15.3	6.74	8.214	22.577	19.938	43.9	24.0	28.6	8.6	3.31	0.77	33.9	10.0	18.6
105	167.1	0.578	75.8	15.3	6.74	8.291	22.595	19.938	43.9	24.0	28.6	8.6	3.31	0.77	33.9	10.0	18.6
106	167.2	0.583	75.8	15.4	6.75	8.378	22.614	19.935	43.9	24.0	28.5	8.6	3.32	0.77	33.9	10.0	18.6
107	167.5	0.587	75.8	15.4	6.75	8.445	22.651	19.954	43.9	24.0	28.5	8.6	3.32	0.77	34.0	10.0	18.6
108	167.5	0.592	75.8	15.4	6.76	8.522	22.651	19.937	43.9	24.0	28.5	8.6	3.32	0.77	33.9	10.0	18.6
109	167.5	0.597	75.8	15.4	6.77	8.598	22.651	19.919	43.9	24.0	28.5	8.6	3.32	0.77	33.9	10.0	18.6
110	167.4	0.601	75.8	15.4	6.77	8.675	22.632	19.885	43.9	24.0	28.5	8.6	3.31	0.77	33.9	9.9	18.5
111	167.7	0.606	75.8	15.4	6.78	8.762	22.688	19.916	43.9	24.0	28.5	8.6	3.32	0.77	33.9	10.0	18.5
112	167.7	0.611	75.8	15.4	6.78	8.839	22.688	19.899	43.9	24.0	28.5	8.6	3.32	0.77	33.9	9.9	18.5
113	167.7	0.615	75.8	15.4	6.79	8.916	22.688	19.881	43.9	24.0	28.5	8.6	3.31	0.77	33.9	9.9	18.5
114	167.7	0.620	75.8	15.4	6.80	8.992	22.688	19.864	43.8	24.0	28.5	8.6	3.31	0.77	33.9	9.9	18.5
115	167.9	0.625	75.8	15.4	6.80	9.069	22.725	19.880	43.9	24.0	28.5	8.6	3.31	0.77	33.9	9.9	18.5
116	167.5	0.629	75.8	15.4	6.81	9.146	22.651	19.795	43.8	24.0	28.4	8.6	3.30	0.78	33.9	9.9	18.5
117	167.6	0.634	75.8	15.4	6.81	9.223	22.670	19.795	43.8	24.0	28.3	8.6	3.31	0.78	33.9	9.9	18.4
118	167.7	0.638	75.8	15.4	6.82	9.300	22.688	19.794	43.8	24.0	28.3	8.6	3.31	0.78	33.9	9.9	18.4
119	167.8	0.643	75.8	15.4	6.82	9.377	22.707	19.793	43.8	24.0	28.3	8.6	3.31	0.78	33.9	9.9	18.4
120	167.8	0.647	75.8	15.4	6.83	9.454	22.707	19.776	43.8	24.0	28.3	8.6	3.31	0.78	33.9	9.9	18.4
121	168.1	0.652	75.8	15.4	6.84	9.530	22.744	19.792	43.8	24.0	28.3	8.6	3.31	0.78	33.9	9.9	18.4
122	168.7	0.657	75.8	15.4	6.84	9.617	22.855	19.873	43.9	24.0	28.4	8.6	3.32	0.78	33.9	9.9	18.5
123	169.2	0.662	75.8	15.4	6.85	9.694	22.929	19.922	43.9	24.0	28.5	8.6	3.33	0.77	33.9	10.0	18.5
124	168.9	0.666	75.8	15.4	6.85	9.771	22.873	19.855	43.8	24.0	28.4	8.6	3.32	0.78	33.9	9.9	18.5
125	169.0	0.671	75.8	15.4	6.86	9.847	22.892	19.854	43.8	24.0	28.4	8.6	3.32	0.78	33.9	9.9	18.5
126	169.1	0.675	75.8	15.4	6.87	9.924	22.911	19.853	43.8	24.0	28.4	8.6	3.32	0.78	33.9	9.9	18.5
127	169.0	0.680	75.8	15.4	6.87	10.001	22.892	19.819	43.8	24.0	28.4	8.6	3.32	0.78	33.9	9.9	18.5
128	168.7	0.685	75.8	15.4	6.88	10.078	22.855	19.768	43.7	24.0	28.3	8.6	3.31	0.78	33.9	9.9	18.4
129	168.7	0.690	75.8	15.4	6.88	10.164	22.855	19.748	43.7	24.0	28.3	8.6	3.31	0.78	33.9	9.9	18.4
130	168.5	0.694	75.8	15.4	6.89	10.241	22.818	19.697	43.7	24.0	28.2	8.6	3.30	0.78	33.8	9.8	18.4
131	168.6	0.699	75.8	15.4	6.90	10.318	22.836	19.696	43.7	24.0	28.2	8.6	3.30	0.78	33.8	9.8	18.4
132	168.7	0.703	75.8	15.4	6.90	10.395	22.855	19.695	43.7	24.0	28.2	8.6	3.30	0.78	33.8	9.8	18.4
133	168.9	0.708	75.8	15.4	6.91	10.472	22.873	19.694	43.7	24.0	28.2	8.6	3.30	0.78	33.8	9.8	18.4
134	169.3	0.713	75.9	15.5	6.91	10.549	22.948	19.743	43.7	24.0	28.3	8.5	3.32	0.78	33.8	9.9	18.4
135	169.3	0.717	75.9	15.5	6.92	10.626	22.948	19.725	43.7	24.0	28.2	8.5	3.32	0.78	33.8	9.9	18.4
136	169.8	0.722	75.9	15.5	6.93	10.702	23.022	19.774	43.8	24.0	28.3	8.5	3.32	0.78	33.9	9.9	18.4
137	170.3	0.727	75.8	15.4	6.93	10.789	23.114	19.837	43.8	24.0	28.4	8.6	3.32	0.78	33.9	9.9	18.5
138	171.0	0.731	75.8	15.4	6.94	10.866	23.226	19.918	43.9	24.0	28.5	8.6	3.33	0.77	33.9	10.0	18.5
139	171.1	0.736	75.8	15.4	6.94	10.943	23.244	19.917	43.9	24.0	28.5	8.6	3.33	0.77	33.9	10.0	18.5
140	171.4	0.741	75.8	15.4	6.95	11.020	23.281	19.932	43.9	24.0	28.5	8.6	3.33	0.77	33.9	10.0	18.5
141	171.6	0.746	75.8	15.4	6.96	11.106	23.318	19.945	43.9	24.0	28.5	8.6	3.33	0.77	34.0	10.0	18.5
142	171.6	0.750	75.8	15.4	6.96	11.173	23.318	19.929	43.9	24.0	28.5	8.6	3.33	0.77	33.9	10.0	18.5
143	172.1	0.755	75.8	15.4	6.97	11.260	23.392	19.975	44.0	24.0	28.5	8.6	3.34	0.77	34.0	10.0	18.5

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
144	171.7	0.759	75.9	15.5	6.98	11.337	23.337	19.907	43.9	24.0	28.4	8.5	3.34	0.78	33.9	10.0	18.5
145	171.6	0.764	75.9	15.5	6.98	11.413	23.318	19.873	43.9	24.0	28.4	8.5	3.33	0.78	33.9	9.9	18.4
146	171.9	0.768	75.8	15.4	6.99	11.490	23.374	19.904	43.9	24.0	28.5	8.6	3.33	0.78	33.9	10.0	18.5
147	172.2	0.773	75.8	15.4	6.99	11.567	23.411	19.919	43.9	24.0	28.5	8.6	3.33	0.77	33.9	10.0	18.5
148	172.2	0.778	75.8	15.4	7.00	11.644	23.411	19.901	43.9	24.0	28.5	8.6	3.33	0.78	33.9	10.0	18.5
149	172.3	0.782	75.8	15.4	7.01	11.721	23.430	19.899	43.9	24.0	28.5	8.6	3.33	0.78	33.9	9.9	18.5
150	172.6	0.787	75.8	15.4	7.01	11.807	23.485	19.928	43.9	24.0	28.5	8.6	3.33	0.77	33.9	10.0	18.5
151	172.5	0.792	75.8	15.4	7.02	11.884	23.467	19.894	43.9	24.0	28.4	8.6	3.33	0.78	33.9	9.9	18.5
152	172.6	0.796	75.9	15.5	7.02	11.961	23.485	19.892	43.9	24.0	28.4	8.5	3.34	0.78	33.9	9.9	18.5
153	172.8	0.801	75.9	15.5	7.03	12.038	23.504	19.890	43.9	24.0	28.4	8.5	3.34	0.78	33.9	9.9	18.5
154	172.9	0.806	75.9	15.5	7.04	12.115	23.522	19.889	43.9	24.0	28.4	8.5	3.34	0.78	33.9	9.9	18.5
155	172.9	0.810	75.8	15.4	7.04	12.192	23.522	19.870	43.8	24.0	28.4	8.6	3.32	0.78	33.9	9.9	18.5
156	173.0	0.815	75.8	15.4	7.05	12.268	23.541	19.869	43.8	24.0	28.4	8.6	3.32	0.78	33.9	9.9	18.5
157	172.8	0.820	75.8	15.4	7.06	12.355	23.504	19.816	43.8	24.0	28.4	8.6	3.32	0.78	33.9	9.9	18.5
158	172.9	0.824	75.8	15.4	7.06	12.422	23.522	19.816	43.8	24.0	28.4	8.6	3.32	0.78	33.9	9.9	18.5
159	173.0	0.828	75.8	15.4	7.07	12.499	23.541	19.814	43.8	24.0	28.4	8.6	3.32	0.78	33.9	9.9	18.5
160	173.3	0.834	75.8	15.4	7.07	12.585	23.596	19.843	43.8	24.0	28.4	8.6	3.32	0.78	33.9	9.9	18.5
161	173.3	0.838	75.8	15.4	7.08	12.662	23.596	19.824	43.8	24.0	28.4	8.6	3.32	0.78	33.9	9.9	18.5
162	173.3	0.843	75.8	15.4	7.09	12.739	23.596	19.806	43.8	24.0	28.4	8.6	3.32	0.78	33.9	9.9	18.5
163	173.3	0.847	75.8	15.4	7.09	12.816	23.596	19.788	43.8	24.0	28.3	8.6	3.31	0.78	33.9	9.9	18.4
164	173.4	0.852	75.8	15.4	7.10	12.893	23.615	19.786	43.8	24.0	28.3	8.6	3.31	0.78	33.9	9.9	18.4
165	173.4	0.856	75.8	15.4	7.11	12.970	23.615	19.768	43.7	24.0	28.3	8.6	3.31	0.78	33.9	9.9	18.4
166	173.6	0.861	75.8	15.4	7.11	13.047	23.633	19.766	43.7	24.0	28.3	8.6	3.31	0.78	33.9	9.9	18.4
167	173.8	0.866	75.8	15.4	7.12	13.123	23.671	19.780	43.8	24.0	28.3	8.6	3.31	0.78	33.9	9.9	18.4
168	173.7	0.870	75.8	15.4	7.12	13.200	23.652	19.746	43.7	24.0	28.3	8.6	3.31	0.78	33.9	9.9	18.4
169	173.8	0.875	75.8	15.4	7.13	13.287	23.671	19.741	43.7	24.0	28.3	8.6	3.31	0.78	33.8	9.9	18.4
170	174.0	0.879	75.8	15.4	7.14	13.354	23.708	19.758	43.7	24.0	28.3	8.6	3.31	0.78	33.9	9.9	18.4
171	174.0	0.884	75.8	15.4	7.14	13.441	23.708	19.737	43.7	24.0	28.3	8.6	3.31	0.78	33.8	9.9	18.4
172	174.1	0.889	75.8	15.4	7.15	13.517	23.726	19.735	43.7	24.0	28.3	8.6	3.30	0.78	33.8	9.9	18.5
173	174.1	0.894	75.8	15.4	7.16	13.594	23.726	19.717	43.7	24.0	28.3	8.6	3.29	0.78	33.8	9.9	18.4
174	174.0	0.898	75.8	15.4	7.16	13.671	23.708	19.682	43.7	24.0	28.3	8.6	3.29	0.78	33.8	9.8	18.4
175	174.4	0.903	75.8	15.4	7.17	13.748	23.763	19.712	43.7	24.0	28.3	8.6	3.29	0.78	33.8	9.9	18.4
176	175.2	0.908	75.8	15.4	7.18	13.834	23.893	19.803	43.8	24.0	28.4	8.6	3.32	0.78	33.9	9.9	18.5
177	175.4	0.912	75.8	15.4	7.18	13.911	23.930	19.817	43.8	24.0	28.4	8.6	3.32	0.78	33.9	9.9	18.5
178	175.4	0.917	75.8	15.4	7.19	13.988	23.930	19.799	43.8	24.0	28.3	8.6	3.32	0.78	33.9	9.9	18.5
179	175.3	0.921	75.8	15.4	7.20	14.065	23.911	19.764	43.7	24.0	28.4	8.6	3.30	0.78	33.9	9.9	18.5
180	175.3	0.926	75.8	15.4	7.20	14.142	23.911	19.746	43.7	24.0	28.3	8.6	3.30	0.78	33.9	9.9	18.5
181	175.4	0.931	75.8	15.4	7.21	14.219	23.930	19.743	43.7	24.0	28.3	8.6	3.30	0.78	33.8	9.9	18.5
182	175.3	0.935	75.8	15.4	7.22	14.296	23.911	19.709	43.7	24.0	28.3	8.6	3.29	0.78	33.8	9.9	18.4
183	174.8	0.940	75.8	15.4	7.22	14.372	23.837	19.627	43.6	24.0	28.2	8.6	3.28	0.78	33.8	9.8	18.4
184	175.2	0.944	75.8	15.4	7.23	14.449	23.893	19.657	43.6	24.0	28.2	8.6	3.29	0.78	33.8	9.8	18.4

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
185	175.2	0.949	75.8	15.4	7.24	14.526	23.893	19.638	43.6	24.0	28.2	8.6	3.29	0.78	33.8	9.8	18.4
186	175.2	0.954	75.8	15.4	7.24	14.613	23.893	19.618	43.6	24.0	28.2	8.6	3.28	0.78	33.8	9.8	18.4
187	175.4	0.958	75.8	15.3	7.25	14.680	23.930	19.633	43.6	24.0	28.3	8.6	3.27	0.78	33.8	9.8	18.4
188	175.4	0.963	75.8	15.3	7.25	14.757	23.930	19.615	43.6	24.0	28.2	8.6	3.27	0.78	33.8	9.8	18.4
189	175.5	0.967	75.8	15.3	7.26	14.834	23.949	19.612	43.6	24.0	28.2	8.6	3.27	0.78	33.8	9.8	18.4
190	176.1	0.972	75.8	15.3	7.27	14.920	24.041	19.670	43.6	24.0	28.3	8.6	3.28	0.78	33.8	9.8	18.5
191	176.5	0.977	75.8	15.4	7.28	14.997	24.115	19.715	43.7	24.0	28.3	8.6	3.29	0.78	33.8	9.9	18.4
192	177.1	0.981	75.8	15.4	7.28	15.074	24.208	19.775	43.8	24.0	28.4	8.6	3.30	0.78	33.9	9.9	18.5
193	177.2	0.987	75.8	15.3	7.29	15.160	24.227	19.770	43.7	24.0	28.4	8.6	3.29	0.78	33.9	9.9	18.5
194	177.3	0.991	75.8	15.3	7.30	15.227	24.245	19.769	43.7	24.0	28.4	8.6	3.29	0.78	33.9	9.9	18.5
195	177.6	0.995	75.8	15.3	7.30	15.304	24.282	19.782	43.8	24.0	28.4	8.6	3.29	0.78	33.9	9.9	18.5
196	177.8	1.000	75.8	15.3	7.31	15.391	24.319	19.792	43.8	24.0	28.4	8.6	3.29	0.78	33.9	9.9	18.5
197	177.6	1.005	75.8	15.3	7.32	15.468	24.282	19.742	43.7	24.0	28.4	8.6	3.29	0.78	33.8	9.9	18.5
198	177.7	1.009	75.8	15.3	7.32	15.545	24.301	19.739	43.7	24.0	28.4	8.6	3.29	0.78	33.8	9.9	18.5
199	177.7	1.014	75.8	15.3	7.33	15.621	24.301	19.721	43.7	24.0	28.4	8.6	3.28	0.78	33.8	9.9	18.5
200	177.9	1.019	75.8	15.3	7.34	15.698	24.338	19.733	43.7	24.0	28.4	8.6	3.29	0.78	33.8	9.9	18.5
201	177.9	1.023	75.8	15.3	7.34	15.775	24.338	19.714	43.7	24.0	28.3	8.6	3.28	0.78	33.8	9.9	18.5
202	177.9	1.028	75.7	15.3	7.35	15.852	24.338	19.696	43.7	24.0	28.4	8.7	3.27	0.78	33.8	9.8	18.5
203	178.0	1.032	75.7	15.3	7.36	15.929	24.356	19.693	43.7	24.0	28.4	8.7	3.27	0.78	33.8	9.8	18.5
204	178.0	1.037	75.7	15.3	7.36	16.006	24.356	19.674	43.7	24.0	28.3	8.7	3.27	0.78	33.8	9.8	18.5
205	178.1	1.041	75.7	15.3	7.37	16.083	24.375	19.671	43.6	24.0	28.3	8.7	3.27	0.78	33.8	9.8	18.5
206	178.3	1.046	75.7	15.3	7.38	16.159	24.393	19.668	43.6	24.0	28.3	8.7	3.27	0.78	33.8	9.8	18.5
207	178.4	1.051	75.7	15.3	7.38	16.236	24.412	19.664	43.6	24.0	28.3	8.7	3.27	0.78	33.8	9.8	18.5
208	178.6	1.055	75.7	15.3	7.39	16.313	24.449	19.677	43.7	24.0	28.3	8.7	3.27	0.78	33.8	9.8	18.5
209	178.5	1.060	75.7	15.3	7.40	16.390	24.430	19.642	43.6	24.0	28.3	8.7	3.27	0.78	33.8	9.8	18.5
210	178.6	1.064	75.7	15.3	7.40	16.467	24.449	19.639	43.6	24.0	28.4	8.7	3.25	0.78	33.8	9.8	18.5
211	178.6	1.069	75.7	15.3	7.41	16.544	24.449	19.620	43.6	24.0	28.3	8.7	3.25	0.78	33.8	9.8	18.5
212	178.5	1.073	75.7	15.3	7.42	16.621	24.430	19.586	43.6	24.0	28.3	8.7	3.25	0.78	33.8	9.8	18.5
213	178.5	1.078	75.7	15.3	7.42	16.697	24.430	19.567	43.5	24.0	28.2	8.7	3.26	0.78	33.8	9.8	18.5
214	178.7	1.083	75.7	15.3	7.43	16.774	24.468	19.579	43.6	24.0	28.3	8.7	3.26	0.78	33.8	9.8	18.5
215	178.7	1.088	75.7	15.3	7.44	16.861	24.468	19.558	43.5	24.0	28.3	8.7	3.24	0.78	33.8	9.8	18.5
216	178.7	1.092	75.7	15.3	7.45	16.938	24.468	19.539	43.5	24.0	28.3	8.7	3.24	0.78	33.7	9.8	18.5
217	179.1	1.097	75.7	15.3	7.45	17.014	24.523	19.567	43.5	24.0	28.3	8.7	3.25	0.78	33.8	9.8	18.5
218	179.1	1.101	75.7	15.3	7.46	17.091	24.523	19.548	43.5	24.0	28.3	8.7	3.24	0.78	33.8	9.8	18.5
219	178.9	1.106	75.7	15.3	7.47	17.168	24.505	19.514	43.5	24.0	28.2	8.7	3.24	0.78	33.7	9.8	18.5
220	179.1	1.110	75.6	15.2	7.47	17.245	24.523	19.510	43.5	24.0	28.3	8.8	3.23	0.78	33.7	9.8	18.5
221	179.2	1.116	75.7	15.3	7.48	17.331	24.542	19.504	43.5	24.0	28.2	8.7	3.24	0.78	33.7	9.8	18.5
222	179.2	1.120	75.7	15.3	7.49	17.408	24.542	19.485	43.5	24.0	28.2	8.7	3.24	0.78	33.7	9.7	18.5
223	179.4	1.125	75.7	15.3	7.49	17.485	24.579	19.497	43.5	24.0	28.2	8.7	3.24	0.78	33.7	9.7	18.5
224	179.4	1.129	75.6	15.2	7.50	17.562	24.579	19.478	43.5	24.0	28.2	8.8	3.23	0.78	33.7	9.7	18.5
225	179.2	1.134	75.6	15.2	7.51	17.639	24.542	19.429	43.4	24.0	28.2	8.8	3.22	0.78	33.7	9.7	18.5

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
226	179.2	1.138	75.6	15.2	7.52	17.716	24.542	19.410	43.4	24.0	28.2	8.8	3.22	0.78	33.7	9.7	18.5
227	179.4	1.143	75.6	15.2	7.52	17.793	24.579	19.422	43.4	24.0	28.2	8.8	3.22	0.78	33.7	9.7	18.5
228	179.2	1.148	75.6	15.2	7.53	17.879	24.542	19.370	43.3	24.0	28.1	8.8	3.21	0.79	33.7	9.7	18.4
229	179.5	1.153	75.6	15.2	7.54	17.956	24.597	19.397	43.4	24.0	28.1	8.8	3.22	0.78	33.7	9.7	18.5
230	179.9	1.157	75.6	15.2	7.54	18.033	24.653	19.423	43.4	24.0	28.2	8.8	3.22	0.78	33.7	9.7	18.5
231	180.0	1.162	75.6	15.2	7.55	18.110	24.671	19.420	43.4	24.0	28.2	8.8	3.21	0.78	33.7	9.7	18.5
232	180.0	1.166	75.6	15.2	7.56	18.187	24.671	19.401	43.4	24.0	28.2	8.8	3.21	0.78	33.7	9.7	18.5
233	179.4	1.172	75.6	15.2	7.57	18.273	24.579	19.303	43.3	24.0	28.1	8.8	3.20	0.79	33.6	9.7	18.4
234	179.5	1.176	75.6	15.2	7.57	18.340	24.597	19.302	43.3	24.0	28.1	8.8	3.20	0.79	33.6	9.7	18.4
235	179.5	1.181	75.6	15.2	7.58	18.427	24.597	19.281	43.3	24.0	28.1	8.8	3.19	0.79	33.6	9.6	18.4
236	179.4	1.185	75.6	15.2	7.59	18.504	24.579	19.247	43.2	24.0	28.0	8.8	3.19	0.79	33.6	9.6	18.4
237	178.9	1.190	75.6	15.2	7.60	18.580	24.505	19.168	43.1	24.0	28.0	8.8	3.18	0.79	33.6	9.6	18.4
238	178.8	1.194	75.6	15.2	7.60	18.657	24.486	19.134	43.1	24.0	27.9	8.8	3.18	0.79	33.5	9.6	18.4
239	178.8	1.199	75.6	15.1	7.61	18.734	24.486	19.115	43.1	24.0	27.9	8.8	3.16	0.79	33.5	9.6	18.4
240	178.8	1.204	75.6	15.1	7.62	18.811	24.486	19.096	43.1	24.0	27.9	8.8	3.16	0.79	33.5	9.5	18.4
241	178.7	1.208	75.6	15.1	7.62	18.888	24.468	19.062	43.0	24.0	27.9	8.8	3.16	0.79	33.5	9.5	18.4
242	178.9	1.213	75.6	15.1	7.63	18.965	24.505	19.073	43.1	24.0	27.9	8.8	3.16	0.79	33.5	9.5	18.4
243	178.9	1.217	75.6	15.1	7.64	19.042	24.505	19.055	43.0	24.0	27.9	8.8	3.16	0.79	33.5	9.5	18.4
244	179.4	1.222	75.6	15.1	7.65	19.118	24.579	19.096	43.1	24.0	27.9	8.8	3.16	0.79	33.5	9.5	18.4
245	180.3	1.226	75.6	15.1	7.65	19.195	24.727	19.197	43.2	24.0	28.0	8.8	3.17	0.79	33.6	9.6	18.4
246	180.5	1.231	75.6	15.1	7.66	19.272	24.764	19.208	43.2	24.0	28.0	8.8	3.17	0.79	33.6	9.6	18.4
247	180.7	1.236	75.5	15.1	7.67	19.349	24.783	19.203	43.2	24.0	28.1	8.9	3.16	0.79	33.6	9.6	18.5
248	180.8	1.240	75.5	15.1	7.68	19.426	24.801	19.199	43.2	24.0	28.1	8.9	3.16	0.79	33.6	9.6	18.5
249	180.9	1.245	75.5	15.1	7.68	19.503	24.820	19.195	43.2	24.0	28.1	8.9	3.16	0.79	33.6	9.6	18.5
250	180.8	1.249	75.5	15.1	7.69	19.580	24.801	19.161	43.1	24.0	28.0	8.9	3.16	0.79	33.6	9.6	18.5
251	181.0	1.254	75.5	15.1	7.70	19.656	24.838	19.172	43.2	24.0	28.0	8.9	3.16	0.79	33.6	9.6	18.5
252	180.9	1.258	75.5	15.1	7.70	19.733	24.820	19.138	43.1	24.0	28.0	8.9	3.16	0.79	33.5	9.6	18.4
253	180.8	1.263	75.5	15.1	7.71	19.820	24.801	19.102	43.1	24.0	28.0	8.9	3.15	0.79	33.5	9.6	18.4
254	180.8	1.268	75.5	15.1	7.72	19.897	24.801	19.083	43.1	24.0	28.0	8.9	3.15	0.79	33.5	9.5	18.4
255	180.9	1.273	75.5	15.1	7.73	19.973	24.820	19.078	43.1	24.0	28.0	8.9	3.14	0.79	33.5	9.5	18.5
256	180.8	1.275	75.5	15.1	7.73	20.021	24.801	19.052	43.0	24.0	28.0	8.9	3.14	0.79	33.5	9.5	18.4

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)

Photographs of Sample's Failures

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. U-2412B

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project 39406.1.1 **County** GUILFORD **Owner**

Date: Sampled 3/13/13 **Received** 10/18/13 **Reported** 10/22/13

Sampled from ROADWAY **By** N ROBERSON

Submitted by M HURT 1995 **Standard Specifications**

787967 TO 787968
10/23/13

TEST RESULTS

Proj. Sample No.		ST-12#1	ST-12#2				
Lab. Sample No.		787967	787968				
Retained #4 Sieve	%	-	-				
Passing #10 Sieve	%	100	100				
Passing #40 Sieve	%	99	100				
Passing #200 Sieve	%	78	82				

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	4.0	3.0				
Fine Sand Ret - #270	%	27.4	23.8				
Silt 0.05 - 0.005 mm	%	52.5	55.1				
Clay < 0.005 mm	%	16.1	18.1				
T-#		T-5771	T-5771				
Gravity		2.733	2.697				

L. L.		52	53				
P. I.		13	13				
AASHTO Classification		A-7-5(13)	A-7-5(14)				
Station		404+50	404+50				
Offset		3 RT	3 RT				
Alignment		L	L				
Location							
Depth (Ft)		24.50	24.50				
	to	26.50	26.50				
Final Moisture	%	44.56	40.95				

cc: N ROBERSON
GREG BODENHEIMER
MASON HURT

Soils Engineer

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	33.70	38.50	**Plastic Limits:**	0	
Dry Density (pcf):	81.25	88.46	**Plasticity Index (%):**	0	
Saturation (%):	82.50	111.32			
Void Ratio:	1.1335	0.9595	**Specific Gravity:**	2.779	Measured

Soil Description:	Tan colored clay		
Project Number:	39406.1.1	**Depth:** 24.5 - 26.5 ft	**Remarks:**
Sample Number:	ST-12	**Boring Number:**	Solid height is 0.47001 inches ; Blow/ft. = NA
Project:	U-2412B		
Client:	T-5771		
Location:	Guilford County (Sta. 404+50)		

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	33.70	38.50	**Plastic Limits:**	0	
Dry Density (pcf):	81.25	88.46	**Plasticity Index (%):**	0	
Saturation (%):	82.50	111.32			
Void Ratio:	1.1335	0.9595	**Specific Gravity:**	2.779	Measured

Soil Description: Tan colored clay

Project Number: 39406.1.1 **Depth:** 24.5 - 26.5 ft

Sample Number: ST-12 **Boring Number:**

Project: U-2412B

Client: T-5771

Location: Guilford County (Sta. 404+50)

Remarks: Solid height is 0.47001 inches ; Blow/ft. = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	33.70	38.50	**Plastic Limits:**	0	
Dry Density (pcf):	81.25	88.46	**Plasticity Index (%):**	0	
Saturation (%):	82.50	111.32			
Void Ratio:	1.1335	0.9595	**Specific Gravity:**	2.779	Measured

Soil Description: Tan colored clay

Project Number: 39406.1.1 **Depth:** 24.5 - 26.5 ft

Sample Number: ST-12 **Boring Number:**

Project: U-2412B

Client: T-5771

Location: Guilford County (Sta. 404+50)

Remarks:
Solid height is 0.47001 inches ; Blow/ft. = NA

Consolidation Test Results
Summary

Project: U-2412B
Location: Guilford County (Sta. 404+50)
Job Number: T-5771

Project Number: 39406.1.1

Sample Number: ST-12
Boring Number:
Depth: 24.5 - 26.5 ft
Sample Type: Undisturbed

Soil Description:
Tan colored clay
Remarks:
Solid height is 0.47001 inches ; Blow/ft. = NA

Test Number:
Test Date:

Index	Load Sequence (tsf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	1.0009	0.5318	0.00	1.1335	0.000		0.000	
1	0.063	0.0072	0.9937	0.5246	0.72	1.1181	0.333		2294.537	
2	0.125	0.0129	0.9880	0.5189	1.29	1.1060	0.063		12085.444	
3	0.250	0.0249	0.9760	0.5069	2.49	1.0804	0.175		4212.019	
4	0.500	0.0418	0.9591	0.4900	4.18	1.0444	0.165		4313.925	
5	1.000	0.0611	0.9398	0.4707	6.10	1.0032	0.113		6048.131	
6	2.000	0.0815	0.9194	0.4503	8.14	0.9598	0.119		5496.558	
7	4.000	0.1053	0.8956	0.4265	10.52	0.9090	0.080		7748.621	
8	2.000	0.1008	0.9001	0.4310	10.07	0.9186	0.000		0.000	
9	1.000	0.0935	0.9074	0.4383	9.34	0.9342	0.000		0.000	
10	0.500	0.0844	0.9165	0.4474	8.43	0.9536	0.000		0.000	
11	1.000	0.0876	0.9133	0.4442	8.75	0.9468	0.000		0.000	
12	2.000	0.0961	0.9048	0.4357	9.60	0.9286	0.000		0.000	
13	4.000	0.1074	0.8935	0.4244	10.73	0.9046	0.000		0.000	
14	8.000	0.1207	0.8802	0.4111	12.06	0.8762	0.174		3445.421	
15	16.000	0.1798	0.8211	0.3520	17.96	0.7502	0.391		1334.271	
16	4.000	0.1681	0.8328	0.3637	16.79	0.7752	0.000		0.000	
17	0.016	0.0816	0.9193	0.4502	8.15	0.9595	0.000		0.000	

Tested By:

Checked By:

Consolidation Test
Consolidation Specimen Information

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County (Sta. 404+50)
Job Number: T-5771 **Test Date:**

Sample Number: ST-12 **Soil Description:**
Boring Number: Tan colored clay
Depth: 24.5 - 26.5 ft **Remarks:**
Sample Type: Undisturbed Solid height is 0.47001 inches ; Blow/ft. = NA

Test Number:
Liquid Limit: 0.0000 **Initial Void Ratio:** 1.1335 **Initial Height (in):** 1.0009
Plastic Limit: 0.0000 **Plasticity Index (%):** 0.0000 **Initial Diameter (in):** 2.5000
Specific Gravity: 2.7790 Measured **Weight of Ring (g):** 107.3100

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	140.10	145.13
Dry Soil + Container (g)	104.79	104.79
Weight of Container (g)	0.00	0.00
Moisture Content (%)	33.70	38.50
Void Ratio	1.1335	0.9595
Saturation (%)	82.50	111.32
Dry Density (pcf)	81.25	88.46

Tested By: **Checked By:**

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Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date :

Tested By:

Effective Stress at Maximum Deviator Stress Criterion

Deviator Stress Vs. Axial Strain

Initial	Specimen A	B	C	D
Water Content (%)	36.8	36.8	35.0	
Dry Density (pcf)	77.3	78.7	81.4	
Saturation (%)	83.50	86.12	88.39	
Void Ratio	1.200	1.163	1.063	
Diameter (in)	2.864	2.876	2.876	
Height (in)	6.040	5.890	6.090	
Specific Gravity	2.73	2.73	2.70	
Liquid Limit	0	0	0	
Plastic Limit	0	0	0	
After Consolidation	**A**	**B**	**C**	**D**
B-Value	0.00	0.00	0.00	
Water Content (%)	37.7	38.0	38.7	
Dry Density (pcf)	78.49	79.78	85.65	
Saturation (%)	100.00	100.00	100.00	
Void Ratio	1.108	1.139	0.966	
Effective Stress (psi)	6.0	12.0	24.0	
Back Press. (psi)	59.8	59.8	59.8	
Rate of Strain	0.009	0.009	0.009	

Maximium Deviator Stress Criterion	
C (psi)	0.0
C' (psi)	0.0
Ø (deg)	0.0
Ø' (deg)	0.0

After Shear	A	B	C	D
σ'1 at Failure (psi)	8.65	17.58	62.79	
σ'3 at Failure (psi)	4.23	7.87	18.55	

Project:	U-2412B	N/A	N/A	N/A	N/A
Location:	Guilford County (Sta. 404+50)				
Project Number:	39406.1.1				
Boring Number:	0				
Sample Number:	ST-12				
Depth:	24.50 - 26.50 ft				
Sample Type:	Undisturbed	Failure Photographs			
Description:					
Test Type	Consolidated Undrained				
Remarks	Multi-Stage for samples A & B				

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Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date:

Tested By:

Deviator Stress vs. Axial Strain

Principal Stress Ratio vs. Axial Strain

Change in Pore Pressure vs. Axial Strain
Change in Pore Pressure (psi)
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.000
5.000
10.000
15.000
20.000
25.000
Axial Strain (%)
Specimen A
Specimen B
Specimen C
Specimen D

Mohr Stress Circles at Maximum Deviator Stress Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at Maximum Principal Stress Ratio Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at 15% Axial Strain Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)
Q (psi)
P' (psi)
0.0
10.0
20.0
30.0
40.0
50.0
Specimen A
Specimen B
Specimen C
Specimen D
Tangent Line

Stress Paths (Total)
(C' = 0.0 Ø' = 0.0)
Q (psi)
P (psi)
0.0
10.0
20.0
30.0
40.0
50.0

Specimen A Shear Data

CU Triaxial Test

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File Location
T-5771.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5771
Sample Location: Guilford County (Sta. 404+50)
Sample Description: Tan colored clay
Remarks: 40° shear plane with slicken side. Final height = 5.0645 inch

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.733
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.864	2.851	
Height (in)	6.040	6.005	
Weight (grams)	1081.00		1142.00
Moisture (%)	36.84		44.56
Dry Density (pcf)	77.35	78.49	
Saturation (%)	83.50	100.00	
Void Ratio	1.200	1.108	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 65.800
Effective Confining Stress (psi): 6.0
Corrected Peak Deviator Stress (psi): 4.422 at reading number: 11

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	25.7	0.072	59.8	0.0	6.38	0.000	0.000	0.000	6.0	6.0	6.0	6.0	1.00	0.00	6.0	0.0	6.0
1	37.6	0.077	60.4	0.6	6.39	0.077	1.868	1.837	7.9	6.0	7.3	5.4	1.34	0.32	6.9	0.9	6.4
2	42.0	0.081	60.6	0.9	6.39	0.138	2.557	2.501	8.5	6.0	7.7	5.2	1.48	0.34	7.3	1.3	6.4
3	44.4	0.083	60.8	1.0	6.40	0.184	2.920	2.844	8.9	6.0	7.9	5.0	1.57	0.35	7.4	1.4	6.4
4	46.0	0.087	61.0	1.2	6.40	0.245	3.174	3.072	9.1	6.0	7.9	4.8	1.63	0.38	7.6	1.5	6.4
5	47.8	0.091	61.1	1.3	6.40	0.314	3.464	3.332	9.4	6.0	8.0	4.7	1.71	0.40	7.7	1.7	6.4
6	49.6	0.096	61.2	1.4	6.41	0.391	3.736	3.571	9.6	6.0	8.2	4.6	1.78	0.40	7.8	1.8	6.4
7	50.8	0.100	61.3	1.5	6.41	0.467	3.936	3.737	9.8	6.0	8.2	4.5	1.83	0.41	7.9	1.9	6.4
8	52.2	0.104	61.4	1.6	6.42	0.536	4.154	3.924	9.9	6.0	8.3	4.4	1.89	0.41	8.0	2.0	6.4
9	54.1	0.109	61.5	1.7	6.42	0.613	4.444	4.180	10.2	6.0	8.5	4.3	1.97	0.41	8.1	2.1	6.4
10	54.8	0.114	61.5	1.8	6.43	0.690	4.553	4.255	10.3	6.0	8.5	4.3	2.00	0.41	8.1	2.1	6.4
11	55.9	0.116	61.6	1.8	6.43	0.720	4.734	4.422	10.4	6.0	8.6	4.2	2.05	0.41	8.2	2.2	6.4

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)

Specimen B Shear Data

CU Triaxial Test

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File Location
T-5771.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5771
Sample Location: Guilford County (Sta. 404+50)
Sample Description: Same as Specimen A
Remarks: Stage #2 ; Specimen's remarks same as Specimen A

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.733
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.876	2.858	
Height (in)	5.890	5.879	
Weight (grams)	1081.00		1142.00
Moisture (%)	36.84		44.56
Dry Density (pcf)	78.66	79.78	
Saturation (%)	86.12	100.00	
Void Ratio	1.163	1.139	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 71.800
Effective Confining Stress (psi): 12.0
Corrected Peak Deviator Stress (psi): 9.707 at reading number: 29

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	30.8	0.126	59.8	0.0	6.42	0.000	0.000	0.000	12.0	12.0	12.0	12.0	1.00	0.00	12.0	0.0	12.0
1	41.9	0.128	60.4	0.6	6.42	0.039	1.733	1.717	13.7	12.0	13.1	11.4	1.15	0.36	12.8	0.9	12.2
2	49.2	0.131	61.0	1.2	6.42	0.086	2.870	2.834	14.8	12.0	13.6	10.8	1.26	0.41	13.4	1.4	12.2
3	55.7	0.135	61.5	1.7	6.43	0.157	3.881	3.814	15.8	12.0	14.1	10.3	1.37	0.45	13.9	1.9	12.2
4	59.6	0.139	61.9	2.1	6.43	0.235	4.494	4.393	16.4	12.0	14.3	9.9	1.44	0.48	14.2	2.2	12.1
5	64.3	0.144	62.3	2.5	6.44	0.305	5.216	5.083	17.1	12.0	14.6	9.5	1.53	0.49	14.5	2.5	12.1
6	68.2	0.148	62.6	2.8	6.44	0.376	5.830	5.663	17.7	12.0	14.9	9.2	1.61	0.49	14.8	2.8	12.1
7	71.6	0.152	62.8	3.0	6.45	0.454	6.353	6.150	18.1	12.0	15.1	9.0	1.69	0.49	15.1	3.1	12.0
8	74.9	0.156	63.0	3.2	6.45	0.524	6.877	6.639	18.6	12.0	15.4	8.8	1.76	0.49	15.3	3.3	12.1
9	76.8	0.161	63.2	3.4	6.45	0.595	7.166	6.894	18.9	12.0	15.5	8.6	1.80	0.49	15.4	3.4	12.1
10	79.2	0.165	63.3	3.5	6.46	0.673	7.545	7.235	19.2	12.0	15.7	8.5	1.85	0.49	15.6	3.6	12.1
11	81.2	0.169	63.5	3.6	6.46	0.744	7.851	7.507	19.5	12.0	15.9	8.3	1.90	0.49	15.7	3.8	12.1
12	82.3	0.174	63.6	3.8	6.47	0.822	8.032	7.650	19.6	12.0	15.9	8.2	1.93	0.49	15.8	3.8	12.1
13	84.5	0.178	63.7	3.9	6.47	0.892	8.375	7.957	19.9	12.0	16.1	8.1	1.98	0.48	16.0	4.0	12.1
14	86.2	0.183	63.7	3.9	6.48	0.971	8.628	8.170	20.2	12.0	16.2	8.1	2.01	0.48	16.1	4.1	12.1
15	88.1	0.187	63.8	4.0	6.48	1.041	8.934	8.441	20.4	12.0	16.4	8.0	2.06	0.48	16.2	4.2	12.2
16	89.6	0.191	63.9	4.1	6.49	1.119	9.169	8.636	20.6	12.0	16.5	7.9	2.09	0.47	16.3	4.3	12.2
17	90.8	0.196	63.9	4.1	6.49	1.190	9.350	8.780	20.8	12.0	16.7	7.9	2.12	0.47	16.4	4.4	12.3
18	92.3	0.200	64.0	4.1	6.50	1.268	9.584	8.975	21.0	12.0	16.8	7.8	2.14	0.46	16.5	4.5	12.3

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	93.7	0.205	64.0	4.2	6.50	1.346	9.801	9.151	21.1	12.0	17.0	7.8	2.17	0.46	16.6	4.6	12.4
20	95.1	0.209	64.0	4.2	6.51	1.425	10.017	9.326	21.3	12.0	17.1	7.8	2.20	0.45	16.7	4.7	12.4
21	95.3	0.214	64.0	4.2	6.51	1.495	10.054	9.328	21.3	12.0	17.1	7.8	2.20	0.45	16.7	4.7	12.5
22	96.1	0.218	64.0	4.2	6.52	1.573	10.180	9.414	21.4	12.0	17.2	7.8	2.21	0.45	16.7	4.7	12.5
23	96.7	0.223	64.0	4.2	6.52	1.652	10.270	9.465	21.5	12.0	17.2	7.8	2.22	0.45	16.7	4.7	12.5
24	97.9	0.227	64.0	4.2	6.53	1.730	10.451	9.604	21.6	12.0	17.4	7.8	2.23	0.44	16.8	4.8	12.6
25	98.2	0.232	64.0	4.2	6.53	1.808	10.505	9.619	21.6	12.0	17.4	7.8	2.24	0.44	16.8	4.8	12.6
26	99.0	0.237	64.0	4.2	6.54	1.886	10.631	9.705	21.7	12.0	17.5	7.8	2.24	0.43	16.8	4.9	12.7
27	99.0	0.241	64.0	4.2	6.54	1.965	10.631	9.666	21.7	12.0	17.5	7.8	2.24	0.43	16.8	4.8	12.6
28	99.0	0.245	64.0	4.1	6.55	2.035	10.631	9.645	21.6	12.0	17.5	7.8	2.23	0.43	16.8	4.8	12.7
29	99.5	0.250	63.9	4.1	6.55	2.113	10.703	9.707	21.7	12.0	17.6	7.9	2.23	0.42	16.8	4.9	12.7
30	99.2	0.254	63.9	4.1	6.56	2.192	10.667	9.664	21.7	12.0	17.6	7.9	2.22	0.42	16.8	4.8	12.7
31	98.8	0.259	63.9	4.1	6.56	2.270	10.595	9.585	21.6	12.0	17.5	7.9	2.21	0.42	16.8	4.8	12.7
32	98.0	0.264	63.8	4.0	6.57	2.348	10.469	9.453	21.4	12.0	17.4	8.0	2.19	0.43	16.7	4.7	12.7
33	98.1	0.268	63.8	4.0	6.57	2.419	10.487	9.463	21.5	12.0	17.4	8.0	2.19	0.43	16.7	4.7	12.7
34	98.8	0.272	63.8	4.0	6.58	2.497	10.595	9.561	21.6	12.0	17.6	8.0	2.19	0.42	16.8	4.8	12.8
35	98.5	0.277	63.8	4.0	6.58	2.567	10.559	9.518	21.5	12.0	17.5	8.0	2.19	0.42	16.8	4.8	12.8
36	98.9	0.281	63.7	3.9	6.59	2.646	10.613	9.563	21.6	12.0	17.6	8.1	2.18	0.41	16.8	4.8	12.9
37	98.4	0.285	63.7	3.9	6.59	2.716	10.541	9.485	21.5	12.0	17.6	8.1	2.17	0.41	16.7	4.7	12.9
38	98.4	0.290	63.7	3.9	6.60	2.794	10.541	9.477	21.5	12.0	17.6	8.1	2.16	0.41	16.7	4.7	12.9
39	98.2	0.295	63.7	3.9	6.61	2.873	10.505	9.433	21.4	12.0	17.6	8.1	2.16	0.41	16.7	4.7	12.9
40	97.9	0.299	63.6	3.8	6.61	2.951	10.451	9.372	21.4	12.0	17.5	8.2	2.15	0.41	16.7	4.7	12.9
41	97.3	0.303	63.6	3.8	6.62	3.021	10.360	9.278	21.3	12.0	17.5	8.2	2.13	0.41	16.6	4.6	12.8
42	97.5	0.307	63.6	3.8	6.62	3.092	10.396	9.305	21.3	12.0	17.5	8.2	2.13	0.40	16.6	4.7	12.9
43	97.6	0.312	63.6	3.8	6.63	3.170	10.415	9.315	21.3	12.0	17.5	8.2	2.13	0.40	16.6	4.7	12.9
44	97.7	0.317	63.5	3.7	6.63	3.248	10.433	9.324	21.3	12.0	17.6	8.3	2.13	0.40	16.7	4.7	12.9
45	97.0	0.321	63.5	3.7	6.64	3.319	10.324	9.212	21.2	12.0	17.5	8.3	2.11	0.40	16.6	4.6	12.9
46	96.1	0.325	63.5	3.7	6.64	3.397	10.180	9.064	21.1	12.0	17.4	8.3	2.09	0.41	16.5	4.5	12.8
47	96.3	0.329	63.5	3.7	6.65	3.467	10.216	9.092	21.1	12.0	17.4	8.3	2.09	0.40	16.5	4.5	12.9
48	96.1	0.334	63.5	3.6	6.65	3.546	10.180	9.049	21.0	12.0	17.4	8.3	2.08	0.40	16.5	4.5	12.9
49	96.1	0.338	63.5	3.6	6.66	3.616	10.180	9.042	21.0	12.0	17.4	8.3	2.08	0.40	16.5	4.5	12.9
50	95.8	0.343	63.4	3.6	6.66	3.694	10.126	8.982	21.0	12.0	17.4	8.4	2.07	0.40	16.5	4.5	12.9
51	95.7	0.347	63.4	3.6	6.67	3.773	10.108	8.957	20.9	12.0	17.4	8.4	2.07	0.40	16.5	4.5	12.9
52	95.9	0.352	63.4	3.6	6.67	3.843	10.144	8.984	21.0	12.0	17.4	8.4	2.07	0.40	16.5	4.5	12.9
53	95.9	0.356	63.4	3.6	6.68	3.921	10.144	8.976	21.0	12.0	17.4	8.4	2.06	0.40	16.5	4.5	12.9
54	95.4	0.361	63.4	3.6	6.68	4.000	10.072	8.899	20.9	12.0	17.3	8.4	2.06	0.40	16.4	4.4	12.9
55	95.4	0.365	63.3	3.5	6.69	4.070	10.072	8.892	20.9	12.0	17.4	8.5	2.05	0.40	16.4	4.4	12.9
56	94.8	0.370	63.3	3.5	6.69	4.148	9.981	8.798	20.8	12.0	17.3	8.5	2.04	0.40	16.4	4.4	12.9
57	95.0	0.374	63.3	3.5	6.70	4.227	9.999	8.807	20.8	12.0	17.3	8.5	2.04	0.40	16.4	4.4	12.9
58	95.9	0.379	63.3	3.5	6.70	4.305	10.144	8.937	20.9	12.0	17.5	8.5	2.05	0.39	16.5	4.5	13.0
59	95.1	0.383	63.2	3.4	6.71	4.375	10.017	8.809	20.8	12.0	17.4	8.6	2.03	0.39	16.4	4.4	13.0

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	94.3	0.387	63.2	3.4	6.71	4.454	9.891	8.681	20.7	12.0	17.2	8.6	2.02	0.40	16.3	4.3	12.9
61	95.1	0.392	63.2	3.4	6.72	4.524	10.017	8.794	20.8	12.0	17.4	8.6	2.02	0.39	16.4	4.4	13.0
62	94.5	0.396	63.2	3.4	6.73	4.602	9.927	8.701	20.7	12.0	17.3	8.6	2.01	0.39	16.3	4.4	12.9
63	93.7	0.401	63.2	3.4	6.73	4.681	9.801	8.572	20.6	12.0	17.2	8.6	2.00	0.39	16.3	4.3	12.9
64	94.3	0.405	63.2	3.4	6.74	4.751	9.891	8.651	20.6	12.0	17.3	8.6	2.00	0.39	16.3	4.3	12.9
65	93.6	0.410	63.2	3.4	6.74	4.829	9.783	8.541	20.5	12.0	17.2	8.6	1.99	0.39	16.3	4.3	12.9
66	93.6	0.414	63.1	3.3	6.75	4.908	9.783	8.533	20.5	12.0	17.2	8.7	1.98	0.39	16.3	4.3	12.9
67	94.1	0.419	63.1	3.3	6.75	4.986	9.873	8.611	20.6	12.0	17.3	8.7	1.99	0.39	16.3	4.3	13.0
68	93.9	0.423	63.1	3.3	6.76	5.064	9.837	8.569	20.6	12.0	17.3	8.7	1.99	0.38	16.3	4.3	13.0
69	94.3	0.428	63.1	3.3	6.76	5.142	9.891	8.613	20.6	12.0	17.3	8.7	1.99	0.38	16.3	4.3	13.0
70	94.5	0.433	63.1	3.3	6.77	5.221	9.927	8.639	20.6	12.0	17.4	8.7	1.99	0.38	16.3	4.3	13.0
71	94.6	0.437	63.1	3.3	6.77	5.299	9.945	8.648	20.6	12.0	17.4	8.7	1.99	0.38	16.3	4.3	13.1
72	94.8	0.442	63.0	3.2	6.78	5.377	9.981	8.675	20.7	12.0	17.4	8.8	1.99	0.37	16.3	4.3	13.1
73	94.7	0.446	63.0	3.2	6.79	5.448	9.963	8.651	20.6	12.0	17.4	8.8	1.98	0.37	16.3	4.3	13.1
74	94.7	0.451	63.0	3.2	6.79	5.526	9.963	8.643	20.6	12.0	17.4	8.8	1.98	0.37	16.3	4.3	13.1
75	94.5	0.455	63.0	3.2	6.80	5.604	9.927	8.601	20.6	12.0	17.4	8.8	1.98	0.37	16.3	4.3	13.1
76	94.6	0.460	63.0	3.2	6.80	5.682	9.945	8.610	20.6	12.0	17.4	8.8	1.98	0.37	16.3	4.3	13.1
77	95.0	0.464	63.0	3.1	6.81	5.761	9.999	8.654	20.6	12.0	17.5	8.8	1.98	0.36	16.3	4.3	13.2
78	94.6	0.468	63.0	3.1	6.81	5.831	9.945	8.596	20.6	12.0	17.4	8.8	1.97	0.37	16.3	4.3	13.1
79	94.3	0.473	62.9	3.1	6.82	5.909	9.891	8.537	20.5	12.0	17.4	8.9	1.96	0.37	16.3	4.3	13.1
80	94.7	0.478	62.9	3.1	6.82	5.988	9.963	8.597	20.6	12.0	17.5	8.9	1.97	0.36	16.3	4.3	13.2
81	94.4	0.482	62.9	3.1	6.83	6.058	9.909	8.539	20.5	12.0	17.4	8.9	1.96	0.36	16.3	4.3	13.2
82	94.6	0.486	62.9	3.1	6.84	6.136	9.945	8.565	20.6	12.0	17.5	8.9	1.96	0.36	16.3	4.3	13.2
83	94.7	0.491	62.9	3.1	6.84	6.215	9.963	8.574	20.6	12.0	17.5	8.9	1.96	0.36	16.3	4.3	13.2
85	94.5	0.500	62.8	3.0	6.85	6.363	9.927	8.526	20.5	12.0	17.5	9.0	1.95	0.36	16.3	4.3	13.2
86	94.6	0.504	62.8	3.0	6.86	6.442	9.945	8.535	20.5	12.0	17.5	9.0	1.95	0.35	16.3	4.3	13.2
87	94.8	0.509	62.8	3.0	6.86	6.520	9.981	8.561	20.6	12.0	17.6	9.0	1.95	0.35	16.3	4.3	13.3
88	94.6	0.514	62.8	3.0	6.87	6.598	9.945	8.519	20.5	12.0	17.5	9.0	1.95	0.35	16.3	4.3	13.3
89	95.3	0.518	62.8	3.0	6.87	6.677	10.054	8.613	20.6	12.0	17.6	9.0	1.96	0.35	16.3	4.3	13.3
90	94.8	0.522	62.8	3.0	6.88	6.747	9.981	8.538	20.5	12.0	17.6	9.0	1.95	0.35	16.3	4.3	13.3
91	95.4	0.527	62.7	2.9	6.89	6.825	10.072	8.614	20.6	12.0	17.7	9.1	1.95	0.34	16.3	4.3	13.4
92	96.0	0.531	62.7	2.9	6.89	6.896	10.162	8.691	20.7	12.0	17.7	9.1	1.96	0.34	16.3	4.3	13.4
93	95.4	0.536	62.7	2.9	6.90	6.974	10.072	8.599	20.6	12.0	17.7	9.1	1.95	0.34	16.3	4.3	13.4
94	95.2	0.540	62.7	2.9	6.90	7.052	10.035	8.558	20.5	12.0	17.6	9.1	1.94	0.34	16.3	4.3	13.4
95	95.8	0.544	62.7	2.9	6.91	7.123	10.126	8.635	20.6	12.0	17.7	9.1	1.95	0.34	16.3	4.3	13.4
96	95.1	0.549	62.7	2.9	6.91	7.201	10.017	8.526	20.5	12.0	17.6	9.1	1.94	0.34	16.3	4.3	13.3
97	95.7	0.553	62.7	2.9	6.92	7.271	10.108	8.603	20.6	12.0	17.7	9.1	1.94	0.33	16.3	4.3	13.4
98	95.2	0.558	62.7	2.9	6.92	7.350	10.035	8.528	20.5	12.0	17.6	9.1	1.94	0.34	16.3	4.3	13.4
99	95.1	0.562	62.7	2.9	6.93	7.420	10.017	8.504	20.5	12.0	17.6	9.1	1.93	0.34	16.2	4.3	13.4
100	95.3	0.566	62.7	2.9	6.94	7.498	10.054	8.530	20.5	12.0	17.7	9.1	1.93	0.33	16.3	4.3	13.4
101	95.7	0.571	62.6	2.8	6.94	7.569	10.108	8.573	20.6	12.0	17.7	9.2	1.94	0.33	16.3	4.3	13.5

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
102	95.1	0.575	62.6	2.8	6.95	7.647	10.017	8.482	20.5	12.0	17.6	9.2	1.93	0.33	16.2	4.2	13.4
103	96.0	0.580	62.6	2.8	6.95	7.725	10.162	8.607	20.6	12.0	17.8	9.2	1.94	0.33	16.3	4.3	13.5
104	95.1	0.584	62.6	2.8	6.96	7.796	10.017	8.467	20.5	12.0	17.7	9.2	1.92	0.33	16.2	4.2	13.4
105	95.7	0.589	62.6	2.8	6.96	7.874	10.108	8.542	20.5	12.0	17.7	9.2	1.93	0.33	16.3	4.3	13.5
106	95.3	0.593	62.6	2.8	6.97	7.944	10.054	8.485	20.5	12.0	17.7	9.2	1.92	0.33	16.2	4.2	13.4
107	95.4	0.597	62.6	2.8	6.98	8.023	10.072	8.494	20.5	12.0	17.7	9.2	1.92	0.33	16.2	4.2	13.5
108	95.4	0.602	62.6	2.8	6.98	8.101	10.072	8.486	20.5	12.0	17.7	9.2	1.92	0.33	16.2	4.2	13.5
109	96.0	0.607	62.5	2.7	6.99	8.179	10.162	8.561	20.6	12.0	17.8	9.3	1.92	0.32	16.3	4.3	13.5
110	96.7	0.611	62.5	2.7	6.99	8.258	10.270	8.652	20.6	12.0	17.9	9.3	1.93	0.32	16.3	4.3	13.6
111	96.5	0.616	62.5	2.7	7.00	8.336	10.234	8.611	20.6	12.0	17.9	9.3	1.93	0.31	16.3	4.3	13.6
112	95.7	0.620	62.5	2.7	7.01	8.414	10.108	8.487	20.5	12.0	17.8	9.3	1.91	0.32	16.2	4.2	13.5
113	95.9	0.624	62.5	2.7	7.01	8.485	10.144	8.513	20.5	12.0	17.8	9.3	1.92	0.32	16.2	4.3	13.5
114	96.0	0.629	62.5	2.7	7.02	8.563	10.162	8.522	20.5	12.0	17.8	9.3	1.91	0.31	16.3	4.3	13.6
115	96.1	0.633	62.5	2.7	7.02	8.633	10.180	8.531	20.5	12.0	17.8	9.3	1.92	0.31	16.3	4.3	13.6
116	96.0	0.638	62.5	2.7	7.03	8.712	10.162	8.507	20.5	12.0	17.8	9.3	1.91	0.31	16.2	4.3	13.6
117	96.7	0.642	62.5	2.6	7.03	8.790	10.270	8.598	20.6	12.0	17.9	9.3	1.92	0.31	16.3	4.3	13.6
118	96.5	0.647	62.5	2.6	7.04	8.868	10.234	8.557	20.5	12.0	17.9	9.3	1.92	0.31	16.3	4.3	13.6
119	95.7	0.651	62.4	2.6	7.05	8.939	10.108	8.434	20.4	12.0	17.8	9.4	1.90	0.31	16.2	4.2	13.6
120	96.8	0.656	62.4	2.6	7.05	9.017	10.288	8.591	20.6	12.0	18.0	9.4	1.92	0.30	16.3	4.3	13.7
121	96.1	0.660	62.4	2.6	7.06	9.095	10.180	8.484	20.5	12.0	17.9	9.4	1.91	0.31	16.2	4.2	13.6
122	96.1	0.665	62.4	2.6	7.06	9.166	10.180	8.477	20.5	12.0	17.9	9.4	1.90	0.31	16.2	4.2	13.6
123	96.6	0.669	62.4	2.6	7.07	9.244	10.252	8.535	20.5	12.0	17.9	9.4	1.91	0.30	16.3	4.3	13.7
124	95.1	0.673	62.4	2.6	7.07	9.314	10.017	8.315	20.3	12.0	17.7	9.4	1.88	0.31	16.1	4.2	13.6
125	96.7	0.678	62.4	2.6	7.08	9.392	10.270	8.536	20.5	12.0	18.0	9.4	1.90	0.30	16.3	4.3	13.7
126	96.9	0.682	62.4	2.6	7.09	9.471	10.306	8.560	20.6	12.0	18.0	9.4	1.91	0.30	16.3	4.3	13.7
127	96.5	0.687	62.4	2.6	7.09	9.541	10.234	8.488	20.5	12.0	17.9	9.4	1.90	0.30	16.2	4.2	13.7
128	97.3	0.691	62.3	2.5	7.10	9.619	10.360	8.594	20.6	12.0	18.1	9.5	1.91	0.29	16.3	4.3	13.8
129	96.5	0.696	62.3	2.5	7.10	9.698	10.234	8.472	20.5	12.0	17.9	9.5	1.90	0.30	16.2	4.2	13.7
130	97.0	0.700	62.3	2.5	7.11	9.768	10.324	8.546	20.5	12.0	18.0	9.5	1.90	0.30	16.3	4.3	13.7
131	96.8	0.705	62.3	2.5	7.12	9.846	10.288	8.505	20.5	12.0	18.0	9.5	1.90	0.29	16.2	4.3	13.7
132	96.3	0.709	62.3	2.5	7.12	9.925	10.216	8.432	20.4	12.0	17.9	9.5	1.89	0.30	16.2	4.2	13.7
133	96.3	0.713	62.3	2.5	7.13	9.995	10.216	8.425	20.4	12.0	17.9	9.5	1.88	0.29	16.2	4.2	13.7
134	97.0	0.718	62.3	2.5	7.13	10.073	10.324	8.515	20.5	12.0	18.0	9.5	1.89	0.29	16.2	4.3	13.8
135	97.2	0.722	62.3	2.5	7.14	10.144	10.342	8.523	20.5	12.0	18.0	9.5	1.90	0.29	16.3	4.3	13.8
136	97.2	0.727	62.3	2.5	7.15	10.222	10.342	8.515	20.5	12.0	18.0	9.5	1.89	0.29	16.2	4.3	13.8
137	97.2	0.731	62.2	2.4	7.15	10.300	10.342	8.507	20.5	12.0	18.1	9.6	1.89	0.29	16.2	4.3	13.8
138	97.2	0.735	62.2	2.4	7.16	10.371	10.342	8.500	20.5	12.0	18.1	9.6	1.89	0.29	16.2	4.2	13.8
139	97.4	0.740	62.2	2.4	7.16	10.449	10.378	8.524	20.5	12.0	18.1	9.6	1.89	0.29	16.3	4.3	13.8
140	96.7	0.744	62.2	2.4	7.17	10.520	10.270	8.420	20.4	12.0	18.0	9.6	1.88	0.29	16.2	4.2	13.8
141	97.0	0.748	62.2	2.4	7.18	10.590	10.324	8.461	20.5	12.0	18.0	9.6	1.88	0.28	16.2	4.2	13.8
142	97.3	0.753	62.2	2.4	7.18	10.668	10.360	8.485	20.5	12.0	18.1	9.6	1.89	0.28	16.2	4.2	13.8

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
143	97.0	0.757	62.2	2.4	7.19	10.747	10.324	8.445	20.4	12.0	18.0	9.6	1.88	0.29	16.2	4.2	13.8
144	96.9	0.762	62.2	2.4	7.19	10.817	10.306	8.422	20.4	12.0	18.0	9.6	1.88	0.28	16.2	4.2	13.8
145	96.5	0.766	62.2	2.4	7.20	10.887	10.234	8.350	20.3	12.0	18.0	9.6	1.87	0.29	16.2	4.2	13.8
146	96.1	0.770	62.2	2.4	7.21	10.966	10.180	8.294	20.3	12.0	17.9	9.6	1.86	0.29	16.1	4.1	13.8
147	97.0	0.775	62.2	2.4	7.21	11.044	10.324	8.414	20.4	12.0	18.0	9.6	1.88	0.28	16.2	4.2	13.8
148	96.5	0.779	62.2	2.4	7.22	11.114	10.234	8.327	20.3	12.0	18.0	9.6	1.86	0.28	16.2	4.2	13.8
149	96.6	0.783	62.2	2.4	7.22	11.185	10.252	8.336	20.3	12.0	18.0	9.6	1.86	0.28	16.2	4.2	13.8
150	96.5	0.788	62.2	2.4	7.23	11.263	10.234	8.312	20.3	12.0	18.0	9.6	1.86	0.28	16.1	4.2	13.8
151	97.0	0.792	62.1	2.3	7.24	11.341	10.324	8.384	20.4	12.0	18.1	9.7	1.87	0.28	16.2	4.2	13.9
152	96.3	0.797	62.1	2.3	7.24	11.412	10.216	8.280	20.3	12.0	17.9	9.7	1.86	0.28	16.1	4.1	13.8
153	96.3	0.801	62.1	2.3	7.25	11.490	10.216	8.272	20.3	12.0	17.9	9.7	1.86	0.28	16.1	4.1	13.8
154	97.5	0.806	62.1	2.3	7.26	11.568	10.396	8.424	20.4	12.0	18.1	9.7	1.87	0.28	16.2	4.2	13.9
155	97.0	0.810	62.1	2.3	7.26	11.647	10.324	8.352	20.3	12.0	18.0	9.7	1.86	0.27	16.2	4.2	13.9
156	97.7	0.815	62.1	2.3	7.27	11.717	10.433	8.440	20.4	12.0	18.1	9.7	1.87	0.27	16.2	4.2	13.9
157	97.5	0.819	62.1	2.3	7.27	11.795	10.396	8.400	20.4	12.0	18.1	9.7	1.87	0.27	16.2	4.2	13.9
158	97.4	0.824	62.1	2.3	7.28	11.874	10.378	8.376	20.4	12.0	18.1	9.7	1.86	0.27	16.2	4.2	13.9
159	97.7	0.828	62.1	2.3	7.29	11.952	10.433	8.416	20.4	12.0	18.1	9.7	1.87	0.27	16.2	4.2	13.9
160	98.2	0.832	62.1	2.3	7.29	12.022	10.505	8.472	20.5	12.0	18.2	9.7	1.87	0.27	16.2	4.2	14.0
161	97.9	0.837	62.1	2.3	7.30	12.101	10.451	8.416	20.4	12.0	18.1	9.7	1.87	0.27	16.2	4.2	13.9
162	97.6	0.842	62.0	2.2	7.31	12.179	10.415	8.376	20.4	12.0	18.1	9.8	1.86	0.27	16.2	4.2	13.9
163	97.7	0.846	62.0	2.2	7.31	12.257	10.433	8.384	20.4	12.0	18.1	9.8	1.86	0.27	16.2	4.2	13.9
164	97.6	0.850	62.0	2.2	7.32	12.328	10.415	8.361	20.4	12.0	18.1	9.8	1.85	0.26	16.2	4.2	14.0
165	97.7	0.855	62.0	2.2	7.33	12.414	10.433	8.368	20.4	12.0	18.2	9.8	1.86	0.26	16.2	4.2	14.0
166	97.6	0.860	62.0	2.2	7.33	12.492	10.415	7.924	19.9	12.0	17.7	9.8	1.81	0.28	16.0	4.0	13.7
167	98.2	0.864	62.0	2.2	7.34	12.562	10.505	7.993	20.0	12.0	17.8	9.8	1.82	0.28	16.0	4.0	13.8
168	97.2	0.869	62.0	2.2	7.34	12.641	10.342	7.841	19.8	12.0	17.7	9.8	1.80	0.28	15.9	3.9	13.7
169	98.3	0.873	62.0	2.2	7.35	12.719	10.523	7.987	20.0	12.0	17.8	9.8	1.81	0.27	16.0	4.0	13.8
170	98.0	0.878	62.0	2.2	7.36	12.797	10.469	7.929	19.9	12.0	17.7	9.8	1.81	0.27	16.0	4.0	13.8
171	97.9	0.882	62.0	2.1	7.36	12.868	10.451	7.904	19.9	12.0	17.7	9.8	1.80	0.27	15.9	4.0	13.8
172	98.4	0.887	62.0	2.1	7.37	12.946	10.541	7.972	20.0	12.0	17.8	9.8	1.81	0.27	16.0	4.0	13.8
173	98.2	0.891	62.0	2.1	7.38	13.024	10.505	7.929	19.9	12.0	17.8	9.8	1.81	0.27	16.0	4.0	13.8
174	97.5	0.896	62.0	2.1	7.38	13.095	10.396	7.825	19.8	12.0	17.7	9.8	1.79	0.27	15.9	3.9	13.8
175	98.8	0.900	61.9	2.1	7.39	13.173	10.595	7.987	20.0	12.0	17.9	9.9	1.81	0.27	16.0	4.0	13.9
176	98.9	0.905	61.9	2.1	7.40	13.251	10.613	7.992	20.0	12.0	17.9	9.9	1.81	0.26	16.0	4.0	13.9
177	97.9	0.909	61.9	2.1	7.40	13.330	10.451	7.840	19.8	12.0	17.7	9.9	1.79	0.27	15.9	3.9	13.8
178	98.9	0.913	61.9	2.1	7.41	13.400	10.613	7.971	20.0	12.0	17.9	9.9	1.80	0.26	16.0	4.0	13.9
179	97.7	0.918	61.9	2.1	7.42	13.478	10.433	7.804	19.8	12.0	17.7	9.9	1.79	0.27	15.9	3.9	13.8
180	98.4	0.922	61.9	2.1	7.42	13.549	10.541	7.888	19.9	12.0	17.8	9.9	1.80	0.26	15.9	3.9	13.8
181	98.3	0.927	61.9	2.1	7.43	13.627	10.523	7.861	19.9	12.0	17.8	9.9	1.79	0.27	15.9	3.9	13.8
182	98.2	0.931	61.9	2.1	7.43	13.697	10.505	7.836	19.8	12.0	17.7	9.9	1.79	0.27	15.9	3.9	13.8
183	98.7	0.936	61.9	2.1	7.44	13.776	10.577	7.887	19.9	12.0	17.8	9.9	1.80	0.26	15.9	3.9	13.8

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
184	97.6	0.940	61.9	2.1	7.45	13.846	10.415	7.738	19.7	12.0	17.7	9.9	1.78	0.27	15.9	3.9	13.8
185	98.7	0.944	61.9	2.1	7.45	13.917	10.577	7.868	19.9	12.0	17.8	9.9	1.79	0.26	15.9	3.9	13.9
186	98.8	0.948	61.8	2.0	7.46	13.995	10.595	7.872	19.9	12.0	17.8	10.0	1.79	0.26	15.9	3.9	13.9
187	97.4	0.953	61.8	2.0	7.47	14.073	10.378	7.675	19.7	12.0	17.6	10.0	1.77	0.26	15.8	3.8	13.8
188	98.8	0.957	61.8	2.0	7.47	14.144	10.595	7.852	19.8	12.0	17.8	10.0	1.79	0.26	15.9	3.9	13.9
189	98.3	0.962	61.8	2.0	7.48	14.222	10.523	7.779	19.8	12.0	17.7	10.0	1.78	0.26	15.9	3.9	13.9
190	98.4	0.966	61.8	2.0	7.49	14.292	10.541	7.785	19.8	12.0	17.8	10.0	1.78	0.26	15.9	3.9	13.9
191	97.7	0.971	61.8	2.0	7.49	14.371	10.433	7.681	19.7	12.0	17.7	10.0	1.77	0.26	15.8	3.8	13.8
192	98.0	0.975	61.8	2.0	7.50	14.449	10.469	7.701	19.7	12.0	17.7	10.0	1.77	0.26	15.8	3.9	13.8
193	98.1	0.979	61.8	2.0	7.51	14.519	10.487	7.707	19.7	12.0	17.7	10.0	1.77	0.26	15.8	3.9	13.9
194	98.2	0.983	61.8	2.0	7.51	14.590	10.505	7.712	19.7	12.0	17.7	10.0	1.77	0.26	15.8	3.9	13.9
195	98.8	0.988	61.8	2.0	7.52	14.668	10.595	7.779	19.8	12.0	17.8	10.0	1.78	0.25	15.9	3.9	13.9
196	98.4	0.993	61.8	2.0	7.53	14.746	10.541	7.721	19.7	12.0	17.7	10.0	1.77	0.26	15.9	3.9	13.9
197	98.2	0.997	61.8	2.0	7.53	14.824	10.505	7.680	19.7	12.0	17.7	10.0	1.77	0.26	15.8	3.8	13.9
198	98.3	1.001	61.8	2.0	7.54	14.895	10.523	7.685	19.7	12.0	17.7	10.0	1.77	0.26	15.8	3.8	13.9
199	98.1	1.006	61.7	1.9	7.54	14.965	10.487	7.645	19.6	12.0	17.7	10.1	1.76	0.25	15.8	3.8	13.9
200	98.5	1.011	61.7	1.9	7.55	15.051	10.559	7.694	19.7	12.0	17.7	10.1	1.77	0.25	15.8	3.8	13.9
201	98.3	1.015	61.7	1.9	7.56	15.122	10.523	7.654	19.6	12.0	17.7	10.1	1.76	0.25	15.8	3.8	13.9
202	97.5	1.019	61.7	1.9	7.57	15.200	10.396	7.536	19.5	12.0	17.6	10.1	1.75	0.25	15.8	3.8	13.8
203	98.4	1.024	61.7	1.9	7.57	15.278	10.541	7.647	19.6	12.0	17.7	10.1	1.76	0.25	15.8	3.8	13.9
204	98.2	1.028	61.7	1.9	7.58	15.349	10.505	7.607	19.6	12.0	17.7	10.1	1.75	0.25	15.8	3.8	13.9
205	98.2	1.033	61.7	1.9	7.59	15.427	10.505	7.596	19.6	12.0	17.7	10.1	1.75	0.25	15.8	3.8	13.9
206	98.1	1.037	61.7	1.9	7.59	15.498	10.487	7.571	19.6	12.0	17.7	10.1	1.75	0.25	15.8	3.8	13.9
207	97.5	1.041	61.7	1.9	7.60	15.576	10.396	7.484	19.5	12.0	17.6	10.1	1.74	0.25	15.7	3.7	13.9
208	99.2	1.046	61.7	1.9	7.61	15.654	10.667	7.702	19.7	12.0	17.8	10.1	1.76	0.24	15.8	3.9	14.0
209	99.1	1.050	61.7	1.9	7.61	15.725	10.649	7.677	19.7	12.0	17.8	10.1	1.76	0.24	15.8	3.8	14.0
210	98.9	1.055	61.7	1.9	7.62	15.803	10.613	7.635	19.6	12.0	17.8	10.1	1.75	0.24	15.8	3.8	14.0
211	98.4	1.059	61.7	1.9	7.63	15.873	10.541	7.565	19.6	12.0	17.7	10.1	1.75	0.24	15.8	3.8	13.9
212	98.5	1.064	61.6	1.8	7.63	15.952	10.559	7.569	19.6	12.0	17.7	10.2	1.74	0.24	15.8	3.8	14.0
213	98.9	1.068	61.6	1.8	7.64	16.030	10.613	7.604	19.6	12.0	17.8	10.2	1.75	0.24	15.8	3.8	14.0
214	98.4	1.072	61.6	1.8	7.65	16.100	10.541	7.533	19.5	12.0	17.7	10.2	1.74	0.24	15.8	3.8	13.9
215	98.9	1.076	61.6	1.8	7.65	16.171	10.613	7.584	19.6	12.0	17.8	10.2	1.74	0.24	15.8	3.8	14.0
216	98.7	1.081	61.6	1.8	7.66	16.249	10.577	7.543	19.5	12.0	17.7	10.2	1.74	0.24	15.8	3.8	14.0
217	99.0	1.086	61.6	1.8	7.67	16.327	10.631	7.577	19.6	12.0	17.8	10.2	1.74	0.24	15.8	3.8	14.0
218	98.5	1.090	61.6	1.8	7.67	16.406	10.559	7.506	19.5	12.0	17.7	10.2	1.74	0.24	15.7	3.8	14.0
219	98.3	1.095	61.6	1.8	7.68	16.484	10.523	7.465	19.5	12.0	17.7	10.2	1.73	0.24	15.7	3.7	14.0
220	97.6	1.099	61.6	1.8	7.69	16.554	10.415	7.365	19.4	12.0	17.6	10.2	1.72	0.24	15.7	3.7	13.9
221	98.2	1.104	61.6	1.8	7.70	16.633	10.505	7.429	19.4	12.0	17.7	10.2	1.73	0.24	15.7	3.7	13.9
222	98.4	1.108	61.5	1.7	7.70	16.711	10.541	7.448	19.4	12.0	17.7	10.3	1.73	0.23	15.7	3.7	14.0
223	98.2	1.112	61.5	1.7	7.71	16.781	10.505	7.409	19.4	12.0	17.7	10.3	1.72	0.23	15.7	3.7	14.0
224	98.3	1.117	61.5	1.7	7.72	16.860	10.523	7.413	19.4	12.0	17.7	10.3	1.72	0.23	15.7	3.7	14.0

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
225	98.9	1.121	61.5	1.7	7.72	16.930	10.613	7.478	19.5	12.0	17.8	10.3	1.73	0.23	15.7	3.7	14.0
226	98.0	1.126	61.5	1.7	7.73	17.008	10.469	7.347	19.3	12.0	17.6	10.3	1.71	0.23	15.7	3.7	14.0
227	98.0	1.130	61.5	1.7	7.74	17.079	10.469	7.337	19.3	12.0	17.6	10.3	1.71	0.23	15.7	3.7	14.0
228	97.7	1.134	61.5	1.7	7.74	17.157	10.433	7.297	19.3	12.0	17.6	10.3	1.71	0.23	15.6	3.6	13.9
229	97.9	1.139	61.5	1.7	7.75	17.227	10.451	7.302	19.3	12.0	17.6	10.3	1.71	0.23	15.6	3.7	14.0
230	98.2	1.143	61.5	1.7	7.76	17.306	10.505	7.336	19.3	12.0	17.7	10.3	1.71	0.23	15.7	3.7	14.0
231	98.0	1.147	61.5	1.6	7.77	17.376	10.469	7.296	19.3	12.0	17.6	10.3	1.71	0.23	15.6	3.6	14.0
232	98.7	1.152	61.5	1.6	7.77	17.454	10.577	7.375	19.4	12.0	17.7	10.3	1.71	0.22	15.7	3.7	14.0
233	97.9	1.156	61.5	1.6	7.78	17.525	10.451	7.261	19.3	12.0	17.6	10.3	1.70	0.23	15.6	3.6	14.0
234	97.7	1.161	61.5	1.6	7.79	17.603	10.433	7.235	19.2	12.0	17.6	10.3	1.70	0.23	15.6	3.6	14.0
235	97.9	1.165	61.5	1.6	7.79	17.674	10.451	7.240	19.2	12.0	17.6	10.3	1.70	0.23	15.6	3.6	14.0
236	97.6	1.169	61.4	1.6	7.80	17.752	10.415	7.200	19.2	12.0	17.6	10.4	1.69	0.22	15.6	3.6	14.0
237	97.3	1.174	61.4	1.6	7.81	17.830	10.360	7.144	19.1	12.0	17.5	10.4	1.69	0.23	15.6	3.6	13.9
238	96.9	1.178	61.4	1.6	7.81	17.901	10.306	7.090	19.1	12.0	17.5	10.4	1.68	0.22	15.5	3.5	13.9
239	97.3	1.183	61.4	1.6	7.82	17.979	10.360	7.124	19.1	12.0	17.5	10.4	1.68	0.22	15.6	3.6	14.0
240	97.5	1.187	61.4	1.6	7.83	18.049	10.396	7.144	19.1	12.0	17.5	10.4	1.69	0.22	15.6	3.6	14.0
241	97.6	1.191	61.4	1.6	7.84	18.128	10.415	7.148	19.1	12.0	17.6	10.4	1.69	0.22	15.6	3.6	14.0
242	97.7	1.196	61.4	1.6	7.84	18.206	10.433	7.152	19.1	12.0	17.6	10.4	1.69	0.22	15.6	3.6	14.0
243	97.9	1.201	61.4	1.6	7.85	18.284	10.451	7.156	19.1	12.0	17.6	10.4	1.69	0.22	15.6	3.6	14.0
244	98.0	1.205	61.4	1.6	7.86	18.355	10.469	7.161	19.2	12.0	17.6	10.4	1.69	0.22	15.6	3.6	14.0
245	98.4	1.209	61.4	1.6	7.87	18.433	10.541	7.209	19.2	12.0	17.6	10.4	1.69	0.22	15.6	3.6	14.0
246	96.8	1.214	61.3	1.5	7.87	18.511	10.288	6.992	19.0	12.0	17.5	10.5	1.67	0.22	15.5	3.5	14.0
247	98.2	1.219	61.3	1.5	7.88	18.589	10.505	7.158	19.1	12.0	17.6	10.5	1.68	0.21	15.6	3.6	14.0
248	97.2	1.223	61.3	1.5	7.89	18.668	10.342	7.015	19.0	12.0	17.5	10.5	1.67	0.22	15.5	3.5	14.0
249	98.5	1.227	61.3	1.5	7.90	18.738	10.559	7.181	19.2	12.0	17.6	10.5	1.69	0.21	15.6	3.6	14.1
250	97.5	1.232	61.3	1.5	7.90	18.816	10.396	7.038	19.0	12.0	17.5	10.5	1.67	0.21	15.5	3.5	14.0
251	98.2	1.237	61.3	1.5	7.91	18.895	10.505	7.116	19.1	12.0	17.6	10.5	1.68	0.21	15.5	3.6	14.0
252	97.6	1.241	61.3	1.5	7.92	18.973	10.415	7.032	19.0	12.0	17.5	10.5	1.67	0.21	15.5	3.5	14.0
253	98.2	1.245	61.3	1.5	7.92	19.043	10.505	7.095	19.1	12.0	17.6	10.5	1.67	0.21	15.5	3.5	14.1
254	97.5	1.250	61.3	1.5	7.93	19.122	10.396	6.996	19.0	12.0	17.5	10.5	1.67	0.21	15.5	3.5	14.0
255	97.0	1.254	61.3	1.5	7.94	19.200	10.324	6.927	18.9	12.0	17.4	10.5	1.66	0.21	15.5	3.5	14.0
256	98.2	1.259	61.3	1.5	7.95	19.270	10.505	7.063	19.1	12.0	17.6	10.5	1.67	0.21	15.5	3.5	14.1
257	97.0	1.263	61.2	1.4	7.95	19.349	10.324	6.907	18.9	12.0	17.5	10.6	1.65	0.21	15.4	3.5	14.0
258	96.7	1.267	61.2	1.4	7.96	19.419	10.270	6.854	18.8	12.0	17.4	10.6	1.65	0.21	15.4	3.4	14.0
259	97.6	1.272	61.2	1.4	7.97	19.497	10.415	6.959	19.0	12.0	17.5	10.6	1.66	0.21	15.5	3.5	14.0
260	97.4	1.276	61.2	1.4	7.98	19.568	10.378	6.921	18.9	12.0	17.5	10.6	1.66	0.21	15.5	3.5	14.0
261	97.5	1.281	61.2	1.4	7.98	19.646	10.396	6.924	18.9	12.0	17.5	10.6	1.65	0.20	15.5	3.5	14.0
262	97.5	1.285	61.2	1.4	7.99	19.716	10.396	6.915	18.9	12.0	17.5	10.6	1.65	0.20	15.4	3.5	14.0
263	97.5	1.289	61.2	1.4	8.00	19.795	10.396	6.904	18.9	12.0	17.5	10.6	1.65	0.20	15.4	3.5	14.0
264	96.3	1.294	61.2	1.4	8.01	19.865	10.216	6.750	18.7	12.0	17.3	10.6	1.64	0.21	15.4	3.4	14.0
265	97.5	1.298	61.2	1.4	8.01	19.943	10.396	6.883	18.9	12.0	17.5	10.6	1.65	0.21	15.4	3.4	14.0

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
266	97.2	1.302	61.2	1.4	8.02	20.006	10.342	6.832	18.8	12.0	17.4	10.6	1.65	0.21	15.4	3.4	14.0

Specimen C Shear Data

CU Triaxial Test

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File Location
T-5771.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5771
Sample Location: Guilford County (Sta. 404+50)
Sample Description: Tan colored clay
Remarks: 30° shear plane with slicken side

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.697
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.876	2.805	
Height (in)	6.090	6.082	
Weight (grams)	1141.00		1191.00
Moisture (%)	35.03		40.95
Dry Density (pcf)	81.38	85.65	
Saturation (%)	88.39	100.00	
Void Ratio	1.063	0.966	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 83.800
Effective Confining Stress (psi): 24.0
Corrected Peak Deviator Stress (psi): 44.241 at reading number: 119

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	28.5	0.038	59.8	0.0	6.18	0.000	0.000	0.000	24.0	24.0	24.0	24.0	1.00	0.00	24.0	0.0	24.0
1	55.6	0.042	61.2	1.5	6.18	0.066	4.377	4.349	28.4	24.0	26.9	22.6	1.19	0.34	26.2	2.2	24.7
2	67.6	0.046	62.1	2.4	6.19	0.132	6.315	6.255	30.3	24.0	27.9	21.7	1.29	0.38	27.2	3.1	24.8
3	71.3	0.050	62.4	2.7	6.19	0.207	6.911	6.815	30.9	24.0	28.2	21.4	1.32	0.39	27.4	3.4	24.8
4	81.4	0.055	63.2	3.5	6.20	0.283	8.550	8.415	32.5	24.0	29.0	20.6	1.41	0.41	28.2	4.2	24.8
5	89.4	0.059	64.0	4.2	6.20	0.349	9.854	9.683	33.7	24.0	29.5	19.8	1.49	0.43	28.9	4.8	24.7
6	96.0	0.063	64.6	4.8	6.21	0.415	10.916	10.708	34.7	24.0	29.9	19.2	1.56	0.45	29.4	5.4	24.5
7	101.2	0.067	65.1	5.4	6.21	0.472	11.754	11.514	35.6	24.0	30.2	18.7	1.62	0.47	29.8	5.8	24.4
8	105.2	0.069	65.6	5.8	6.21	0.509	12.406	12.143	36.2	24.0	30.4	18.2	1.67	0.48	30.1	6.1	24.3
9	108.1	0.070	65.9	6.1	6.21	0.528	12.872	12.597	36.6	24.0	30.5	17.9	1.70	0.48	30.3	6.3	24.2
10	113.5	0.073	66.0	6.3	6.22	0.575	13.747	13.442	37.5	24.0	31.2	17.8	1.76	0.47	30.8	6.7	24.5
11	116.9	0.077	66.0	6.3	6.22	0.641	14.306	13.963	38.0	24.0	31.8	17.8	1.78	0.45	31.0	7.0	24.8
12	117.6	0.079	66.0	6.3	6.22	0.670	14.418	14.059	38.1	24.0	31.8	17.8	1.79	0.44	31.1	7.0	24.8
13	117.8	0.081	66.1	6.3	6.22	0.707	14.436	14.057	38.1	24.0	31.8	17.7	1.79	0.45	31.1	7.0	24.7
14	119.0	0.083	66.3	6.5	6.23	0.745	14.641	14.240	38.3	24.0	31.8	17.5	1.81	0.46	31.2	7.1	24.7
15	121.2	0.085	66.5	6.7	6.23	0.773	14.995	14.576	38.6	24.0	31.9	17.3	1.84	0.46	31.3	7.3	24.6
16	126.5	0.089	66.9	7.1	6.23	0.839	15.852	15.390	39.4	24.0	32.3	16.9	1.91	0.46	31.7	7.7	24.6
17	131.5	0.092	67.2	7.4	6.23	0.887	16.653	16.158	40.2	24.0	32.8	16.6	1.97	0.46	32.1	8.1	24.7
18	136.4	0.095	67.5	7.7	6.24	0.943	17.454	16.920	41.0	24.0	33.3	16.3	2.04	0.45	32.5	8.5	24.8

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	141.2	0.099	67.5	7.7	6.24	1.000	18.236	17.662	41.7	24.0	34.0	16.3	2.08	0.44	32.9	8.8	25.1
20	146.4	0.102	67.5	7.7	6.25	1.056	19.075	18.459	42.5	24.0	34.8	16.3	2.13	0.42	33.3	9.2	25.6
21	149.4	0.106	67.5	7.8	6.25	1.113	19.559	18.905	42.9	24.0	35.2	16.3	2.16	0.41	33.5	9.5	25.7
22	156.1	0.110	67.7	8.0	6.25	1.179	20.639	19.934	44.0	24.0	36.0	16.1	2.24	0.40	34.0	10.0	26.0
23	161.5	0.114	67.9	8.1	6.26	1.245	21.515	20.759	44.8	24.0	36.7	15.9	2.31	0.39	34.4	10.4	26.3
24	166.7	0.118	68.2	8.4	6.26	1.311	22.353	21.546	45.6	24.0	37.2	15.6	2.38	0.39	34.8	10.8	26.4
25	171.9	0.122	68.5	8.7	6.27	1.377	23.191	22.332	46.4	24.0	37.6	15.3	2.46	0.39	35.2	11.2	26.5
26	176.5	0.126	68.7	9.0	6.27	1.452	23.936	23.019	47.1	24.0	38.1	15.1	2.53	0.39	35.6	11.5	26.6
27	181.8	0.130	68.9	9.1	6.27	1.518	24.793	23.821	47.9	24.0	38.7	14.9	2.60	0.38	36.0	11.9	26.8
28	186.8	0.135	68.8	9.1	6.28	1.594	25.613	24.580	48.6	24.0	39.6	15.0	2.64	0.37	36.3	12.3	27.3
29	191.7	0.139	68.7	8.9	6.28	1.660	26.395	25.306	49.3	24.0	40.4	15.1	2.67	0.35	36.7	12.7	27.8
30	196.1	0.143	68.7	8.9	6.29	1.726	27.122	25.977	50.0	24.0	41.1	15.1	2.72	0.34	37.0	13.0	28.1
31	200.7	0.147	68.8	9.0	6.29	1.801	27.867	26.659	50.7	24.0	41.7	15.0	2.77	0.34	37.4	13.3	28.4
32	204.9	0.151	68.9	9.1	6.30	1.867	28.538	27.272	51.3	24.0	42.2	14.9	2.83	0.34	37.7	13.6	28.5
33	209.0	0.156	69.0	9.3	6.30	1.943	29.208	27.879	51.9	24.0	42.7	14.8	2.89	0.33	38.0	13.9	28.7
34	213.2	0.161	69.1	9.3	6.31	2.018	29.879	28.491	52.5	24.0	43.2	14.7	2.94	0.33	38.3	14.2	28.9
35	217.7	0.165	69.2	9.5	6.31	2.094	30.605	29.180	53.2	24.0	43.8	14.6	3.00	0.32	38.6	14.6	29.2
36	221.6	0.170	69.3	9.5	6.32	2.169	31.239	29.777	53.8	24.0	44.3	14.5	3.05	0.32	38.9	14.9	29.4
37	225.4	0.174	69.0	9.3	6.32	2.245	31.853	30.354	54.4	24.0	45.1	14.8	3.05	0.31	39.2	15.2	30.0
38	229.1	0.179	68.8	9.1	6.33	2.320	32.449	30.912	55.0	24.0	45.9	15.0	3.06	0.29	39.5	15.5	30.4
39	232.4	0.184	68.8	9.0	6.33	2.405	32.990	31.412	55.5	24.0	46.4	15.0	3.09	0.29	39.7	15.7	30.7
40	235.6	0.189	68.8	9.0	6.34	2.480	33.511	31.896	55.9	24.0	46.9	15.0	3.12	0.28	40.0	15.9	31.0
41	238.6	0.194	68.8	9.0	6.34	2.565	33.995	32.339	56.4	24.0	47.4	15.0	3.15	0.28	40.2	16.2	31.2
42	241.5	0.199	68.8	9.0	6.35	2.650	34.461	32.764	56.8	24.0	47.8	15.0	3.18	0.28	40.4	16.4	31.4
43	244.7	0.204	68.9	9.1	6.35	2.726	34.983	33.245	57.3	24.0	48.1	14.9	3.23	0.27	40.7	16.6	31.5
44	242.5	0.206	69.0	9.3	6.36	2.763	34.629	32.888	56.9	24.0	47.7	14.8	3.22	0.28	40.5	16.4	31.2
45	241.8	0.206	69.1	9.3	6.36	2.773	34.517	32.776	56.8	24.0	47.5	14.7	3.22	0.28	40.4	16.4	31.1
46	241.5	0.208	68.9	9.1	6.36	2.792	34.461	32.715	56.8	24.0	47.6	14.9	3.20	0.28	40.4	16.4	31.3
47	241.6	0.209	68.7	8.9	6.36	2.810	34.480	32.726	56.8	24.0	47.8	15.1	3.17	0.27	40.4	16.4	31.5
48	243.1	0.210	68.7	8.9	6.36	2.829	34.722	32.955	57.0	24.0	48.1	15.1	3.18	0.27	40.5	16.5	31.6
49	245.2	0.212	68.7	8.9	6.36	2.867	35.057	33.268	57.3	24.0	48.4	15.1	3.20	0.27	40.7	16.6	31.7
50	247.0	0.215	68.7	8.9	6.36	2.905	35.355	33.544	57.6	24.0	48.6	15.1	3.22	0.27	40.8	16.8	31.9
51	248.9	0.217	68.7	8.9	6.37	2.942	35.653	33.820	57.9	24.0	49.0	15.1	3.23	0.26	41.0	16.9	32.1
52	251.7	0.220	68.7	9.0	6.37	2.990	36.119	34.255	58.3	24.0	49.3	15.1	3.27	0.26	41.2	17.1	32.2
53	254.6	0.224	68.9	9.1	6.37	3.065	36.585	34.679	58.7	24.0	49.6	14.9	3.32	0.26	41.4	17.3	32.3
54	257.5	0.229	68.8	9.1	6.38	3.140	37.050	35.102	59.1	24.0	50.1	15.0	3.34	0.26	41.6	17.6	32.5
55	259.8	0.233	68.6	8.8	6.38	3.207	37.423	35.439	59.5	24.0	50.7	15.2	3.33	0.25	41.8	17.7	32.9
56	262.0	0.237	68.4	8.6	6.39	3.282	37.777	35.753	59.8	24.0	51.2	15.4	3.32	0.24	41.9	17.9	33.3
57	264.6	0.241	68.3	8.6	6.39	3.348	38.205	36.142	60.2	24.0	51.6	15.5	3.34	0.24	42.1	18.1	33.5
58	267.3	0.246	68.3	8.5	6.40	3.423	38.634	36.527	60.6	24.0	52.0	15.5	3.36	0.23	42.3	18.3	33.8
59	269.1	0.251	68.3	8.5	6.40	3.499	38.932	36.785	60.8	24.0	52.3	15.5	3.37	0.23	42.4	18.4	33.9

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	270.8	0.256	68.2	8.5	6.41	3.584	39.211	37.022	61.1	24.0	52.6	15.6	3.38	0.23	42.6	18.5	34.1
61	272.7	0.260	68.2	8.4	6.41	3.650	39.509	37.283	61.3	24.0	52.9	15.6	3.39	0.23	42.7	18.6	34.3
62	274.5	0.264	68.2	8.5	6.42	3.725	39.807	37.540	61.6	24.0	53.1	15.6	3.41	0.23	42.8	18.8	34.4
63	276.6	0.268	68.2	8.5	6.42	3.791	40.143	37.836	61.9	24.0	53.4	15.6	3.43	0.22	43.0	18.9	34.5
64	277.9	0.272	68.0	8.2	6.43	3.857	40.347	38.007	62.0	24.0	53.8	15.8	3.40	0.22	43.0	19.0	34.8
65	280.2	0.276	67.9	8.1	6.43	3.923	40.720	38.338	62.4	24.0	54.3	15.9	3.40	0.21	43.2	19.2	35.1
66	282.5	0.281	67.9	8.1	6.44	3.999	41.093	38.665	62.7	24.0	54.6	15.9	3.43	0.21	43.4	19.3	35.3
67	284.4	0.285	67.8	8.1	6.44	4.065	41.409	38.942	63.0	24.0	54.9	16.0	3.44	0.21	43.5	19.5	35.5
68	286.4	0.289	67.7	8.0	6.45	4.131	41.726	39.218	63.3	24.0	55.3	16.1	3.44	0.20	43.6	19.6	35.7
69	288.5	0.294	67.7	7.9	6.45	4.206	42.061	39.508	63.5	24.0	55.6	16.1	3.45	0.20	43.8	19.8	35.9
70	290.3	0.298	67.7	7.9	6.46	4.272	42.359	39.765	63.8	24.0	55.9	16.1	3.46	0.20	43.9	19.9	36.0
71	291.9	0.302	67.6	7.9	6.46	4.348	42.620	39.983	64.0	24.0	56.2	16.2	3.47	0.20	44.0	20.0	36.2
72	293.4	0.306	67.5	7.8	6.46	4.414	42.862	40.186	64.2	24.0	56.5	16.3	3.47	0.19	44.1	20.1	36.4
73	295.0	0.311	67.4	7.7	6.47	4.489	43.123	40.403	64.4	24.0	56.8	16.4	3.47	0.19	44.2	20.2	36.6
74	296.6	0.315	67.4	7.6	6.47	4.555	43.384	40.623	64.7	24.0	57.0	16.4	3.47	0.19	44.4	20.3	36.7
75	298.0	0.319	67.3	7.6	6.48	4.631	43.607	40.804	64.8	24.0	57.3	16.5	3.48	0.19	44.4	20.4	36.9
76	299.3	0.323	67.3	7.5	6.48	4.697	43.812	40.970	65.0	24.0	57.5	16.5	3.48	0.18	44.5	20.5	37.0
77	300.7	0.328	67.3	7.5	6.49	4.772	44.036	41.150	65.2	24.0	57.7	16.5	3.49	0.18	44.6	20.6	37.1
78	301.9	0.333	67.2	7.4	6.49	4.847	44.241	41.312	65.4	24.0	57.9	16.6	3.48	0.18	44.7	20.7	37.3
79	302.8	0.337	67.1	7.4	6.50	4.923	44.390	41.420	65.5	24.0	58.1	16.7	3.49	0.18	44.8	20.7	37.4
80	303.4	0.342	67.1	7.3	6.50	4.998	44.483	41.475	65.5	24.0	58.2	16.7	3.48	0.18	44.8	20.7	37.4
81	304.8	0.347	67.1	7.3	6.51	5.083	44.706	41.649	65.7	24.0	58.4	16.7	3.49	0.18	44.9	20.8	37.6
82	305.8	0.352	66.9	7.2	6.52	5.159	44.874	41.775	65.8	24.0	58.6	16.9	3.48	0.17	44.9	20.9	37.8
83	306.8	0.356	66.9	7.1	6.52	5.234	45.023	41.882	65.9	24.0	58.8	16.9	3.47	0.17	45.0	20.9	37.9
84	308.0	0.361	66.8	7.1	6.53	5.310	45.228	42.042	66.1	24.0	59.0	17.0	3.48	0.17	45.1	21.0	38.0
85	308.9	0.366	66.8	7.0	6.53	5.394	45.377	42.145	66.2	24.0	59.2	17.0	3.48	0.17	45.1	21.1	38.1
86	309.2	0.371	66.7	7.0	6.54	5.479	45.414	42.141	66.2	24.0	59.2	17.1	3.47	0.17	45.1	21.1	38.1
87	309.6	0.376	66.7	6.9	6.54	5.555	45.489	42.178	66.2	24.0	59.3	17.1	3.47	0.16	45.1	21.1	38.2
88	310.3	0.380	66.7	6.9	6.55	5.630	45.600	42.249	66.3	24.0	59.4	17.1	3.46	0.16	45.2	21.1	38.3
89	311.1	0.385	66.6	6.9	6.55	5.706	45.731	42.337	66.4	24.0	59.5	17.2	3.46	0.16	45.2	21.2	38.4
90	312.3	0.389	66.6	6.8	6.56	5.781	45.917	42.478	66.5	24.0	59.7	17.2	3.47	0.16	45.3	21.2	38.5
91	312.9	0.394	66.5	6.7	6.56	5.857	46.010	42.531	66.6	24.0	59.9	17.3	3.45	0.16	45.3	21.3	38.6
92	313.8	0.399	66.4	6.7	6.57	5.932	46.159	42.637	66.7	24.0	60.0	17.4	3.45	0.16	45.4	21.3	38.7
93	314.4	0.403	66.4	6.6	6.57	5.998	46.252	42.694	66.7	24.0	60.1	17.4	3.45	0.15	45.4	21.3	38.8
94	314.9	0.407	66.3	6.6	6.58	6.073	46.346	42.746	66.8	24.0	60.2	17.5	3.45	0.15	45.4	21.4	38.8
95	315.5	0.412	66.3	6.5	6.58	6.149	46.439	42.799	66.8	24.0	60.3	17.5	3.44	0.15	45.4	21.4	38.9
96	316.3	0.416	66.3	6.5	6.59	6.224	46.569	42.886	66.9	24.0	60.4	17.5	3.45	0.15	45.5	21.4	39.0
97	317.6	0.421	66.3	6.5	6.59	6.300	46.774	43.043	67.1	24.0	60.6	17.5	3.45	0.15	45.6	21.5	39.1
98	318.2	0.426	66.2	6.5	6.60	6.375	46.867	43.095	67.1	24.0	60.7	17.6	3.45	0.15	45.6	21.5	39.1
99	318.6	0.430	66.1	6.4	6.61	6.451	46.942	43.129	67.2	24.0	60.8	17.7	3.44	0.15	45.6	21.6	39.2
100	319.5	0.435	66.1	6.3	6.61	6.526	47.091	43.233	67.3	24.0	61.0	17.7	3.44	0.15	45.7	21.6	39.4

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	320.1	0.439	66.0	6.3	6.62	6.602	47.184	43.285	67.3	24.0	61.1	17.8	3.43	0.14	45.7	21.6	39.4
102	320.1	0.443	66.0	6.2	6.62	6.668	47.184	43.253	67.3	24.0	61.1	17.8	3.43	0.14	45.7	21.6	39.5
103	320.3	0.449	65.9	6.2	6.63	6.753	47.221	43.248	67.3	24.0	61.1	17.9	3.42	0.14	45.7	21.6	39.5
104	320.6	0.453	65.9	6.2	6.63	6.828	47.258	43.247	67.3	24.0	61.1	17.9	3.42	0.14	45.7	21.6	39.5
105	321.0	0.458	65.9	6.1	6.64	6.903	47.333	43.281	67.3	24.0	61.2	17.9	3.42	0.14	45.7	21.6	39.5
106	322.1	0.462	65.9	6.1	6.64	6.969	47.500	43.406	67.4	24.0	61.4	17.9	3.42	0.14	45.7	21.7	39.7
107	322.9	0.466	65.8	6.1	6.65	7.045	47.631	43.491	67.5	24.0	61.5	18.0	3.42	0.14	45.8	21.7	39.7
108	324.0	0.470	65.8	6.0	6.65	7.111	47.817	43.633	67.7	24.0	61.7	18.0	3.42	0.14	45.9	21.8	39.8
109	324.4	0.475	65.7	5.9	6.66	7.186	47.873	43.648	67.7	24.0	61.8	18.1	3.41	0.14	45.9	21.8	39.9
110	324.8	0.479	65.6	5.9	6.66	7.252	47.947	43.686	67.7	24.0	61.9	18.2	3.40	0.13	45.9	21.8	40.0
111	325.2	0.483	65.6	5.8	6.67	7.318	48.003	43.706	67.7	24.0	61.9	18.2	3.40	0.13	45.9	21.9	40.1
112	326.3	0.488	65.6	5.8	6.67	7.394	48.190	43.842	67.9	24.0	62.1	18.2	3.41	0.13	46.0	21.9	40.1
113	327.1	0.492	65.5	5.8	6.68	7.460	48.320	43.931	68.0	24.0	62.2	18.3	3.40	0.13	46.0	22.0	40.2
114	327.9	0.496	65.5	5.7	6.68	7.526	48.450	44.020	68.1	24.0	62.3	18.3	3.40	0.13	46.1	22.0	40.3
115	328.7	0.500	65.5	5.7	6.69	7.601	48.581	44.104	68.1	24.0	62.4	18.3	3.41	0.13	46.1	22.1	40.4
116	329.6	0.505	65.5	5.7	6.69	7.677	48.711	44.187	68.2	24.0	62.5	18.3	3.41	0.13	46.1	22.1	40.4
117	329.6	0.509	65.4	5.7	6.70	7.743	48.711	44.155	68.2	24.0	62.5	18.4	3.40	0.13	46.1	22.1	40.5
118	329.4	0.513	65.3	5.5	6.70	7.809	48.693	44.106	68.1	24.0	62.6	18.5	3.38	0.13	46.1	22.1	40.6
119	330.6	0.517	65.3	5.5	6.71	7.884	48.879	44.241	68.3	24.0	62.8	18.5	3.39	0.12	46.2	22.1	40.7
120	330.2	0.522	65.3	5.5	6.71	7.960	48.823	44.153	68.2	24.0	62.7	18.5	3.38	0.12	46.1	22.1	40.6
121	330.2	0.527	65.2	5.5	6.72	8.035	48.823	44.116	68.2	24.0	62.7	18.6	3.37	0.12	46.1	22.1	40.6
122	330.7	0.531	65.2	5.4	6.72	8.111	48.898	44.147	68.2	24.0	62.8	18.6	3.37	0.12	46.1	22.1	40.7
123	331.2	0.536	65.2	5.4	6.73	8.186	48.972	44.179	68.2	24.0	62.8	18.6	3.37	0.12	46.1	22.1	40.7
124	331.6	0.540	65.2	5.4	6.74	8.261	49.047	44.210	68.3	24.0	62.8	18.6	3.37	0.12	46.1	22.1	40.7
125	331.3	0.545	65.1	5.4	6.74	8.337	48.991	44.122	68.2	24.0	62.8	18.7	3.36	0.12	46.1	22.1	40.7
126	330.8	0.550	65.1	5.3	6.75	8.422	48.916	44.012	68.1	24.0	62.7	18.7	3.35	0.12	46.0	22.0	40.7
127	330.9	0.555	65.0	5.3	6.75	8.497	48.935	43.992	68.0	24.0	62.8	18.8	3.34	0.12	46.0	22.0	40.8
128	330.7	0.560	64.9	5.2	6.76	8.582	48.898	43.917	68.0	24.0	62.8	18.9	3.33	0.12	46.0	22.0	40.8
129	330.4	0.565	64.9	5.2	6.77	8.667	48.842	43.824	67.9	24.0	62.7	18.9	3.32	0.12	46.0	21.9	40.8
130	330.2	0.570	64.9	5.1	6.77	8.742	48.823	43.770	67.8	24.0	62.7	18.9	3.31	0.12	45.9	21.9	40.8
131	330.4	0.575	64.9	5.1	6.78	8.827	48.842	43.746	67.8	24.0	62.7	18.9	3.31	0.12	45.9	21.9	40.8
132	330.4	0.579	64.9	5.1	6.78	8.893	48.842	43.714	67.8	24.0	62.6	18.9	3.31	0.12	45.9	21.9	40.8
133	330.4	0.583	64.8	5.1	6.79	8.969	48.842	43.677	67.7	24.0	62.6	19.0	3.30	0.12	45.9	21.8	40.8
134	330.0	0.588	64.8	5.1	6.79	9.044	48.786	43.589	67.6	24.0	62.5	19.0	3.30	0.12	45.8	21.8	40.7
135	330.5	0.592	64.8	5.1	6.80	9.120	48.860	43.620	67.7	24.0	62.6	19.0	3.30	0.12	45.9	21.8	40.8
136	330.5	0.597	64.8	5.0	6.81	9.195	48.860	43.583	67.6	24.0	62.6	19.0	3.29	0.11	45.8	21.8	40.8
137	330.0	0.602	64.7	4.9	6.81	9.271	48.786	43.479	67.5	24.0	62.6	19.1	3.28	0.11	45.8	21.7	40.8
138	330.1	0.606	64.7	4.9	6.82	9.346	48.804	43.459	67.5	24.0	62.6	19.1	3.27	0.11	45.8	21.7	40.8
139	330.7	0.611	64.7	4.9	6.82	9.421	48.898	43.506	67.5	24.0	62.6	19.1	3.28	0.11	45.8	21.8	40.9
140	331.3	0.615	64.7	4.9	6.83	9.487	48.991	43.558	67.6	24.0	62.7	19.1	3.28	0.11	45.8	21.8	40.9
141	331.3	0.620	64.6	4.9	6.83	9.572	48.991	43.517	67.6	24.0	62.7	19.2	3.27	0.11	45.8	21.8	40.9

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	330.6	0.624	64.6	4.9	6.84	9.638	48.879	43.383	67.4	24.0	62.5	19.2	3.27	0.11	45.7	21.7	40.8
143	330.8	0.629	64.6	4.9	6.84	9.714	48.916	43.380	67.4	24.0	62.5	19.2	3.27	0.11	45.7	21.7	40.8
144	330.5	0.633	64.6	4.8	6.85	9.789	48.860	43.293	67.3	24.0	62.5	19.2	3.26	0.11	45.7	21.6	40.8
145	330.0	0.638	64.5	4.8	6.86	9.865	48.786	43.189	67.2	24.0	62.5	19.3	3.24	0.11	45.6	21.6	40.9
146	329.8	0.642	64.5	4.7	6.86	9.931	48.748	43.123	67.2	24.0	62.4	19.3	3.23	0.11	45.6	21.6	40.9
147	329.4	0.647	64.5	4.7	6.87	10.016	48.693	43.031	67.1	24.0	62.3	19.3	3.23	0.11	45.6	21.5	40.8
148	328.5	0.652	64.5	4.7	6.87	10.091	48.544	42.861	66.9	24.0	62.2	19.3	3.22	0.11	45.5	21.4	40.7
149	328.3	0.656	64.5	4.7	6.88	10.157	48.506	42.795	66.8	24.0	62.1	19.3	3.22	0.11	45.4	21.4	40.7
150	328.5	0.660	64.5	4.7	6.88	10.223	48.544	42.797	66.8	24.0	62.1	19.3	3.22	0.11	45.4	21.4	40.7
151	328.4	0.664	64.5	4.7	6.89	10.299	48.525	42.743	66.8	24.0	62.1	19.3	3.21	0.11	45.4	21.4	40.7
152	328.7	0.668	64.5	4.7	6.89	10.365	48.581	42.761	66.8	24.0	62.1	19.3	3.21	0.11	45.4	21.4	40.7
153	328.4	0.672	64.5	4.7	6.90	10.431	48.525	42.679	66.7	24.0	62.0	19.3	3.21	0.11	45.4	21.3	40.7
154	328.9	0.676	64.4	4.7	6.90	10.497	48.599	42.714	66.8	24.0	62.1	19.4	3.21	0.11	45.4	21.4	40.7
155	328.9	0.681	64.4	4.6	6.91	10.572	48.599	42.677	66.7	24.0	62.1	19.4	3.20	0.11	45.4	21.3	40.8
156	328.7	0.685	64.4	4.6	6.92	10.638	48.581	42.628	66.7	24.0	62.1	19.4	3.19	0.11	45.4	21.3	40.7
157	328.6	0.689	64.4	4.6	6.92	10.714	48.562	42.575	66.6	24.0	62.0	19.4	3.19	0.11	45.3	21.3	40.7
158	328.6	0.693	64.4	4.6	6.93	10.780	48.562	42.543	66.6	24.0	62.0	19.4	3.19	0.11	45.3	21.3	40.7
159	328.3	0.698	64.4	4.6	6.93	10.855	48.506	42.457	66.5	24.0	61.8	19.4	3.19	0.11	45.3	21.2	40.6
160	327.8	0.702	64.4	4.6	6.94	10.921	48.432	42.358	66.4	24.0	61.7	19.4	3.18	0.11	45.2	21.2	40.6
161	327.4	0.707	64.4	4.6	6.94	10.996	48.357	42.255	66.3	24.0	61.6	19.4	3.18	0.11	45.2	21.1	40.5
162	326.9	0.711	64.4	4.6	6.95	11.072	48.283	42.153	66.2	24.0	61.5	19.4	3.17	0.11	45.1	21.1	40.5
163	326.7	0.716	64.4	4.6	6.95	11.147	48.246	42.083	66.1	24.0	61.5	19.4	3.17	0.11	45.1	21.0	40.5
164	325.4	0.720	64.3	4.6	6.96	11.213	48.041	41.869	65.9	24.0	61.3	19.5	3.15	0.11	45.0	20.9	40.4
165	324.8	0.725	64.3	4.6	6.97	11.298	47.947	41.746	65.8	24.0	61.2	19.5	3.14	0.11	44.9	20.9	40.3
166	324.6	0.730	64.4	4.6	6.97	11.374	47.910	41.677	65.7	24.0	61.1	19.4	3.14	0.11	44.9	20.8	40.3
167	323.3	0.734	64.4	4.6	6.98	11.449	47.705	41.459	65.5	24.0	60.9	19.4	3.13	0.11	44.8	20.7	40.2
168	322.5	0.739	64.4	4.6	6.98	11.525	47.575	41.308	65.3	24.0	60.7	19.4	3.13	0.11	44.7	20.7	40.1
169	322.1	0.743	64.4	4.6	6.99	11.600	47.500	41.206	65.2	24.0	60.6	19.4	3.12	0.11	44.6	20.6	40.0
170	321.6	0.748	64.4	4.6	7.00	11.685	47.426	41.100	65.1	24.0	60.5	19.4	3.12	0.11	44.6	20.5	39.9
171	320.7	0.754	64.4	4.7	7.00	11.770	47.277	40.928	65.0	24.0	60.3	19.4	3.12	0.11	44.5	20.5	39.8
172	319.4	0.759	64.4	4.6	7.01	11.855	47.072	40.707	64.7	24.0	60.1	19.4	3.10	0.11	44.4	20.4	39.7
173	318.5	0.763	64.4	4.6	7.02	11.930	46.923	40.541	64.6	24.0	60.0	19.4	3.09	0.11	44.3	20.3	39.7
174	317.7	0.768	64.4	4.6	7.02	12.006	46.793	40.391	64.4	24.0	59.8	19.4	3.08	0.11	44.2	20.2	39.6
175	316.4	0.773	64.4	4.6	7.03	12.081	46.588	40.175	64.2	24.0	59.6	19.4	3.07	0.12	44.1	20.1	39.5
176	315.5	0.777	64.4	4.7	7.03	12.156	46.439	40.009	64.0	24.0	59.4	19.4	3.07	0.12	44.0	20.0	39.4
177	314.8	0.781	64.4	4.7	7.04	12.222	46.327	39.880	63.9	24.0	59.2	19.4	3.06	0.12	44.0	19.9	39.3
178	314.4	0.786	64.4	4.7	7.05	12.298	46.252	39.780	63.8	24.0	59.1	19.4	3.06	0.12	43.9	19.9	39.2
179	313.7	0.790	64.5	4.7	7.05	12.373	46.141	39.647	63.7	24.0	59.0	19.3	3.05	0.12	43.9	19.8	39.1
180	313.0	0.795	64.5	4.7	7.06	12.449	46.029	39.514	63.6	24.0	58.8	19.3	3.05	0.12	43.8	19.8	39.1
181	312.6	0.800	64.5	4.7	7.06	12.524	45.973	39.431	63.5	24.0	58.7	19.3	3.04	0.12	43.8	19.7	39.0
182	311.8	0.804	64.4	4.7	7.07	12.590	45.843	39.287	63.3	24.0	58.6	19.4	3.03	0.12	43.7	19.6	39.0

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	310.9	0.808	64.4	4.7	7.08	12.666	45.694	39.122	63.2	24.0	58.5	19.4	3.02	0.12	43.6	19.6	38.9
184	310.3	0.813	64.4	4.7	7.08	12.741	45.600	39.006	63.0	24.0	58.4	19.4	3.02	0.12	43.5	19.5	38.9
185	310.0	0.817	64.5	4.7	7.09	12.817	45.545	38.923	63.0	24.0	58.2	19.3	3.02	0.12	43.5	19.5	38.8
186	309.8	0.821	64.5	4.7	7.09	12.883	45.507	38.860	62.9	24.0	58.2	19.3	3.01	0.12	43.5	19.4	38.7
187	309.1	0.826	64.5	4.7	7.10	12.958	45.396	38.729	62.8	24.0	58.0	19.3	3.01	0.12	43.4	19.4	38.7
188	308.5	0.831	64.5	4.7	7.11	13.034	45.302	38.614	62.7	24.0	57.9	19.3	3.00	0.12	43.3	19.3	38.6
189	308.3	0.835	64.5	4.8	7.11	13.109	45.265	38.547	62.6	24.0	57.8	19.3	3.00	0.12	43.3	19.3	38.5
190	307.2	0.840	64.5	4.7	7.12	13.184	45.097	38.367	62.4	24.0	57.7	19.3	2.99	0.12	43.2	19.2	38.5
191	306.6	0.844	64.4	4.7	7.12	13.260	45.004	38.253	62.3	24.0	57.6	19.4	2.98	0.12	43.2	19.1	38.5
192	305.8	0.849	64.4	4.7	7.13	13.335	44.874	38.106	62.1	24.0	57.5	19.4	2.97	0.12	43.1	19.1	38.4
193	305.7	0.853	64.4	4.7	7.14	13.401	44.855	38.060	62.1	24.0	57.4	19.4	2.97	0.12	43.1	19.0	38.4
194	305.6	0.857	64.4	4.7	7.14	13.477	44.837	38.010	62.1	24.0	57.4	19.4	2.96	0.12	43.0	19.0	38.4
195	305.2	0.861	64.4	4.7	7.15	13.543	44.762	37.916	62.0	24.0	57.3	19.4	2.96	0.12	43.0	19.0	38.3
196	304.7	0.866	64.5	4.7	7.15	13.618	44.688	37.818	61.9	24.0	57.1	19.3	2.96	0.13	42.9	18.9	38.2
197	304.8	0.870	64.5	4.7	7.16	13.684	44.706	37.804	61.8	24.0	57.1	19.3	2.96	0.13	42.9	18.9	38.2
198	303.9	0.874	64.5	4.7	7.16	13.750	44.557	37.646	61.7	24.0	57.0	19.3	2.95	0.13	42.9	18.8	38.1
199	303.3	0.879	64.4	4.7	7.17	13.826	44.464	37.532	61.6	24.0	56.9	19.4	2.94	0.12	42.8	18.8	38.1
200	303.0	0.883	64.4	4.6	7.18	13.892	44.408	37.455	61.5	24.0	56.8	19.4	2.93	0.12	42.8	18.7	38.1
201	302.6	0.887	64.4	4.6	7.18	13.967	44.352	37.373	61.4	24.0	56.8	19.4	2.92	0.12	42.7	18.7	38.1
202	301.7	0.891	64.4	4.6	7.19	14.033	44.203	37.216	61.3	24.0	56.6	19.4	2.92	0.12	42.6	18.6	38.0
203	300.7	0.896	64.4	4.6	7.19	14.109	44.036	37.039	61.1	24.0	56.4	19.4	2.91	0.13	42.6	18.5	37.9
204	300.4	0.900	64.4	4.6	7.20	14.184	43.998	36.973	61.0	24.0	56.4	19.4	2.91	0.13	42.5	18.5	37.9
205	299.5	0.905	64.4	4.6	7.21	14.250	43.849	36.817	60.9	24.0	56.2	19.4	2.90	0.13	42.4	18.4	37.8
206	298.2	0.909	64.4	4.6	7.21	14.326	43.645	36.608	60.6	24.0	56.0	19.4	2.89	0.13	42.3	18.3	37.7
207	296.5	0.914	64.4	4.6	7.22	14.401	43.365	36.336	60.4	24.0	55.7	19.4	2.87	0.13	42.2	18.2	37.6
208	294.9	0.918	64.4	4.6	7.23	14.476	43.104	36.080	60.1	24.0	55.5	19.4	2.86	0.13	42.1	18.0	37.4
209	292.8	0.923	64.4	4.6	7.23	14.552	42.769	35.761	59.8	24.0	55.2	19.4	2.84	0.13	41.9	17.9	37.3
210	290.4	0.928	64.4	4.6	7.24	14.637	42.378	35.391	59.4	24.0	54.8	19.4	2.83	0.13	41.7	17.7	37.1
211	288.3	0.933	64.4	4.7	7.25	14.712	42.043	35.073	59.1	24.0	54.4	19.4	2.81	0.13	41.6	17.5	36.9
212	286.0	0.937	64.5	4.7	7.25	14.788	41.670	34.724	58.8	24.0	54.0	19.3	2.80	0.14	41.4	17.4	36.7
213	284.9	0.940	64.5	4.7	7.26	14.835	41.484	34.545	58.6	24.0	53.8	19.3	2.79	0.14	41.3	17.3	36.6
214	260.9	0.992	64.8	5.0	7.33	15.689	37.601	30.918	55.0	24.0	49.9	19.0	2.63	0.16	39.5	15.5	34.5
215	245.5	1.026	64.8	5.0	7.38	16.248	35.109	28.620	52.7	24.0	47.6	19.0	2.51	0.18	38.4	14.3	33.3
216	232.2	1.058	64.8	5.0	7.42	16.774	32.957	26.644	50.7	24.0	45.6	19.0	2.40	0.19	37.4	13.3	32.3
217	220.4	1.087	64.8	5.0	7.47	17.251	31.047	24.907	48.9	24.0	43.9	19.0	2.31	0.20	36.5	12.5	31.5
218	212.3	1.117	64.8	5.0	7.51	17.744	29.736	23.676	47.7	24.0	42.7	19.0	2.25	0.21	35.9	11.8	30.8
219	207.1	1.149	64.9	5.1	7.56	18.270	28.895	22.831	46.9	24.0	41.7	18.9	2.21	0.23	35.5	11.4	30.3
220	205.8	1.184	64.9	5.1	7.61	18.846	28.684	22.494	46.5	24.0	41.4	18.9	2.19	0.23	35.3	11.2	30.1
221	202.8	1.214	64.9	5.1	7.66	19.339	28.199	21.961	46.0	24.0	40.9	18.9	2.16	0.23	35.0	11.0	29.9
222	200.2	1.276	64.8	5.0	7.76	20.359	27.778	21.339	45.6	24.2	40.5	19.2	2.11	0.24	34.9	10.7	29.9

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)

Failure Photographs of Samples

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. U-2412B

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project 39406.1.1 **County** GUILFORD **Owner**

Date: Sampled 3/1/13 **Received** 10/31/13 **Reported** 11/1/13

Sampled from RDWY **By** N ROBERSON

Submitted by MASON HURT 1995 **Standard Specifications**

788128 TO 788129
11/4/13

TEST RESULTS

Proj. Sample No.		ST-13#1	ST-13 #2				
Lab. Sample No.		788128	788129				
Retained #4 Sieve	%	-	-				
Passing #10 Sieve	%	100	100				
Passing #40 Sieve	%	96	95				
Passing #200 Sieve	%	66	65				

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	10.6	12.4				
Fine Sand Ret - #270	%	30.7	28.5				
Silt 0.05 - 0.005 mm	%	42.6	39.0				
Clay < 0.005 mm	%	16.0	20.1				
T-#		T-5772	T-5772				
Sample							

L. L.		38	40				
P. I.		6	8				
AASHTO Classification		A-4(4)	A-4(5)				
Station		404+50	404+50				
Offset		3 FT	3 FT				
Alignment		L	L				
Location		RT	RT				
Depth (Ft)		34.5 FT	34.5 FT				
	to	36.5 FT	36.5 FT				

cc: N ROBERSON
SURIYATI BS

Soils Engineer

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	24.12	27.69	**Plastic Limits:**	0	
Dry Density (pcf):	94.21	105.02	**Plasticity Index (%):**	0	
Saturation (%):	80.00	118.69			
Void Ratio:	0.8333	0.6447	**Specific Gravity:**	2.769	Measured

Soil Description: Yellowish tan colored silt

Project Number: 39406.1.1 **Depth:** 34.5 - 36.5 ft

Sample Number: ST-13 **Boring Number:**

Project: U-2412B

Client: T-5772

Location: Guilford County (Sta. 404+50)

Remarks: Solid height is 0.54653 inches ; Blows/ft = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	24.12	27.69	**Plastic Limits:**	0	
Dry Density (pcf):	94.21	105.02	**Plasticity Index (%):**	0	
Saturation (%):	80.00	118.69			
Void Ratio:	0.8333	0.6447	**Specific Gravity:**	2.769	Measured

Soil Description: Yellowish tan colored silt

Project Number: 39406.1.1 **Depth:** 34.5 - 36.5 ft

Sample Number: ST-13 **Boring Number:**

Project: U-2412B

Client: T-5772

Location: Guilford County (Sta. 404+50)

Remarks: Solid height is 0.54653 inches ; Blows/ft = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	24.12	27.69	**Plastic Limits:**	0	
Dry Density (pcf):	94.21	105.02	**Plasticity Index (%):**	0	
Saturation (%):	80.00	118.69			
Void Ratio:	0.8333	0.6447	**Specific Gravity:**	2.769	Measured

Soil Description: Yellowish tan colored silt

Project Number: 39406.1.1 **Depth:** 34.5 - 36.5 ft

Sample Number: ST-13 **Boring Number:**

Project: U-2412B

Client: T-5772

Location: Guilford County (Sta. 404+50)

Remarks: Solid height is 0.54653 inches ; Blows/ft = NA

Consolidation Test Results
Summary

Project: U-2412B
Location: Guilford County (Sta. 404+50)
Job Number: T-5772

Project Number: 39406.1.1

Sample Number: ST-13
Boring Number:
Depth: 34.5 - 36.5 ft
Sample Type: Undisturbed

Soil Description:
Yellowish tan colored silt
Remarks:
Solid height is 0.54653 inches ; Blows/ft = NA

Test Number:
Test Date:

Index	Load Sequence (tsf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	1.0001	0.4546	0.00	0.8333	0.000		0.000	
1	0.031	0.0017	0.9984	0.4529	0.17	0.8302	0.181		4270.907	
2	0.063	0.0055	0.9946	0.4491	0.55	0.8233	0.423		1811.753	
3	0.125	0.0122	0.9879	0.4424	1.22	0.8110	0.222		3404.813	
4	0.250	0.0239	0.9762	0.4307	2.39	0.7895	0.196		3758.438	
5	0.500	0.0378	0.9623	0.4168	3.78	0.7640	0.079		9058.855	
6	1.000	0.0567	0.9434	0.3979	5.67	0.7294	0.063		11018.959	
7	2.000	0.0769	0.9232	0.3777	7.69	0.6924	0.063		10552.137	
8	4.000	0.0991	0.9010	0.3555	9.91	0.6517	0.098		6429.599	
9	2.000	0.0960	0.9041	0.3586	9.60	0.6574	0.000		0.000	
10	1.000	0.0912	0.9089	0.3634	9.12	0.6662	0.000		0.000	
11	0.500	0.0850	0.9151	0.3696	8.50	0.6775	0.000		0.000	
12	1.000	0.0877	0.9124	0.3669	8.77	0.6726	0.000		0.000	
13	2.000	0.0929	0.9072	0.3617	9.29	0.6630	0.000		0.000	
14	4.000	0.1018	0.8983	0.3528	10.18	0.6467	0.000		0.000	
15	8.000	0.1266	0.8735	0.3280	12.66	0.6013	0.083		7139.194	
16	16.000	0.1632	0.8369	0.2914	16.32	0.5342	0.250		2167.884	
17	4.000	0.1565	0.8436	0.2981	15.65	0.5464	0.000		0.000	
18	0.016	0.1029	0.8972	0.3517	10.29	0.6447	0.000		0.000	

Tested By:

Checked By:

Consolidation Test
Consolidation Specimen Information

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County (Sta. 404+50)
Job Number: T-5772 **Test Date:**

Sample Number: ST-13 **Soil Description:**
Boring Number: Yellowish tan colored silt
Depth: 34.5 - 36.5 ft **Remarks:**
Sample Type: Undisturbed Solid height is 0.54653 inches ; Blows/ft = NA

Test Number:
Liquid Limit: 0.0000 **Initial Void Ratio:** 0.8333 **Initial Height (in):** 1.0001
Plastic Limit: 0.0000 **Plasticity Index (%):** 0.0000 **Initial Diameter (in):** 2.5000
Specific Gravity: 2.7690 Measured **Weight of Ring (g):** 109.4000

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	150.69	155.03
Dry Soil + Container (g)	121.41	121.41
Weight of Container (g)	0.00	0.00
Moisture Content (%)	24.12	27.69
Void Ratio	0.8333	0.6447
Saturation (%)	80.00	118.69
Dry Density (pcf)	94.21	105.02

Tested By: **Checked By:**

ncdot

Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date

Tested By:

Effective Stress at Maximum Deviator Stress Criterion

Deviator Stress Vs. Axial Strain

Initial	Specimen A	B	C	D
Water Content (%)	24.7	24.7	24.6	
Dry Density (pcf)	100.2	102.1	99.1	
Saturation (%)	93.30	97.75	89.25	
Void Ratio	0.735	0.702	0.772	
Diameter (in)	2.866	2.931	2.861	
Height (in)	6.077	5.701	6.082	
Specific Gravity	2.79	2.79	2.82	
Liquid Limit	0	0	0	
Plastic Limit	0	0	0	
After Consolidation	**A**	**B**	**C**	**D**
B-Value	0.00	0.00	0.00	
Water Content (%)	25.6	25.6	27.5	
Dry Density (pcf)	102.38	103.56	105.99	
Saturation (%)	100.00	100.00	100.00	
Void Ratio	0.702	0.683	0.660	
Effective Stress (psi)	9.0	18.0	36.0	
Back Press. (psi)	60.3	60.4	60.4	
Rate of Strain	0.009	0.009	0.009	

Maximium Deviator Stress Criterion		After Shear	A	B	C	D
C (psi)	0.0	σ'1 at Failure (psi)	37.82	43.29	52.26	
C' (psi)	0.0	σ'3 at Failure (psi)	9.97	20.80	31.24	
Ø (deg)	0.0					
Ø' (deg)	0.0					

Project:	U-2412B	N/A	N/A	N/A	N/A
Location:	Guilford County (Sta. 404+50)				
Project Number:	39406.1.1				
Boring Number:					
Sample Number:	ST-13				
Depth:	34.5 - 36.5 ft.				
Sample Type:	Undisturbed	Failure Photographs			
Description:					
Test Type	Consolidated Undrained				
Remarks	Multi-Stage: Sample A and B				

ncdot

Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date:

Tested By:

Deviator Stress vs. Axial Strain

Principal Stress Ratio vs. Axial Strain

Change in Pore Pressure vs. Axial Strain

Mohr Stress Circles at Maximum Deviator Stress Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at Maximum Principal Stress Ratio Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at 15% Axial Strain Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)
Q (psi)
P' (psi)
0.0
10.0
20.0
30.0
40.0
50.0
Specimen A
Specimen B
Specimen C
Specimen D
Tangent Line

Stress Paths (Total)
(C' = 0.0 Ø' = 0.0)
Q (psi)
P (psi)
0.0
10.0
20.0
30.0
40.0
50.0

Specimen A Shear Data

CU Triaxial Test

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File Location
T-5772.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5772
Sample Location: Guilford County (Sta. 404+50)
Sample Description: Tannish-red colroed silt.
Remarks: 30° shear plane. Multi-stage 1.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.7920001
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.866	2.846	
Height (in)	6.077	6.031	
Weight (grams)	1286.00		1316.00
Moisture (%)	24.73		27.64
Dry Density (pcf)	100.17	102.38	
Saturation (%)	93.30	100.00	
Void Ratio	0.735	0.702	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 69.300
Effective Confining Stress (psi): 9.0
Corrected Peak Deviator Stress (psi): 27.849 at reading number: 52

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	48.5	0.103	60.3	0.0	6.36	0.000	0.000	0.000	9.0	9.0	9.0	9.0	1.00	0.00	9.0	0.0	9.0
1	67.7	0.107	61.2	0.9	6.37	0.076	3.022	2.990	12.0	9.0	11.1	8.1	1.37	0.30	10.5	1.5	9.6
2	75.3	0.112	61.6	1.3	6.37	0.153	4.205	4.140	13.1	9.0	11.8	7.7	1.54	0.33	11.1	2.1	9.7
3	80.5	0.116	61.9	1.6	6.38	0.221	5.024	4.928	13.9	9.0	12.3	7.4	1.67	0.33	11.5	2.5	9.8
4	85.9	0.121	62.1	1.8	6.38	0.298	5.880	5.747	14.8	9.0	13.0	7.2	1.80	0.31	11.9	2.9	10.1
5	88.9	0.125	62.2	1.9	6.38	0.366	6.353	6.188	15.2	9.0	13.3	7.1	1.87	0.31	12.1	3.1	10.2
6	93.6	0.129	62.4	2.1	6.39	0.443	7.081	6.879	15.9	9.0	13.8	6.9	1.99	0.30	12.4	3.4	10.4
7	97.2	0.134	62.5	2.2	6.39	0.519	7.646	7.406	16.4	9.0	14.2	6.8	2.08	0.29	12.7	3.7	10.5
8	101.3	0.138	62.5	2.3	6.40	0.588	8.301	8.025	17.0	9.0	14.8	6.8	2.19	0.28	13.0	4.0	10.8
9	104.3	0.143	62.6	2.3	6.40	0.664	8.774	8.460	17.5	9.0	15.2	6.7	2.26	0.27	13.2	4.2	10.9
10	108.7	0.147	62.6	2.3	6.41	0.733	9.466	9.114	18.1	9.0	15.8	6.7	2.37	0.26	13.6	4.6	11.2
11	112.3	0.151	62.7	2.4	6.41	0.809	10.030	9.637	18.6	9.0	16.3	6.6	2.45	0.25	13.8	4.8	11.5
12	116.3	0.156	62.7	2.4	6.42	0.878	10.649	10.217	19.2	9.0	16.8	6.6	2.55	0.24	14.1	5.1	11.7
13	119.9	0.160	62.7	2.4	6.42	0.954	11.214	10.738	19.7	9.0	17.3	6.6	2.63	0.23	14.4	5.4	11.9
14	123.4	0.165	62.7	2.4	6.43	1.030	11.778	11.259	20.3	9.0	17.8	6.6	2.71	0.22	14.6	5.6	12.2
15	127.6	0.169	62.7	2.4	6.43	1.099	12.433	11.872	20.9	9.0	18.4	6.6	2.81	0.20	14.9	5.9	12.5
16	131.2	0.173	62.7	2.4	6.44	1.175	12.998	12.391	21.4	9.0	19.0	6.6	2.88	0.19	15.2	6.2	12.8
17	134.6	0.178	62.6	2.3	6.44	1.251	13.526	12.873	21.9	9.0	19.5	6.7	2.93	0.18	15.4	6.4	13.1
18	138.3	0.182	62.6	2.3	6.45	1.320	14.108	13.412	22.4	9.0	20.1	6.7	3.00	0.17	15.7	6.7	13.4

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	142.1	0.187	62.6	2.3	6.45	1.396	14.709	13.964	23.0	9.0	20.7	6.7	3.08	0.16	16.0	7.0	13.7
20	145.2	0.191	62.5	2.2	6.46	1.473	15.200	14.407	23.4	9.0	21.2	6.8	3.12	0.15	16.2	7.2	14.0
21	148.7	0.196	62.5	2.2	6.46	1.541	15.747	14.908	23.9	9.0	21.7	6.8	3.18	0.15	16.5	7.5	14.3
22	152.9	0.200	62.4	2.1	6.47	1.618	16.402	15.511	24.5	9.0	22.4	6.9	3.25	0.14	16.8	7.8	14.7
23	156.3	0.204	62.3	2.0	6.47	1.686	16.948	16.010	25.0	9.0	23.0	7.0	3.28	0.12	17.0	8.0	15.0
24	159.6	0.209	62.2	1.9	6.48	1.763	17.458	16.469	25.5	9.0	23.5	7.1	3.33	0.12	17.2	8.2	15.3
25	162.5	0.213	62.2	1.9	6.48	1.831	17.913	16.877	25.9	9.0	24.0	7.1	3.37	0.11	17.4	8.4	15.6
26	166.1	0.218	62.1	1.8	6.48	1.908	18.477	17.387	26.4	9.0	24.6	7.2	3.41	0.10	17.7	8.7	15.9
27	169.8	0.222	62.0	1.7	6.49	1.976	19.060	17.919	26.9	9.0	25.2	7.3	3.45	0.09	18.0	9.0	16.3
28	172.8	0.226	61.9	1.6	6.49	2.045	19.533	18.361	27.4	9.0	25.8	7.4	3.48	0.09	18.2	9.2	16.6
29	175.8	0.231	61.8	1.5	6.50	2.121	20.006	18.809	27.8	9.0	26.3	7.5	3.50	0.08	18.4	9.4	16.9
30	179.6	0.235	61.7	1.4	6.50	2.190	20.607	19.383	28.4	9.0	27.0	7.6	3.55	0.07	18.7	9.7	17.3
31	183.0	0.239	61.6	1.3	6.51	2.259	21.135	19.885	28.9	9.0	27.6	7.7	3.59	0.07	18.9	9.9	17.6
32	185.4	0.243	61.5	1.2	6.51	2.335	21.517	20.242	29.2	9.0	28.0	7.8	3.59	0.06	19.1	10.1	17.9
33	188.4	0.248	61.4	1.1	6.52	2.411	21.991	20.687	29.7	9.0	28.6	7.9	3.62	0.05	19.4	10.3	18.2
34	191.5	0.252	61.3	1.0	6.52	2.480	22.482	21.152	30.2	9.0	29.1	8.0	3.65	0.05	19.6	10.6	18.6
35	194.3	0.257	61.2	0.9	6.53	2.556	22.919	21.560	30.6	9.0	29.7	8.1	3.65	0.04	19.8	10.8	18.9
36	197.4	0.261	61.1	0.8	6.53	2.625	23.411	22.023	31.0	9.0	30.3	8.2	3.67	0.03	20.0	11.0	19.3
37	200.3	0.266	60.9	0.6	6.54	2.701	23.866	22.448	31.5	9.0	30.8	8.4	3.68	0.03	20.2	11.2	19.6
38	203.8	0.270	60.8	0.6	6.54	2.778	24.412	22.961	32.0	9.0	31.4	8.5	3.72	0.02	20.5	11.5	19.9
39	205.9	0.275	60.8	0.5	6.55	2.854	24.739	23.260	32.3	9.0	31.8	8.5	3.72	0.02	20.6	11.6	20.2
40	209.5	0.279	60.6	0.4	6.55	2.930	25.304	23.789	32.8	9.0	32.4	8.7	3.75	0.01	20.9	11.9	20.6
41	212.1	0.283	60.5	0.2	6.56	2.999	25.722	24.178	33.2	9.0	33.0	8.8	3.76	0.01	21.1	12.1	20.9
42	214.6	0.288	60.4	0.1	6.56	3.075	26.105	24.529	33.5	9.0	33.4	8.9	3.75	0.00	21.3	12.3	21.2
43	216.7	0.293	60.3	0.0	6.57	3.151	26.432	24.826	33.8	9.0	33.9	9.0	3.75	0.00	21.4	12.4	21.4
44	219.6	0.297	60.2	-0.1	6.57	3.220	26.888	25.249	34.3	9.0	34.4	9.1	3.77	0.00	21.6	12.6	21.7
45	222.7	0.301	60.1	-0.2	6.58	3.296	27.379	25.703	34.7	9.0	34.9	9.2	3.78	-0.01	21.9	12.9	22.1
46	224.7	0.306	60.0	-0.3	6.58	3.373	27.689	25.982	35.0	9.0	35.3	9.3	3.78	-0.01	22.0	13.0	22.3
47	226.6	0.310	59.9	-0.4	6.59	3.441	27.998	26.261	35.3	9.0	35.7	9.4	3.78	-0.02	22.1	13.1	22.6
48	229.7	0.315	59.7	-0.6	6.59	3.518	28.490	26.714	35.7	9.0	36.3	9.6	3.78	-0.02	22.4	13.4	22.9
49	232.1	0.319	59.6	-0.7	6.60	3.594	28.854	27.044	36.1	9.0	36.8	9.7	3.79	-0.03	22.5	13.5	23.2
50	234.3	0.324	59.5	-0.8	6.60	3.670	29.199	27.355	36.4	9.0	37.2	9.8	3.79	-0.03	22.7	13.7	23.5
51	236.3	0.328	59.4	-0.9	6.61	3.739	29.527	27.650	36.7	9.0	37.6	9.9	3.79	-0.03	22.8	13.8	23.7
52	237.7	0.330	59.3	-1.0	6.61	3.777	29.746	27.849	36.9	9.0	37.8	10.0	3.79	-0.03	22.9	13.9	23.9

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)

Specimen B Shear Data

CU Triaxial Test

ncdot

File Location
T-5772.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5772
Sample Location: Guilford County (Sta. 404+50)
Sample Description: Tannish-red colored silt.
Remarks: 30° shear plane. Multi-state 2.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.7920001
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.931	2.914	
Height (in)	5.701	5.688	
Weight (grams)	1286.00		1316.00
Moisture (%)	24.73		27.64
Dry Density (pcf)	102.15	103.56	
Saturation (%)	97.75	100.00	
Void Ratio	0.702	0.683	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 78.400
Effective Confining Stress (psi): 18.0
Corrected Peak Deviator Stress (psi): 22.489 at reading number: 64

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	235.1	0.343	60.4	0.0	6.67	0.000	0.000	0.000	18.0	18.0	18.0	18.0	1.00	0.00	18.0	0.0	18.0
1	274.7	0.348	61.7	1.3	6.67	0.081	5.939	5.904	23.9	18.0	22.6	16.7	1.35	0.22	20.9	3.0	19.6
2	285.6	0.352	62.1	1.7	6.68	0.154	7.571	7.502	25.5	18.0	23.8	16.3	1.46	0.23	21.7	3.8	20.0
3	292.5	0.357	62.3	1.8	6.68	0.235	8.613	8.504	26.5	18.0	24.6	16.1	1.53	0.21	22.2	4.3	20.4
4	297.0	0.361	62.3	1.8	6.69	0.307	9.290	9.146	27.1	18.0	25.3	16.1	1.57	0.20	22.5	4.6	20.7
5	301.4	0.365	62.3	1.8	6.69	0.388	9.950	9.765	27.7	18.0	25.9	16.1	1.60	0.19	22.8	4.9	21.0
6	305.6	0.370	62.3	1.8	6.70	0.469	10.575	10.349	28.3	18.0	26.5	16.1	1.64	0.18	23.1	5.2	21.3
7	308.7	0.374	62.2	1.8	6.70	0.542	11.044	10.780	28.7	18.0	27.0	16.2	1.67	0.17	23.4	5.4	21.6
8	311.7	0.379	62.2	1.8	6.71	0.623	11.496	11.189	29.1	18.0	27.4	16.2	1.69	0.16	23.6	5.6	21.8
9	314.7	0.383	62.2	1.7	6.72	0.696	11.947	11.601	29.6	18.0	27.8	16.2	1.71	0.15	23.8	5.8	22.0
10	318.0	0.387	62.0	1.6	6.72	0.777	12.433	12.044	30.0	18.0	28.4	16.4	1.74	0.13	24.0	6.0	22.4
11	320.5	0.392	61.9	1.5	6.73	0.850	12.815	12.386	30.3	18.0	28.9	16.5	1.75	0.12	24.2	6.2	22.7
12	323.5	0.396	61.9	1.4	6.73	0.922	13.267	12.796	30.8	18.0	29.3	16.5	1.77	0.11	24.4	6.4	22.9
13	326.0	0.400	61.8	1.4	6.74	1.003	13.632	13.116	31.1	18.0	29.7	16.6	1.79	0.10	24.5	6.6	23.1
14	329.0	0.405	61.8	1.3	6.74	1.076	14.083	13.525	31.5	18.0	30.2	16.6	1.81	0.10	24.7	6.8	23.4
15	330.5	0.409	61.7	1.3	6.75	1.157	14.309	13.707	31.7	18.0	30.4	16.7	1.82	0.09	24.8	6.9	23.6
16	333.5	0.413	61.6	1.1	6.75	1.230	14.760	14.115	32.1	18.0	31.0	16.8	1.84	0.08	25.0	7.1	23.9
17	335.7	0.418	61.4	1.0	6.76	1.311	15.090	14.398	32.4	18.0	31.4	17.0	1.85	0.07	25.2	7.2	24.2
18	335.9	0.422	61.6	1.2	6.76	1.384	15.125	14.393	32.4	18.0	31.2	16.8	1.86	0.08	25.2	7.2	24.0

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	338.9	0.427	61.5	1.1	6.77	1.465	15.577	14.796	32.8	18.0	31.7	16.9	1.88	0.07	25.4	7.4	24.3
20	340.7	0.431	61.4	1.0	6.77	1.545	15.837	15.009	33.0	18.0	32.0	17.0	1.88	0.06	25.5	7.5	24.5
21	342.3	0.435	61.3	0.8	6.78	1.618	16.080	15.209	33.2	18.0	32.3	17.1	1.89	0.06	25.6	7.6	24.7
22	344.9	0.440	61.2	0.8	6.78	1.699	16.462	15.541	33.5	18.0	32.7	17.2	1.90	0.05	25.7	7.8	25.0
23	347.2	0.445	61.0	0.6	6.79	1.780	16.809	15.838	33.8	18.0	33.2	17.4	1.91	0.04	25.9	7.9	25.3
24	348.7	0.449	60.9	0.5	6.79	1.853	17.035	16.020	34.0	18.0	33.5	17.5	1.92	0.03	26.0	8.0	25.5
25	350.9	0.453	60.8	0.4	6.80	1.934	17.365	16.299	34.3	18.0	33.9	17.6	1.93	0.03	26.1	8.1	25.7
26	353.0	0.458	60.8	0.4	6.81	2.023	17.678	16.565	34.5	18.0	34.2	17.6	1.94	0.02	26.2	8.3	25.9
27	354.7	0.462	60.7	0.3	6.81	2.096	17.938	16.807	34.8	18.0	34.5	17.7	1.95	0.02	26.4	8.4	26.1
28	356.0	0.467	60.6	0.2	6.82	2.177	18.129	16.980	34.9	18.0	34.7	17.8	1.96	0.01	26.5	8.5	26.2
29	357.7	0.472	60.4	0.0	6.82	2.257	18.390	17.220	35.2	18.0	35.2	18.0	1.96	0.00	26.6	8.6	26.6
30	359.0	0.476	60.3	-0.1	6.83	2.338	18.581	17.391	35.4	18.0	35.5	18.1	1.96	-0.01	26.7	8.7	26.8
31	360.5	0.481	60.3	-0.2	6.83	2.419	18.806	17.596	35.6	18.0	35.7	18.1	1.97	-0.01	26.8	8.8	26.9
32	362.6	0.486	60.2	-0.2	6.84	2.500	19.119	17.886	35.8	18.0	36.1	18.2	1.98	-0.01	26.9	8.9	27.1
33	364.3	0.490	60.2	-0.3	6.85	2.581	19.379	18.124	36.1	18.0	36.3	18.2	1.99	-0.01	27.0	9.1	27.3
34	365.1	0.495	60.1	-0.4	6.85	2.662	19.501	18.227	36.2	18.0	36.5	18.3	2.00	-0.02	27.1	9.1	27.4
35	367.1	0.499	59.9	-0.5	6.86	2.735	19.796	18.500	36.5	18.0	37.0	18.5	2.00	-0.03	27.2	9.2	27.7
36	368.2	0.504	59.8	-0.6	6.86	2.824	19.970	18.651	36.6	18.0	37.3	18.6	2.00	-0.03	27.3	9.3	27.9
37	369.9	0.509	59.7	-0.7	6.87	2.905	20.213	18.871	36.8	18.0	37.5	18.7	2.01	-0.04	27.4	9.4	28.1
38	371.3	0.513	59.7	-0.7	6.87	2.978	20.421	19.058	37.0	18.0	37.8	18.7	2.02	-0.04	27.5	9.5	28.2
39	372.8	0.517	59.6	-0.8	6.88	3.059	20.647	19.261	37.2	18.0	38.0	18.8	2.03	-0.04	27.6	9.6	28.4
40	374.7	0.521	59.6	-0.8	6.88	3.131	20.942	19.532	37.5	18.0	38.3	18.8	2.04	-0.04	27.7	9.8	28.6
41	376.2	0.526	59.4	-1.0	6.89	3.212	21.168	19.733	37.7	18.0	38.7	19.0	2.04	-0.05	27.8	9.9	28.8
42	377.3	0.531	59.3	-1.2	6.90	3.293	21.324	19.867	37.8	18.0	39.0	19.1	2.04	-0.06	27.9	9.9	29.1
43	378.7	0.535	59.2	-1.2	6.90	3.374	21.533	20.051	38.0	18.0	39.2	19.2	2.05	-0.06	28.0	10.0	29.2
44	380.2	0.539	59.2	-1.3	6.91	3.447	21.759	20.254	38.2	18.0	39.5	19.2	2.05	-0.06	28.1	10.1	29.3
45	381.6	0.544	59.1	-1.3	6.91	3.528	21.967	20.437	38.4	18.0	39.7	19.3	2.06	-0.06	28.2	10.2	29.5
46	383.2	0.549	59.1	-1.4	6.92	3.609	22.210	20.654	38.6	18.0	40.0	19.3	2.07	-0.07	28.3	10.3	29.7
47	384.6	0.553	58.9	-1.5	6.92	3.690	22.418	20.836	38.8	18.0	40.3	19.5	2.07	-0.07	28.4	10.4	29.9
48	386.1	0.558	58.8	-1.7	6.93	3.771	22.644	21.035	39.0	18.0	40.7	19.6	2.07	-0.08	28.5	10.5	30.1
49	387.5	0.562	58.7	-1.7	6.94	3.843	22.853	21.219	39.2	18.0	40.9	19.7	2.08	-0.08	28.6	10.6	30.3
50	387.9	0.566	58.7	-1.8	6.94	3.924	22.922	21.267	39.2	18.0	41.0	19.7	2.08	-0.08	28.6	10.6	30.4
51	388.7	0.571	58.6	-1.8	6.95	4.005	23.044	21.366	39.3	18.0	41.1	19.8	2.08	-0.08	28.6	10.7	30.5
52	389.7	0.575	58.6	-1.9	6.95	4.078	23.182	21.482	39.4	18.0	41.3	19.8	2.08	-0.09	28.7	10.7	30.6
53	390.7	0.580	58.4	-2.0	6.96	4.159	23.339	21.613	39.6	18.0	41.6	20.0	2.08	-0.09	28.8	10.8	30.8
54	391.3	0.584	58.3	-2.1	6.96	4.232	23.426	21.679	39.6	18.0	41.8	20.1	2.08	-0.10	28.8	10.8	30.9
55	392.0	0.589	58.2	-2.2	6.97	4.313	23.530	21.760	39.7	18.0	41.9	20.2	2.08	-0.10	28.8	10.9	31.1
56	393.0	0.593	58.2	-2.3	6.97	4.385	23.686	21.892	39.9	18.0	42.1	20.2	2.08	-0.10	28.9	10.9	31.2
57	394.3	0.597	58.1	-2.3	6.98	4.466	23.877	22.056	40.0	18.0	42.3	20.3	2.09	-0.10	29.0	11.0	31.3
58	394.8	0.601	58.1	-2.4	6.99	4.539	23.947	22.105	40.1	18.0	42.4	20.3	2.09	-0.11	29.0	11.1	31.4
59	395.8	0.606	58.0	-2.4	6.99	4.620	24.103	22.234	40.2	18.0	42.6	20.4	2.09	-0.11	29.1	11.1	31.5

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	396.3	0.610	57.8	-2.6	7.00	4.693	24.172	22.283	40.2	18.0	42.8	20.6	2.08	-0.12	29.1	11.1	31.7
61	396.9	0.615	57.7	-2.7	7.00	4.774	24.259	22.346	40.3	18.0	43.0	20.7	2.08	-0.12	29.1	11.2	31.9
62	397.3	0.619	57.7	-2.8	7.01	4.847	24.329	22.394	40.4	18.0	43.1	20.7	2.08	-0.12	29.2	11.2	31.9
63	397.4	0.624	57.7	-2.8	7.01	4.928	24.346	22.391	40.4	18.0	43.1	20.7	2.08	-0.12	29.2	11.2	31.9
64	398.2	0.628	57.6	-2.8	7.02	5.000	24.467	22.489	40.4	18.0	43.3	20.8	2.08	-0.13	29.2	11.2	32.0
65	398.1	0.632	57.6	-2.9	7.03	5.081	24.450	22.453	40.4	18.0	43.3	20.8	2.08	-0.13	29.2	11.2	32.1
66	398.1	0.636	57.4	-3.0	7.03	5.154	24.450	22.435	40.4	18.0	43.4	21.0	2.07	-0.14	29.2	11.2	32.2
67	391.2	0.641	57.4	-3.0	7.04	5.227	23.408	21.430	39.4	18.0	42.4	21.0	2.02	-0.14	28.7	10.7	31.7
68	393.1	0.645	57.3	-3.1	7.04	5.308	23.703	21.690	39.7	18.0	42.8	21.1	2.03	-0.14	28.8	10.8	31.9
69	393.7	0.650	57.3	-3.1	7.05	5.389	23.790	21.753	39.7	18.0	42.8	21.1	2.03	-0.14	28.8	10.9	32.0
70	394.4	0.654	57.3	-3.2	7.05	5.470	23.894	21.832	39.8	18.0	43.0	21.1	2.03	-0.14	28.9	10.9	32.0
71	394.6	0.659	57.2	-3.2	7.06	5.551	23.929	21.846	39.8	18.0	43.0	21.2	2.03	-0.15	28.9	10.9	32.1
72	394.5	0.663	57.1	-3.3	7.07	5.623	23.912	21.812	39.8	18.0	43.1	21.3	2.03	-0.15	28.9	10.9	32.2
73	394.0	0.668	57.0	-3.5	7.07	5.704	23.825	21.711	39.7	18.0	43.1	21.4	2.01	-0.16	28.8	10.9	32.3
74	394.6	0.672	57.0	-3.5	7.08	5.785	23.929	21.790	39.8	18.0	43.2	21.4	2.02	-0.16	28.9	10.9	32.3
75	394.1	0.677	57.0	-3.5	7.08	5.866	23.842	21.689	39.6	18.0	43.1	21.4	2.01	-0.16	28.8	10.8	32.3
76	394.1	0.681	57.0	-3.5	7.09	5.939	23.842	21.671	39.6	18.0	43.1	21.4	2.01	-0.16	28.8	10.8	32.3
77	394.2	0.686	56.9	-3.5	7.10	6.020	23.860	21.668	39.6	18.0	43.1	21.5	2.01	-0.16	28.8	10.8	32.3
78	394.5	0.690	56.8	-3.6	7.10	6.101	23.912	21.698	39.7	18.0	43.3	21.6	2.01	-0.17	28.8	10.8	32.4
79	394.4	0.695	56.7	-3.7	7.11	6.182	23.894	21.662	39.6	18.0	43.3	21.7	2.00	-0.17	28.8	10.8	32.5
80	394.2	0.699	56.7	-3.8	7.11	6.263	23.860	21.610	39.6	18.0	43.3	21.7	1.99	-0.17	28.8	10.8	32.5
81	394.2	0.704	56.6	-3.8	7.12	6.344	23.860	21.591	39.6	18.0	43.4	21.8	1.99	-0.18	28.8	10.8	32.6
82	394.0	0.709	56.6	-3.8	7.13	6.425	23.825	21.539	39.5	18.0	43.3	21.8	1.99	-0.18	28.7	10.8	32.5
83	393.6	0.713	56.6	-3.8	7.13	6.497	23.773	21.473	39.4	18.0	43.2	21.8	1.99	-0.18	28.7	10.7	32.5
84	393.7	0.717	56.6	-3.9	7.14	6.578	23.790	21.470	39.4	18.0	43.3	21.8	1.98	-0.18	28.7	10.7	32.6
85	393.1	0.722	56.5	-4.0	7.14	6.651	23.703	21.372	39.3	18.0	43.3	21.9	1.97	-0.19	28.6	10.7	32.6
86	392.8	0.726	56.4	-4.1	7.15	6.732	23.651	21.304	39.3	18.0	43.3	22.0	1.97	-0.19	28.6	10.7	32.7
87	393.1	0.731	56.4	-4.1	7.16	6.813	23.703	21.334	39.3	18.0	43.4	22.0	1.97	-0.19	28.6	10.7	32.7
88	392.2	0.735	56.4	-4.1	7.16	6.886	23.564	21.187	39.1	18.0	43.2	22.0	1.96	-0.19	28.6	10.6	32.6
89	392.1	0.740	56.4	-4.1	7.17	6.967	23.547	21.152	39.1	18.0	43.2	22.0	1.96	-0.19	28.5	10.6	32.6
90	391.9	0.744	56.3	-4.1	7.17	7.048	23.512	21.100	39.1	18.0	43.2	22.1	1.96	-0.19	28.5	10.6	32.6
91	391.4	0.748	56.2	-4.2	7.18	7.120	23.443	21.019	39.0	18.0	43.2	22.2	1.95	-0.20	28.5	10.5	32.7
92	390.9	0.753	56.1	-4.3	7.19	7.201	23.373	20.935	38.9	18.0	43.2	22.3	1.94	-0.21	28.4	10.5	32.7
93	391.2	0.757	56.3	-4.2	7.19	7.282	23.408	20.949	38.9	18.0	43.1	22.1	1.95	-0.20	28.4	10.5	32.6
94	390.4	0.762	56.2	-4.2	7.20	7.355	23.287	20.819	38.8	18.0	43.0	22.2	1.94	-0.20	28.4	10.4	32.6
95	390.5	0.766	56.2	-4.2	7.20	7.436	23.304	20.816	38.8	18.0	43.0	22.2	1.94	-0.20	28.4	10.4	32.6
96	389.9	0.770	56.2	-4.2	7.21	7.509	23.217	20.719	38.7	18.0	42.9	22.2	1.93	-0.20	28.3	10.4	32.6
97	389.8	0.775	56.1	-4.3	7.22	7.590	23.200	20.684	38.6	18.0	43.0	22.3	1.93	-0.21	28.3	10.3	32.6
98	389.1	0.780	56.0	-4.5	7.22	7.671	23.096	20.569	38.5	18.0	43.0	22.4	1.92	-0.22	28.2	10.3	32.7
99	389.0	0.784	56.0	-4.5	7.23	7.743	23.078	20.536	38.5	18.0	43.0	22.4	1.92	-0.22	28.2	10.3	32.7
100	388.5	0.788	56.0	-4.5	7.23	7.816	23.009	20.455	38.4	18.0	42.9	22.4	1.91	-0.22	28.2	10.2	32.7

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	388.7	0.792	56.0	-4.5	7.24	7.897	23.044	20.469	38.4	18.0	42.9	22.4	1.91	-0.22	28.2	10.2	32.7
102	388.5	0.797	56.0	-4.5	7.25	7.970	23.009	20.420	38.4	18.0	42.9	22.4	1.91	-0.22	28.2	10.2	32.7
103	389.3	0.801	55.9	-4.5	7.25	8.051	23.130	20.513	38.5	18.0	43.0	22.5	1.91	-0.22	28.2	10.3	32.8
104	388.7	0.806	55.8	-4.6	7.26	8.132	23.044	20.415	38.4	18.0	43.0	22.6	1.90	-0.23	28.2	10.2	32.8
105	387.5	0.810	55.8	-4.7	7.26	8.205	22.853	20.223	38.2	18.0	42.9	22.6	1.89	-0.23	28.1	10.1	32.8
106	387.0	0.815	55.8	-4.7	7.27	8.286	22.783	20.140	38.1	18.0	42.8	22.6	1.89	-0.23	28.0	10.1	32.7
107	386.4	0.819	55.8	-4.7	7.28	8.366	22.696	20.042	38.0	18.0	42.7	22.6	1.89	-0.23	28.0	10.0	32.7
108	386.3	0.824	55.8	-4.7	7.28	8.447	22.679	20.008	38.0	18.0	42.7	22.6	1.88	-0.23	28.0	10.0	32.7
109	386.1	0.828	55.7	-4.7	7.29	8.520	22.644	19.960	37.9	18.0	42.6	22.7	1.88	-0.24	27.9	10.0	32.7
110	385.6	0.832	55.6	-4.8	7.30	8.601	22.575	19.878	37.8	18.0	42.7	22.8	1.87	-0.24	27.9	9.9	32.7
111	385.2	0.837	55.5	-4.9	7.30	8.682	22.505	19.796	37.8	18.0	42.6	22.9	1.87	-0.25	27.9	9.9	32.7
112	385.5	0.842	55.6	-4.9	7.31	8.763	22.557	19.826	37.8	18.0	42.6	22.8	1.87	-0.25	27.9	9.9	32.7
113	384.7	0.846	55.6	-4.9	7.31	8.836	22.436	19.698	37.7	18.0	42.5	22.8	1.86	-0.25	27.8	9.8	32.7
114	384.9	0.850	55.6	-4.9	7.32	8.917	22.470	19.712	37.7	18.0	42.5	22.8	1.86	-0.25	27.8	9.9	32.7
115	384.3	0.855	55.6	-4.9	7.33	8.998	22.384	19.615	37.6	18.0	42.4	22.8	1.86	-0.25	27.8	9.8	32.6
116	384.2	0.860	55.5	-5.0	7.33	9.078	22.366	19.581	37.5	18.0	42.5	22.9	1.85	-0.25	27.8	9.8	32.7
117	382.8	0.864	55.4	-5.1	7.34	9.159	22.158	19.373	37.3	18.0	42.4	23.0	1.84	-0.26	27.6	9.7	32.7
118	383.2	0.869	55.4	-5.0	7.35	9.240	22.210	19.403	37.4	18.0	42.4	23.0	1.84	-0.26	27.7	9.7	32.7
119	383.4	0.873	55.4	-5.0	7.35	9.313	22.245	19.418	37.4	18.0	42.4	23.0	1.84	-0.26	27.7	9.7	32.7
120	383.9	0.878	55.4	-5.0	7.36	9.402	22.314	19.461	37.4	18.0	42.5	23.0	1.85	-0.26	27.7	9.7	32.7
121	383.8	0.882	55.4	-5.0	7.37	9.475	22.297	19.429	37.4	18.0	42.4	23.0	1.84	-0.26	27.7	9.7	32.7
122	383.8	0.887	55.3	-5.1	7.37	9.556	22.297	19.411	37.4	18.0	42.5	23.1	1.84	-0.26	27.7	9.7	32.8
123	384.0	0.891	55.2	-5.2	7.38	9.629	22.332	19.426	37.4	18.0	42.6	23.2	1.84	-0.27	27.7	9.7	32.9
124	383.5	0.896	55.2	-5.2	7.39	9.710	22.262	19.346	37.3	18.0	42.5	23.2	1.83	-0.27	27.6	9.7	32.8
125	383.0	0.900	55.2	-5.2	7.39	9.790	22.175	19.249	37.2	18.0	42.4	23.2	1.83	-0.27	27.6	9.6	32.8
126	382.5	0.904	55.3	-5.2	7.40	9.863	22.106	19.170	37.1	18.0	42.3	23.1	1.83	-0.27	27.5	9.6	32.7
127	382.3	0.909	55.3	-5.2	7.40	9.944	22.071	19.121	37.1	18.0	42.3	23.1	1.83	-0.27	27.5	9.6	32.7
128	382.3	0.913	55.2	-5.2	7.41	10.025	22.071	19.103	37.1	18.0	42.3	23.2	1.82	-0.27	27.5	9.6	32.8
129	381.4	0.918	55.1	-5.3	7.42	10.098	21.950	18.978	36.9	18.0	42.3	23.3	1.81	-0.28	27.4	9.5	32.8
130	381.2	0.922	55.1	-5.4	7.42	10.179	21.915	18.929	36.9	18.0	42.2	23.3	1.81	-0.28	27.4	9.5	32.8
131	381.3	0.927	55.1	-5.3	7.43	10.260	21.932	18.927	36.9	18.0	42.2	23.3	1.81	-0.28	27.4	9.5	32.8
132	381.4	0.931	55.1	-5.3	7.44	10.333	21.950	18.927	36.9	18.0	42.2	23.3	1.81	-0.28	27.4	9.5	32.8
133	380.2	0.936	55.1	-5.3	7.44	10.414	21.759	18.738	36.7	18.0	42.0	23.3	1.80	-0.28	27.3	9.4	32.7
134	379.8	0.940	55.1	-5.3	7.45	10.494	21.706	18.673	36.6	18.0	42.0	23.3	1.80	-0.29	27.3	9.3	32.6
135	379.8	0.944	55.0	-5.4	7.46	10.567	21.706	18.658	36.6	18.0	42.0	23.4	1.80	-0.29	27.3	9.3	32.7
136	379.5	0.949	55.0	-5.5	7.46	10.648	21.654	18.594	36.6	18.0	42.0	23.4	1.79	-0.29	27.3	9.3	32.7
137	378.6	0.954	55.0	-5.4	7.47	10.729	21.515	18.452	36.4	18.0	41.9	23.4	1.79	-0.30	27.2	9.2	32.6
138	378.3	0.958	55.0	-5.4	7.48	10.810	21.481	18.404	36.4	18.0	41.8	23.4	1.79	-0.29	27.2	9.2	32.6
139	376.6	0.962	55.1	-5.4	7.48	10.883	21.220	18.156	36.1	18.0	41.5	23.3	1.78	-0.30	27.0	9.1	32.4
140	376.0	0.967	55.1	-5.4	7.49	10.964	21.133	18.061	36.0	18.0	41.4	23.3	1.77	-0.30	27.0	9.0	32.4
141	374.8	0.971	55.0	-5.4	7.50	11.037	20.960	17.891	35.9	18.0	41.3	23.4	1.76	-0.30	26.9	8.9	32.4

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	373.8	0.976	54.9	-5.5	7.50	11.117	20.803	17.736	35.7	18.0	41.2	23.5	1.75	-0.31	26.8	8.9	32.4
143	374.2	0.980	54.9	-5.5	7.51	11.190	20.856	17.767	35.7	18.0	41.2	23.5	1.76	-0.31	26.8	8.9	32.3
144	373.0	0.984	55.0	-5.4	7.52	11.271	20.682	17.596	35.6	18.0	41.0	23.4	1.75	-0.31	26.8	8.8	32.2
145	372.9	0.989	55.0	-5.4	7.52	11.352	20.665	17.564	35.5	18.0	40.9	23.4	1.75	-0.31	26.7	8.8	32.2
146	369.2	0.993	55.1	-5.4	7.53	11.425	20.109	17.056	35.0	18.0	40.4	23.3	1.73	-0.32	26.5	8.5	31.9
147	369.8	0.997	55.0	-5.4	7.53	11.498	20.196	17.119	35.1	18.0	40.5	23.4	1.73	-0.32	26.5	8.6	31.9
148	369.2	1.002	55.0	-5.5	7.54	11.587	20.109	17.024	35.0	18.0	40.5	23.4	1.73	-0.32	26.5	8.5	31.9
149	368.4	1.006	55.0	-5.5	7.55	11.660	19.987	16.902	34.9	18.0	40.3	23.4	1.72	-0.32	26.4	8.5	31.9
150	368.1	1.011	55.0	-5.4	7.55	11.732	19.953	16.857	34.8	18.0	40.3	23.4	1.72	-0.32	26.4	8.4	31.8
151	367.0	1.015	55.1	-5.4	7.56	11.813	19.779	16.687	34.6	18.0	40.0	23.3	1.71	-0.32	26.3	8.3	31.7
152	366.9	1.019	55.1	-5.3	7.57	11.886	19.762	16.658	34.6	18.0	39.9	23.3	1.72	-0.32	26.3	8.3	31.6
153	366.2	1.024	55.1	-5.3	7.58	11.967	19.657	16.550	34.5	18.0	39.8	23.3	1.71	-0.32	26.2	8.3	31.6
154	366.3	1.028	55.1	-5.4	7.58	12.040	19.675	16.551	34.5	18.0	39.9	23.3	1.71	-0.33	26.2	8.3	31.6
155	365.8	1.033	55.0	-5.4	7.59	12.121	19.605	16.474	34.4	18.0	39.9	23.4	1.70	-0.33	26.2	8.2	31.6
156	365.5	1.037	55.1	-5.4	7.60	12.202	19.553	16.412	34.4	18.0	39.7	23.3	1.70	-0.33	26.2	8.2	31.5
157	364.5	1.042	55.1	-5.3	7.60	12.283	19.414	16.275	34.2	18.0	39.6	23.3	1.70	-0.33	26.1	8.1	31.4
158	363.6	1.046	55.2	-5.3	7.61	12.355	19.275	16.139	34.1	18.0	39.4	23.2	1.69	-0.33	26.0	8.1	31.3
159	361.9	1.051	55.2	-5.2	7.62	12.436	19.015	15.895	33.9	18.0	39.1	23.2	1.69	-0.33	25.9	7.9	31.1
160	361.5	1.055	55.1	-5.3	7.62	12.517	18.963	15.834	33.8	18.0	39.1	23.3	1.68	-0.33	25.9	7.9	31.2
161	362.1	1.059	55.1	-5.4	7.63	12.590	19.050	15.896	33.9	18.0	39.2	23.3	1.68	-0.34	25.9	7.9	31.3
162	361.6	1.064	55.1	-5.3	7.64	12.671	18.980	15.820	33.8	18.0	39.1	23.3	1.68	-0.34	25.9	7.9	31.2
163	360.6	1.069	55.2	-5.2	7.64	12.752	18.824	15.668	33.6	18.0	38.9	23.2	1.68	-0.33	25.8	7.8	31.0
164	360.0	1.073	55.2	-5.2	7.65	12.833	18.737	15.578	33.5	18.0	38.8	23.2	1.67	-0.33	25.7	7.8	31.0
165	360.5	1.078	55.3	-5.2	7.66	12.914	18.806	15.623	33.6	18.0	38.7	23.1	1.68	-0.33	25.8	7.8	30.9
166	359.1	1.082	55.3	-5.2	7.66	12.987	18.598	15.428	33.4	18.0	38.6	23.1	1.67	-0.34	25.7	7.7	30.9
167	359.1	1.087	55.2	-5.2	7.67	13.067	18.598	15.413	33.4	18.0	38.6	23.2	1.66	-0.34	25.7	7.7	30.9
168	358.2	1.091	55.2	-5.2	7.68	13.148	18.459	15.277	33.2	18.0	38.5	23.2	1.66	-0.34	25.6	7.6	30.8
169	358.1	1.096	55.3	-5.2	7.69	13.229	18.442	15.247	33.2	18.0	38.4	23.1	1.66	-0.34	25.6	7.6	30.8
170	358.4	1.100	55.3	-5.1	7.69	13.302	18.494	15.279	33.2	18.0	38.4	23.1	1.66	-0.34	25.6	7.6	30.7
171	357.5	1.104	55.3	-5.1	7.70	13.383	18.355	15.144	33.1	18.0	38.2	23.1	1.66	-0.34	25.5	7.6	30.6
172	357.7	1.109	55.3	-5.1	7.71	13.456	18.390	15.160	33.1	18.0	38.2	23.1	1.66	-0.34	25.5	7.6	30.7
173	357.2	1.113	55.2	-5.2	7.71	13.537	18.320	15.085	33.0	18.0	38.3	23.2	1.65	-0.35	25.5	7.5	30.7
174	357.0	1.118	55.3	-5.2	7.72	13.618	18.285	15.040	33.0	18.0	38.2	23.1	1.65	-0.34	25.5	7.5	30.7
175	357.5	1.122	55.3	-5.2	7.73	13.690	18.355	15.087	33.0	18.0	38.2	23.1	1.65	-0.34	25.5	7.5	30.7
176	357.5	1.127	55.3	-5.1	7.73	13.771	18.355	15.072	33.0	18.0	38.2	23.1	1.65	-0.34	25.5	7.5	30.6
177	357.1	1.131	55.3	-5.1	7.74	13.852	18.303	15.012	33.0	18.0	38.1	23.1	1.65	-0.34	25.5	7.5	30.6
178	356.6	1.135	55.3	-5.1	7.75	13.925	18.216	14.924	32.9	18.0	38.0	23.1	1.65	-0.34	25.4	7.5	30.5
179	357.2	1.140	55.3	-5.2	7.75	14.006	18.320	14.999	33.0	18.0	38.1	23.1	1.65	-0.35	25.5	7.5	30.6
180	357.4	1.144	55.3	-5.2	7.76	14.079	18.338	15.001	33.0	18.0	38.1	23.1	1.65	-0.35	25.5	7.5	30.6
181	356.7	1.149	55.3	-5.2	7.77	14.160	18.233	14.897	32.9	18.0	38.0	23.1	1.64	-0.35	25.4	7.4	30.6
182	357.2	1.153	55.3	-5.1	7.78	14.233	18.320	14.958	32.9	18.0	38.0	23.1	1.65	-0.34	25.4	7.5	30.6

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	356.9	1.157	55.3	-5.1	7.78	14.314	18.268	14.898	32.9	18.0	38.0	23.1	1.65	-0.34	25.4	7.4	30.5
184	356.8	1.162	55.3	-5.1	7.79	14.386	18.251	14.870	32.8	18.0	37.9	23.1	1.64	-0.34	25.4	7.4	30.5
185	355.0	1.166	55.3	-5.2	7.80	14.467	17.990	14.633	32.6	18.0	37.8	23.1	1.63	-0.35	25.3	7.3	30.5
186	356.4	1.170	55.3	-5.2	7.80	14.540	18.199	14.798	32.8	18.0	37.9	23.1	1.64	-0.35	25.4	7.4	30.5
187	356.1	1.175	55.3	-5.1	7.81	14.621	18.147	14.738	32.7	18.0	37.8	23.1	1.64	-0.35	25.3	7.4	30.5
188	356.2	1.179	55.3	-5.1	7.82	14.702	18.164	14.738	32.7	18.0	37.8	23.1	1.64	-0.35	25.3	7.4	30.4
189	356.8	1.184	55.4	-5.1	7.82	14.775	18.251	14.799	32.8	18.0	37.8	23.0	1.64	-0.34	25.4	7.4	30.4
190	356.6	1.188	55.3	-5.1	7.83	14.856	18.216	14.755	32.7	18.0	37.8	23.1	1.64	-0.35	25.3	7.4	30.5
191	355.5	1.192	55.3	-5.2	7.84	14.928	18.060	14.609	32.6	18.0	37.8	23.1	1.63	-0.35	25.3	7.3	30.4
192	356.1	1.197	55.3	-5.2	7.85	15.009	18.147	14.668	32.6	18.0	37.8	23.1	1.63	-0.35	25.3	7.3	30.4
193	356.0	1.202	55.3	-5.1	7.85	15.090	18.129	14.638	32.6	18.0	37.7	23.1	1.63	-0.35	25.3	7.3	30.4
194	356.0	1.206	55.3	-5.1	7.86	15.163	18.129	14.625	32.6	18.0	37.7	23.1	1.63	-0.35	25.3	7.3	30.4
195	356.4	1.210	55.4	-5.1	7.87	15.244	18.199	14.669	32.6	18.0	37.7	23.0	1.64	-0.35	25.3	7.3	30.4
196	356.3	1.215	55.3	-5.1	7.88	15.325	18.181	14.640	32.6	18.0	37.7	23.1	1.63	-0.35	25.3	7.3	30.4
197	355.4	1.220	55.3	-5.2	7.88	15.406	18.042	14.508	32.5	18.0	37.7	23.1	1.63	-0.36	25.2	7.3	30.4
198	355.7	1.224	55.3	-5.2	7.89	15.479	18.094	14.539	32.5	18.0	37.7	23.1	1.63	-0.35	25.2	7.3	30.4
199	356.0	1.228	55.3	-5.1	7.90	15.552	18.129	14.555	32.5	18.0	37.6	23.1	1.63	-0.35	25.2	7.3	30.3
200	356.1	1.232	55.4	-5.1	7.90	15.632	18.147	14.555	32.5	18.0	37.6	23.0	1.63	-0.35	25.2	7.3	30.3
201	356.4	1.237	55.4	-5.1	7.91	15.713	18.199	14.584	32.5	18.0	37.6	23.0	1.63	-0.35	25.3	7.3	30.3
202	356.3	1.242	55.3	-5.1	7.92	15.794	18.181	14.555	32.5	18.0	37.6	23.1	1.63	-0.35	25.2	7.3	30.3
203	356.8	1.246	55.3	-5.2	7.93	15.867	18.251	14.600	32.6	18.0	37.7	23.1	1.63	-0.36	25.3	7.3	30.4
204	355.7	1.250	55.3	-5.2	7.93	15.948	18.094	14.454	32.4	18.0	37.6	23.1	1.63	-0.36	25.2	7.2	30.3
205	355.4	1.255	55.3	-5.1	7.94	16.029	18.042	14.395	32.4	18.0	37.5	23.1	1.62	-0.36	25.2	7.2	30.3
206	355.7	1.259	55.3	-5.1	7.95	16.102	18.094	14.426	32.4	18.0	37.5	23.1	1.63	-0.35	25.2	7.2	30.3
207	354.2	1.264	55.4	-5.1	7.96	16.183	17.869	14.222	32.2	18.0	37.2	23.0	1.62	-0.36	25.1	7.1	30.1
208	357.4	1.268	55.4	-5.1	7.96	16.264	18.338	14.600	32.6	18.0	37.6	23.0	1.63	-0.35	25.3	7.3	30.3
209	357.8	1.272	55.3	-5.2	7.97	16.336	18.407	14.645	32.6	18.0	37.8	23.1	1.63	-0.35	25.3	7.3	30.4
210	358.2	1.277	55.3	-5.2	7.98	16.417	18.459	14.674	32.6	18.0	37.8	23.1	1.63	-0.35	25.3	7.3	30.5
211	357.0	1.282	55.3	-5.1	7.99	16.498	18.285	14.514	32.5	18.0	37.6	23.1	1.63	-0.35	25.2	7.3	30.3
212	357.8	1.286	55.3	-5.1	7.99	16.571	18.407	14.602	32.6	18.0	37.7	23.1	1.63	-0.35	25.3	7.3	30.4
213	357.1	1.290	55.4	-5.1	8.00	16.652	18.303	14.500	32.5	18.0	37.5	23.0	1.63	-0.35	25.2	7.3	30.3
214	356.9	1.295	55.4	-5.1	8.01	16.733	18.268	14.456	32.4	18.0	37.5	23.0	1.63	-0.35	25.2	7.2	30.3
215	357.5	1.300	55.3	-5.2	8.02	16.814	18.355	14.514	32.5	18.0	37.6	23.1	1.63	-0.36	25.2	7.3	30.4
216	358.2	1.304	55.3	-5.2	8.02	16.887	18.459	14.587	32.5	18.0	37.7	23.1	1.63	-0.36	25.3	7.3	30.4
217	357.6	1.308	55.3	-5.2	8.03	16.967	18.372	14.500	32.5	18.0	37.6	23.1	1.63	-0.36	25.2	7.2	30.4
218	357.8	1.313	55.3	-5.1	8.04	17.048	18.407	14.514	32.5	18.0	37.6	23.1	1.63	-0.35	25.2	7.3	30.3
219	358.5	1.318	55.3	-5.1	8.05	17.129	18.511	14.585	32.5	18.0	37.6	23.1	1.63	-0.35	25.3	7.3	30.3
220	358.1	1.322	55.4	-5.1	8.05	17.202	18.442	14.514	32.5	18.0	37.5	23.0	1.63	-0.35	25.2	7.3	30.3
221	357.6	1.326	55.4	-5.1	8.06	17.283	18.372	14.442	32.4	18.0	37.5	23.0	1.63	-0.35	25.2	7.2	30.2
222	357.9	1.330	55.3	-5.1	8.07	17.356	18.424	14.472	32.4	18.0	37.6	23.1	1.63	-0.35	25.2	7.2	30.3
223	357.1	1.335	55.3	-5.2	8.08	17.437	18.303	14.356	32.3	18.0	37.5	23.1	1.62	-0.36	25.1	7.2	30.3

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	356.0	1.340	55.3	-5.2	8.08	17.518	18.129	14.198	32.2	18.0	37.3	23.1	1.61	-0.36	25.1	7.1	30.2
225	357.0	1.344	55.3	-5.1	8.09	17.599	18.285	14.312	32.3	18.0	37.4	23.1	1.62	-0.36	25.1	7.2	30.2
226	357.2	1.348	55.3	-5.1	8.10	17.671	18.320	14.328	32.3	18.0	37.4	23.1	1.62	-0.36	25.1	7.2	30.2
227	357.1	1.353	55.3	-5.1	8.11	17.752	18.303	14.299	32.3	18.0	37.4	23.1	1.62	-0.36	25.1	7.1	30.2
228	357.0	1.357	55.4	-5.1	8.12	17.825	18.285	14.271	32.2	18.0	37.3	23.0	1.62	-0.35	25.1	7.1	30.2
229	356.6	1.362	55.4	-5.1	8.12	17.906	18.216	14.199	32.2	18.0	37.2	23.0	1.62	-0.36	25.1	7.1	30.1
230	357.2	1.366	55.3	-5.2	8.13	17.979	18.320	14.271	32.2	18.0	37.4	23.1	1.62	-0.36	25.1	7.1	30.3
231	356.0	1.370	55.3	-5.2	8.14	18.060	18.129	14.100	32.1	18.0	37.2	23.1	1.61	-0.37	25.0	7.1	30.2
232	356.2	1.375	55.3	-5.2	8.15	18.133	18.164	14.115	32.1	18.0	37.2	23.1	1.61	-0.37	25.0	7.1	30.2
233	356.4	1.379	55.3	-5.1	8.15	18.214	18.199	14.129	32.1	18.0	37.2	23.1	1.61	-0.36	25.0	7.1	30.1
234	356.6	1.383	55.3	-5.1	8.16	18.286	18.216	14.130	32.1	18.0	37.2	23.1	1.61	-0.36	25.0	7.1	30.1
235	356.8	1.387	55.3	-5.1	8.17	18.359	18.251	14.145	32.1	18.0	37.2	23.1	1.61	-0.36	25.0	7.1	30.1
236	356.3	1.392	55.4	-5.1	8.18	18.440	18.181	14.074	32.0	18.0	37.1	23.0	1.61	-0.36	25.0	7.0	30.1
237	355.4	1.396	55.3	-5.1	8.18	18.513	18.042	13.947	31.9	18.0	37.0	23.1	1.60	-0.37	24.9	7.0	30.0
238	355.5	1.401	55.3	-5.2	8.19	18.594	18.060	13.947	31.9	18.0	37.1	23.1	1.60	-0.37	24.9	7.0	30.1
239	355.4	1.405	55.3	-5.2	8.20	18.667	18.042	13.919	31.9	18.0	37.0	23.1	1.60	-0.37	24.9	7.0	30.1
240	355.7	1.410	55.3	-5.1	8.21	18.748	18.094	13.947	31.9	18.0	37.0	23.1	1.60	-0.37	24.9	7.0	30.0
241	354.9	1.414	55.4	-5.1	8.21	18.820	17.973	13.835	31.8	18.0	36.9	23.0	1.60	-0.37	24.9	6.9	29.9
242	355.3	1.418	55.4	-5.0	8.22	18.901	18.025	13.863	31.8	18.0	36.9	23.0	1.60	-0.36	24.9	6.9	29.9
243	355.3	1.422	55.4	-5.0	8.23	18.974	18.025	13.850	31.8	18.0	36.8	23.0	1.60	-0.36	24.9	6.9	29.9
244	355.4	1.427	55.4	-5.0	8.24	19.055	18.042	13.849	31.8	18.0	36.8	23.0	1.60	-0.36	24.9	6.9	29.9
245	354.9	1.431	55.3	-5.1	8.25	19.128	17.973	13.780	31.7	18.0	36.8	23.1	1.60	-0.37	24.9	6.9	29.9
246	354.8	1.436	55.3	-5.1	8.25	19.209	17.956	13.752	31.7	18.0	36.8	23.1	1.60	-0.37	24.8	6.9	30.0
247	354.8	1.440	55.4	-5.1	8.26	19.290	17.956	13.737	31.7	18.0	36.8	23.0	1.60	-0.37	24.8	6.9	29.9
248	354.7	1.445	55.4	-5.0	8.27	19.363	17.938	13.710	31.7	18.0	36.7	23.0	1.60	-0.37	24.8	6.9	29.9
249	355.2	1.449	55.4	-5.0	8.28	19.443	18.008	13.751	31.7	18.0	36.7	23.0	1.60	-0.36	24.8	6.9	29.8
250	354.7	1.454	55.4	-5.0	8.29	19.524	17.938	13.681	31.6	18.0	36.6	23.0	1.60	-0.37	24.8	6.8	29.8
251	354.2	1.458	55.5	-5.0	8.29	19.597	17.869	13.612	31.6	18.0	36.6	22.9	1.59	-0.37	24.8	6.8	29.7
252	354.1	1.462	55.4	-5.0	8.30	19.678	17.851	13.584	31.5	18.0	36.6	23.0	1.59	-0.37	24.8	6.8	29.8
253	354.1	1.467	55.3	-5.1	8.31	19.759	17.851	13.569	31.5	18.0	36.6	23.1	1.59	-0.38	24.7	6.8	29.8
254	354.2	1.472	55.4	-5.1	8.32	19.840	17.869	13.569	31.5	18.0	36.6	23.0	1.59	-0.37	24.7	6.8	29.8
255	354.0	1.476	55.4	-5.0	8.33	19.913	17.834	13.528	31.5	18.0	36.5	23.0	1.59	-0.37	24.7	6.8	29.8
256	354.4	1.480	55.4	-5.0	8.34	19.994	17.886	13.555	31.5	18.0	36.5	23.0	1.59	-0.37	24.7	6.8	29.7
257	353.9	1.481	55.4	-5.0	8.34	20.002	17.817	13.498	31.5	18.0	36.5	23.0	1.59	-0.37	24.7	6.7	29.7

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)

Specimen C Shear Data

CU Triaxial Test

ncdot

File Location
T-5772.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5772
Sample Location: Guilford County (Sta. 404+50)
Sample Description: Greyish tan colored silt
Remarks: 35° shear plane.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.819
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.861	2.796	
Height (in)	6.082	5.955	
Weight (grams)	1267.00		1288.00
Moisture (%)	24.58		26.65
Dry Density (pcf)	99.07	105.99	
Saturation (%)	89.25	100.00	
Void Ratio	0.772	0.660	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 96.400
Effective Confining Stress (psi): 36.0
Corrected Peak Deviator Stress (psi): 21.024 at reading number: 258

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	49.5	0.165	60.4	0.0	6.14	0.000	0.000	0.000	36.0	36.0	36.0	36.0	1.00	0.00	36.0	0.0	36.0
1	82.8	0.169	62.7	2.2	6.14	0.067	5.416	5.386	41.4	36.0	39.1	33.7	1.16	0.42	38.7	2.7	36.4
2	103.6	0.174	64.4	4.0	6.15	0.153	8.815	8.741	44.7	36.0	40.7	32.0	1.27	0.46	40.3	4.4	36.3
3	118.1	0.179	65.8	5.4	6.15	0.230	11.168	11.052	47.0	36.0	41.6	30.6	1.36	0.49	41.5	5.5	36.1
4	128.8	0.184	66.9	6.5	6.16	0.316	12.924	12.758	48.7	36.0	42.3	29.5	1.43	0.51	42.4	6.4	35.9
5	137.3	0.188	67.7	7.3	6.16	0.393	14.306	14.095	50.1	36.0	42.8	28.7	1.49	0.52	43.0	7.0	35.7
6	144.7	0.194	68.4	8.0	6.17	0.479	15.501	15.238	51.2	36.0	43.2	28.0	1.54	0.52	43.6	7.6	35.6
7	150.3	0.198	68.9	8.5	6.17	0.556	16.416	16.106	52.1	36.0	43.6	27.5	1.59	0.53	44.0	8.1	35.6
8	155.4	0.203	69.3	8.9	6.18	0.633	17.257	16.899	52.9	36.0	44.0	27.1	1.62	0.53	44.4	8.4	35.5
9	159.5	0.207	69.7	9.3	6.18	0.709	17.910	17.504	53.5	36.0	44.2	26.7	1.66	0.53	44.7	8.8	35.4
10	163.0	0.212	70.1	9.6	6.19	0.796	18.489	18.029	54.0	36.0	44.4	26.3	1.68	0.53	45.0	9.0	35.4
11	165.8	0.216	70.3	9.9	6.19	0.863	18.938	18.435	54.4	36.0	44.5	26.1	1.71	0.54	45.2	9.2	35.3
12	168.1	0.222	70.5	10.1	6.20	0.949	19.311	18.754	54.7	36.0	44.6	25.9	1.72	0.54	45.4	9.4	35.3
13	169.9	0.226	70.7	10.2	6.20	1.026	19.610	19.005	55.0	36.0	44.7	25.7	1.74	0.54	45.5	9.5	35.2
14	170.9	0.231	70.7	10.3	6.21	1.103	19.778	19.126	55.1	36.0	44.8	25.7	1.74	0.54	45.5	9.6	35.3
15	171.6	0.236	70.8	10.4	6.21	1.189	19.890	19.186	55.2	36.0	44.8	25.6	1.75	0.54	45.6	9.6	35.2
16	172.9	0.240	70.8	10.4	6.22	1.266	20.095	19.343	55.3	36.0	44.9	25.6	1.76	0.54	45.6	9.7	35.2
17	173.9	0.245	70.9	10.4	6.22	1.342	20.264	19.463	55.4	36.0	45.0	25.5	1.76	0.54	45.7	9.7	35.3
18	174.8	0.250	70.9	10.4	6.23	1.419	20.413	19.565	55.5	36.0	45.1	25.5	1.77	0.53	45.8	9.8	35.3

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	176.0	0.254	70.9	10.4	6.23	1.496	20.600	19.703	55.7	36.0	45.2	25.5	1.77	0.53	45.8	9.9	35.4
20	176.4	0.259	70.8	10.4	6.24	1.572	20.674	19.731	55.7	36.0	45.3	25.6	1.77	0.53	45.8	9.9	35.5
21	176.9	0.263	70.7	10.3	6.24	1.649	20.749	19.758	55.7	36.0	45.4	25.7	1.77	0.52	45.9	9.9	35.5
22	176.8	0.268	70.7	10.3	6.25	1.735	20.730	19.688	55.7	36.0	45.3	25.7	1.77	0.52	45.8	9.8	35.5
23	177.0	0.273	70.7	10.3	6.25	1.812	20.768	19.678	55.7	36.0	45.3	25.7	1.77	0.52	45.8	9.8	35.5
24	177.1	0.277	70.7	10.3	6.26	1.889	20.786	19.651	55.6	36.0	45.3	25.7	1.76	0.52	45.8	9.8	35.5
25	177.2	0.282	70.7	10.2	6.26	1.965	20.805	19.623	55.6	36.0	45.4	25.7	1.76	0.52	45.8	9.8	35.5
26	176.9	0.287	70.5	10.1	6.27	2.042	20.749	19.538	55.5	36.0	45.4	25.9	1.76	0.52	45.7	9.8	35.6
27	176.5	0.291	70.5	10.0	6.27	2.119	20.693	19.468	55.4	36.0	45.4	25.9	1.75	0.52	45.7	9.7	35.7
28	176.8	0.296	70.5	10.0	6.28	2.196	20.730	19.488	55.5	36.0	45.4	25.9	1.75	0.52	45.7	9.7	35.7
29	176.8	0.300	70.4	10.0	6.28	2.272	20.730	19.472	55.5	36.0	45.4	26.0	1.75	0.51	45.7	9.7	35.7
30	176.4	0.305	70.4	10.0	6.29	2.359	20.674	19.400	55.4	36.0	45.4	26.0	1.75	0.51	45.7	9.7	35.7
31	176.3	0.310	70.3	9.9	6.29	2.435	20.656	19.366	55.3	36.0	45.4	26.1	1.74	0.51	45.7	9.7	35.7
32	176.1	0.315	70.2	9.8	6.30	2.512	20.618	19.314	55.3	36.0	45.5	26.2	1.74	0.51	45.6	9.7	35.8
33	176.0	0.319	70.1	9.7	6.30	2.589	20.600	19.280	55.3	36.0	45.5	26.3	1.73	0.50	45.6	9.6	35.9
34	176.3	0.324	70.1	9.7	6.31	2.665	20.656	19.318	55.3	36.0	45.6	26.3	1.74	0.50	45.6	9.7	35.9
35	176.3	0.328	70.1	9.7	6.31	2.742	20.656	19.302	55.3	36.0	45.6	26.3	1.73	0.50	45.6	9.7	35.9
36	176.1	0.333	70.1	9.6	6.32	2.819	20.618	19.250	55.2	36.0	45.6	26.3	1.73	0.50	45.6	9.6	36.0
37	176.2	0.338	70.0	9.6	6.32	2.905	20.637	19.251	55.2	36.0	45.6	26.4	1.73	0.50	45.6	9.6	36.0
38	176.4	0.343	69.9	9.5	6.33	2.982	20.674	19.271	55.2	36.0	45.7	26.5	1.73	0.49	45.6	9.6	36.1
39	176.2	0.347	69.9	9.4	6.33	3.058	20.637	19.219	55.2	36.0	45.8	26.5	1.72	0.49	45.6	9.6	36.1
40	176.2	0.352	69.8	9.4	6.34	3.135	20.637	19.203	55.2	36.0	45.8	26.6	1.72	0.49	45.6	9.6	36.2
41	176.1	0.356	69.8	9.4	6.34	3.212	20.618	19.169	55.1	36.0	45.8	26.6	1.72	0.49	45.6	9.6	36.2
42	175.5	0.361	69.8	9.4	6.35	3.298	20.525	19.061	55.0	36.0	45.7	26.6	1.72	0.49	45.5	9.5	36.1
43	175.5	0.366	69.7	9.3	6.35	3.375	20.525	19.045	55.0	36.0	45.7	26.7	1.71	0.49	45.5	9.5	36.2
44	176.2	0.371	69.7	9.3	6.36	3.452	20.637	19.138	55.1	36.0	45.8	26.7	1.72	0.48	45.5	9.6	36.3
45	176.2	0.375	69.6	9.2	6.36	3.528	20.637	19.122	55.1	36.0	45.9	26.8	1.71	0.48	45.5	9.6	36.4
46	176.4	0.380	69.5	9.1	6.37	3.605	20.674	19.142	55.1	36.0	46.0	26.9	1.71	0.48	45.5	9.6	36.4
47	176.4	0.384	69.5	9.1	6.37	3.682	20.674	19.126	55.1	36.0	46.0	26.9	1.71	0.48	45.5	9.6	36.4
48	176.2	0.389	69.5	9.1	6.38	3.758	20.637	19.075	55.1	36.0	46.0	26.9	1.71	0.48	45.5	9.5	36.4
49	176.5	0.394	69.5	9.1	6.38	3.845	20.693	19.111	55.1	36.0	46.0	26.9	1.71	0.48	45.5	9.6	36.5
50	176.5	0.399	69.5	9.0	6.39	3.921	20.693	19.095	55.1	36.0	46.0	26.9	1.71	0.47	45.5	9.5	36.5
51	176.8	0.403	69.4	9.0	6.39	3.998	20.730	19.115	55.1	36.0	46.1	27.0	1.71	0.47	45.5	9.6	36.6
52	176.4	0.408	69.3	8.9	6.40	4.075	20.674	19.045	55.0	36.0	46.1	27.1	1.70	0.47	45.5	9.5	36.6
53	176.8	0.412	69.3	8.9	6.40	4.151	20.730	19.083	55.1	36.0	46.2	27.1	1.70	0.47	45.5	9.5	36.6
54	176.6	0.417	69.3	8.8	6.41	4.228	20.712	19.049	55.0	36.0	46.2	27.1	1.70	0.46	45.5	9.5	36.7
55	176.6	0.421	69.3	8.8	6.41	4.305	20.712	19.033	55.0	36.0	46.2	27.1	1.70	0.46	45.5	9.5	36.7
56	176.8	0.426	69.3	8.8	6.42	4.391	20.730	19.033	55.0	36.0	46.2	27.1	1.70	0.46	45.5	9.5	36.7
57	176.6	0.431	69.2	8.8	6.43	4.468	20.712	18.999	55.0	36.0	46.2	27.2	1.70	0.46	45.5	9.5	36.7
58	176.5	0.436	69.1	8.7	6.43	4.545	20.693	18.966	54.9	36.0	46.3	27.3	1.69	0.46	45.5	9.5	36.8
59	176.8	0.440	69.1	8.6	6.44	4.621	20.730	18.985	55.0	36.0	46.3	27.3	1.69	0.45	45.5	9.5	36.8

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	176.5	0.445	69.1	8.6	6.44	4.698	20.693	18.934	54.9	36.0	46.3	27.3	1.69	0.46	45.4	9.5	36.8
61	176.6	0.449	69.1	8.6	6.45	4.775	20.712	18.936	54.9	36.0	46.3	27.3	1.69	0.46	45.4	9.5	36.8
62	176.4	0.454	69.0	8.6	6.45	4.851	20.674	18.884	54.9	36.0	46.3	27.4	1.69	0.46	45.4	9.4	36.8
63	176.6	0.458	69.0	8.6	6.46	4.928	20.712	18.904	54.9	36.0	46.3	27.4	1.69	0.45	45.4	9.5	36.8
64	176.6	0.464	68.9	8.5	6.46	5.014	20.712	18.886	54.9	36.0	46.4	27.5	1.69	0.45	45.4	9.4	36.9
65	176.6	0.468	68.9	8.4	6.47	5.091	20.712	18.870	54.8	36.0	46.4	27.5	1.69	0.45	45.4	9.4	37.0
66	177.2	0.472	68.9	8.4	6.47	5.158	20.805	18.945	54.9	36.0	46.5	27.5	1.69	0.45	45.5	9.5	37.0
67	176.9	0.477	68.9	8.4	6.48	5.244	20.749	18.874	54.9	36.0	46.4	27.5	1.69	0.45	45.4	9.4	37.0
68	177.0	0.482	68.9	8.4	6.48	5.321	20.768	18.876	54.9	36.0	46.4	27.5	1.69	0.45	45.4	9.4	37.0
69	176.8	0.486	68.8	8.4	6.49	5.398	20.730	18.825	54.8	36.0	46.4	27.6	1.68	0.45	45.4	9.4	37.0
70	176.2	0.491	68.8	8.4	6.49	5.474	20.637	18.720	54.7	36.0	46.3	27.6	1.68	0.45	45.3	9.4	37.0
71	176.4	0.496	68.7	8.3	6.50	5.551	20.674	18.740	54.7	36.0	46.4	27.7	1.68	0.44	45.3	9.4	37.1
72	176.5	0.501	68.7	8.3	6.50	5.637	20.693	18.740	54.7	36.0	46.4	27.7	1.68	0.44	45.3	9.4	37.1
73	176.2	0.505	68.7	8.3	6.51	5.714	20.637	18.671	54.6	36.0	46.4	27.7	1.67	0.44	45.3	9.3	37.0
74	176.6	0.510	68.7	8.3	6.52	5.791	20.712	18.725	54.7	36.0	46.4	27.7	1.68	0.44	45.3	9.4	37.1
75	176.4	0.514	68.7	8.3	6.52	5.868	20.674	18.674	54.7	36.0	46.4	27.7	1.67	0.44	45.3	9.3	37.0
76	176.8	0.520	68.7	8.2	6.53	5.954	20.730	18.709	54.7	36.0	46.5	27.7	1.67	0.44	45.3	9.4	37.1
77	176.9	0.524	68.6	8.2	6.53	6.031	20.749	18.711	54.7	36.0	46.5	27.8	1.67	0.44	45.3	9.4	37.2
78	176.5	0.529	68.5	8.1	6.54	6.107	20.693	18.642	54.6	36.0	46.5	27.9	1.67	0.44	45.3	9.3	37.2
79	176.6	0.533	68.5	8.1	6.54	6.184	20.712	18.644	54.6	36.0	46.5	27.9	1.67	0.44	45.3	9.3	37.2
80	176.8	0.538	68.5	8.1	6.55	6.261	20.730	18.646	54.6	36.0	46.5	27.9	1.67	0.44	45.3	9.3	37.2
81	176.8	0.542	68.5	8.1	6.55	6.337	20.730	18.630	54.6	36.0	46.5	27.9	1.67	0.44	45.3	9.3	37.2
82	177.1	0.547	68.5	8.1	6.56	6.414	20.786	18.666	54.6	36.0	46.5	27.9	1.67	0.43	45.3	9.3	37.2
83	177.1	0.552	68.5	8.0	6.56	6.491	20.786	18.650	54.6	36.0	46.6	27.9	1.67	0.43	45.3	9.3	37.3
84	177.2	0.556	68.4	8.0	6.57	6.567	20.805	18.652	54.6	36.0	46.6	28.0	1.67	0.43	45.3	9.3	37.3
85	177.2	0.561	68.4	8.0	6.57	6.644	20.805	18.636	54.6	36.0	46.6	28.0	1.67	0.43	45.3	9.3	37.3
86	177.3	0.566	68.4	8.0	6.58	6.730	20.824	18.635	54.6	36.0	46.6	28.0	1.67	0.43	45.3	9.3	37.3
87	177.7	0.570	68.4	8.0	6.59	6.807	20.880	18.672	54.6	36.0	46.7	28.0	1.67	0.43	45.3	9.3	37.3
88	177.7	0.575	68.4	8.0	6.59	6.884	20.880	18.656	54.6	36.0	46.6	28.0	1.67	0.43	45.3	9.3	37.3
89	177.6	0.580	68.4	8.0	6.60	6.961	20.861	18.622	54.6	36.0	46.6	28.0	1.66	0.43	45.3	9.3	37.3
90	177.8	0.584	68.3	7.9	6.60	7.037	20.899	18.641	54.6	36.0	46.7	28.1	1.66	0.42	45.3	9.3	37.4
91	178.5	0.589	68.3	7.9	6.61	7.114	21.011	18.729	54.7	36.0	46.8	28.1	1.67	0.42	45.3	9.4	37.5
92	178.3	0.593	68.3	7.9	6.61	7.191	20.973	18.678	54.7	36.0	46.8	28.1	1.66	0.42	45.3	9.3	37.4
93	178.6	0.598	68.3	7.9	6.62	7.267	21.029	18.714	54.7	36.0	46.8	28.1	1.67	0.42	45.3	9.4	37.5
94	178.4	0.602	68.3	7.9	6.62	7.344	20.992	18.663	54.6	36.0	46.8	28.1	1.66	0.42	45.3	9.3	37.4
95	178.6	0.607	68.3	7.8	6.63	7.421	21.029	18.682	54.7	36.0	46.8	28.1	1.66	0.42	45.3	9.3	37.5
96	178.5	0.611	68.2	7.8	6.64	7.497	21.011	18.648	54.6	36.0	46.8	28.2	1.66	0.42	45.3	9.3	37.5
97	178.7	0.616	68.2	7.8	6.64	7.574	21.048	18.667	54.6	36.0	46.9	28.2	1.66	0.42	45.3	9.3	37.6
98	178.9	0.621	68.2	7.8	6.65	7.660	21.085	18.683	54.7	36.0	46.9	28.2	1.66	0.42	45.3	9.3	37.6
99	179.6	0.626	68.2	7.8	6.65	7.737	21.197	18.770	54.7	36.0	47.0	28.2	1.67	0.41	45.4	9.4	37.6
100	180.0	0.630	68.2	7.8	6.66	7.814	21.253	18.806	54.8	36.0	47.0	28.2	1.67	0.41	45.4	9.4	37.6

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	180.3	0.635	68.2	7.8	6.66	7.891	21.309	18.841	54.8	36.0	47.0	28.2	1.67	0.41	45.4	9.4	37.6
102	180.3	0.639	68.1	7.7	6.67	7.967	21.309	18.825	54.8	36.0	47.1	28.3	1.67	0.41	45.4	9.4	37.7
103	181.0	0.644	68.1	7.7	6.67	8.044	21.421	18.911	54.9	36.0	47.2	28.3	1.67	0.41	45.4	9.5	37.8
104	181.2	0.649	68.1	7.7	6.68	8.121	21.459	18.929	54.9	36.0	47.2	28.3	1.67	0.41	45.4	9.5	37.8
105	182.0	0.654	68.1	7.7	6.69	8.207	21.590	19.031	55.0	36.0	47.3	28.3	1.67	0.41	45.5	9.5	37.8
106	182.2	0.658	68.1	7.7	6.69	8.284	21.608	19.031	55.0	36.0	47.3	28.3	1.67	0.41	45.5	9.5	37.8
107	182.4	0.663	68.1	7.7	6.70	8.360	21.646	19.049	55.0	36.0	47.3	28.3	1.67	0.40	45.5	9.5	37.8
108	182.5	0.667	68.1	7.6	6.70	8.437	21.664	19.049	55.0	36.0	47.4	28.3	1.67	0.40	45.5	9.5	37.9
109	182.5	0.672	68.0	7.6	6.71	8.514	21.664	19.033	55.0	36.0	47.4	28.4	1.67	0.40	45.5	9.5	37.9
110	183.0	0.677	68.0	7.6	6.71	8.590	21.739	19.085	55.1	36.0	47.5	28.4	1.67	0.40	45.5	9.5	37.9
111	183.5	0.681	68.0	7.6	6.72	8.667	21.832	19.153	55.1	36.0	47.5	28.4	1.67	0.40	45.6	9.6	38.0
112	183.9	0.686	68.0	7.6	6.73	8.753	21.888	19.185	55.2	36.0	47.6	28.4	1.68	0.40	45.6	9.6	38.0
113	184.0	0.691	68.0	7.6	6.73	8.830	21.907	19.186	55.2	36.0	47.6	28.4	1.68	0.40	45.6	9.6	38.0
114	184.2	0.695	68.0	7.6	6.74	8.907	21.944	19.203	55.2	36.0	47.6	28.4	1.68	0.40	45.6	9.6	38.0
115	184.7	0.700	67.9	7.5	6.74	8.984	22.019	19.254	55.2	36.0	47.7	28.5	1.68	0.39	45.6	9.6	38.1
116	185.1	0.705	67.9	7.5	6.75	9.060	22.094	19.305	55.3	36.0	47.8	28.5	1.68	0.39	45.6	9.7	38.1
117	185.2	0.709	67.9	7.5	6.76	9.137	22.112	19.305	55.3	36.0	47.8	28.5	1.68	0.39	45.6	9.7	38.1
118	185.6	0.714	67.9	7.5	6.76	9.214	22.169	19.339	55.3	36.0	47.8	28.5	1.68	0.39	45.6	9.7	38.1
119	186.6	0.719	67.9	7.5	6.77	9.300	22.337	19.472	55.5	36.0	47.9	28.5	1.68	0.39	45.7	9.7	38.2
120	186.9	0.723	67.9	7.5	6.77	9.377	22.374	19.489	55.5	36.0	48.0	28.5	1.68	0.39	45.7	9.7	38.2
121	187.0	0.728	67.9	7.4	6.78	9.453	22.393	19.489	55.5	36.0	48.0	28.5	1.68	0.38	45.7	9.7	38.3
122	187.4	0.733	67.8	7.4	6.78	9.530	22.467	19.539	55.5	36.0	48.1	28.6	1.68	0.38	45.7	9.8	38.4
123	187.2	0.737	67.8	7.4	6.79	9.607	22.430	19.488	55.5	36.0	48.1	28.6	1.68	0.38	45.7	9.7	38.3
124	187.2	0.742	67.8	7.4	6.80	9.683	22.430	19.471	55.4	36.0	48.1	28.6	1.68	0.38	45.7	9.7	38.3
125	187.2	0.746	67.8	7.4	6.80	9.760	22.430	19.454	55.4	36.0	48.0	28.6	1.68	0.38	45.7	9.7	38.3
126	187.3	0.751	67.8	7.4	6.81	9.837	22.449	19.453	55.4	36.0	48.0	28.6	1.68	0.38	45.7	9.7	38.3
127	187.7	0.755	67.8	7.4	6.81	9.914	22.505	19.487	55.5	36.0	48.1	28.6	1.68	0.38	45.7	9.7	38.4
128	188.1	0.760	67.7	7.3	6.82	9.990	22.579	19.537	55.5	36.0	48.2	28.7	1.68	0.37	45.7	9.8	38.5
129	188.6	0.764	67.7	7.3	6.83	10.067	22.654	19.587	55.6	36.0	48.3	28.7	1.68	0.37	45.8	9.8	38.5
130	188.3	0.769	67.7	7.3	6.83	10.144	22.617	19.536	55.5	36.0	48.2	28.7	1.68	0.37	45.7	9.8	38.5
131	188.9	0.774	67.7	7.3	6.84	10.220	22.710	19.602	55.6	36.0	48.3	28.7	1.68	0.37	45.8	9.8	38.5
132	188.8	0.778	67.7	7.3	6.84	10.297	22.691	19.568	55.5	36.0	48.3	28.7	1.68	0.37	45.8	9.8	38.5
133	189.0	0.783	67.7	7.3	6.85	10.383	22.729	19.582	55.6	36.0	48.3	28.7	1.68	0.37	45.8	9.8	38.5
134	189.1	0.788	67.6	7.2	6.85	10.460	22.747	19.581	55.6	36.0	48.4	28.8	1.68	0.37	45.8	9.8	38.6
135	189.0	0.792	67.6	7.2	6.86	10.537	22.729	19.547	55.5	36.0	48.4	28.8	1.68	0.37	45.8	9.8	38.6
136	189.1	0.797	67.6	7.2	6.87	10.613	22.747	19.546	55.5	36.0	48.4	28.8	1.68	0.37	45.8	9.8	38.6
137	189.3	0.802	67.6	7.2	6.87	10.690	22.766	19.545	55.5	36.0	48.4	28.8	1.68	0.37	45.8	9.8	38.6
138	189.7	0.807	67.6	7.2	6.88	10.776	22.841	19.592	55.6	36.0	48.4	28.8	1.68	0.36	45.8	9.8	38.6
139	189.9	0.811	67.6	7.2	6.89	10.853	22.878	19.608	55.6	36.0	48.4	28.8	1.68	0.36	45.8	9.8	38.6
140	190.4	0.816	67.5	7.1	6.89	10.930	22.953	19.657	55.6	36.0	48.6	28.9	1.68	0.36	45.8	9.8	38.7
141	190.5	0.820	67.5	7.0	6.90	11.007	22.972	19.656	55.6	36.0	48.6	28.9	1.68	0.36	45.8	9.8	38.8

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	190.5	0.826	67.5	7.0	6.90	11.093	22.972	19.636	55.6	36.0	48.6	28.9	1.68	0.36	45.8	9.8	38.8
143	190.4	0.830	67.5	7.0	6.91	11.160	22.953	19.604	55.6	36.0	48.6	28.9	1.68	0.36	45.8	9.8	38.7
144	191.0	0.834	67.5	7.0	6.91	11.237	23.046	19.670	55.6	36.0	48.6	28.9	1.68	0.36	45.8	9.8	38.8
145	191.3	0.839	67.5	7.0	6.92	11.323	23.102	19.700	55.7	36.0	48.6	28.9	1.68	0.36	45.8	9.8	38.8
146	191.3	0.844	67.4	7.0	6.93	11.400	23.102	19.682	55.7	36.0	48.7	29.0	1.68	0.36	45.8	9.8	38.8
147	191.0	0.848	67.3	6.9	6.93	11.476	23.046	19.614	55.6	36.0	48.7	29.1	1.67	0.35	45.8	9.8	38.9
148	191.4	0.853	67.3	6.9	6.94	11.553	23.121	19.663	55.6	36.0	48.7	29.1	1.68	0.35	45.8	9.8	38.9
149	191.8	0.858	67.4	7.0	6.95	11.639	23.177	19.692	55.7	36.0	48.7	29.0	1.68	0.35	45.8	9.8	38.9
150	191.8	0.862	67.3	6.9	6.95	11.706	23.177	19.677	55.7	36.0	48.7	29.1	1.68	0.35	45.8	9.8	38.9
151	192.5	0.867	67.3	6.9	6.96	11.793	23.289	19.756	55.7	36.0	48.8	29.1	1.68	0.35	45.9	9.9	38.9
152	193.5	0.872	67.3	6.9	6.96	11.869	23.457	19.886	55.9	36.0	49.0	29.1	1.68	0.35	45.9	9.9	39.0
153	193.4	0.876	67.3	6.8	6.97	11.946	23.438	19.852	55.8	36.0	49.0	29.1	1.68	0.34	45.9	9.9	39.1
154	193.5	0.881	67.3	6.8	6.98	12.023	23.457	19.850	55.8	36.0	49.0	29.1	1.68	0.34	45.9	9.9	39.1
155	193.4	0.886	67.3	6.8	6.98	12.100	23.438	19.816	55.8	36.0	49.0	29.1	1.68	0.34	45.9	9.9	39.1
156	193.3	0.890	67.3	6.8	6.99	12.176	23.420	19.781	55.8	36.0	48.9	29.1	1.68	0.35	45.9	9.9	39.0
157	194.0	0.895	67.3	6.8	7.00	12.253	23.532	19.862	55.8	36.0	49.0	29.1	1.68	0.34	45.9	9.9	39.1
158	194.6	0.899	67.2	6.8	7.00	12.330	23.644	19.942	55.9	36.0	49.1	29.2	1.68	0.34	45.9	10.0	39.2
159	195.2	0.904	67.1	6.7	7.01	12.406	23.737	20.005	56.0	36.0	49.3	29.3	1.68	0.34	46.0	10.0	39.3
160	195.4	0.908	67.1	6.7	7.01	12.483	23.775	20.020	56.0	36.0	49.3	29.3	1.68	0.34	46.0	10.0	39.3
161	195.6	0.913	67.1	6.7	7.02	12.560	23.793	20.018	56.0	36.0	49.3	29.3	1.68	0.34	46.0	10.0	39.3
162	195.8	0.917	67.1	6.7	7.03	12.636	23.831	20.032	56.0	36.0	49.3	29.3	1.68	0.33	46.0	10.0	39.3
163	195.9	0.923	67.1	6.7	7.03	12.723	23.849	20.028	56.0	36.0	49.3	29.3	1.68	0.33	46.0	10.0	39.3
164	195.8	0.927	67.1	6.7	7.04	12.790	23.831	19.996	56.0	36.0	49.3	29.3	1.68	0.34	46.0	10.0	39.3
165	195.7	0.931	67.1	6.6	7.04	12.867	23.812	19.961	55.9	36.0	49.3	29.3	1.68	0.33	46.0	10.0	39.3
166	195.7	0.936	67.0	6.6	7.05	12.953	23.812	19.941	55.9	36.0	49.3	29.4	1.68	0.33	45.9	10.0	39.4
167	196.0	0.941	67.0	6.6	7.06	13.029	23.868	19.971	55.9	36.0	49.4	29.4	1.68	0.33	46.0	10.0	39.4
168	196.4	0.945	67.1	6.6	7.06	13.106	23.924	20.002	56.0	36.0	49.4	29.3	1.68	0.33	46.0	10.0	39.4
169	196.3	0.950	67.1	6.6	7.07	13.183	23.905	19.967	55.9	36.0	49.3	29.3	1.68	0.33	46.0	10.0	39.3
170	196.7	0.955	67.1	6.6	7.08	13.260	23.980	20.013	56.0	36.0	49.4	29.3	1.68	0.33	46.0	10.0	39.4
171	196.4	0.959	67.0	6.6	7.08	13.336	23.924	19.947	55.9	36.0	49.3	29.4	1.68	0.33	46.0	10.0	39.4
172	196.6	0.964	66.9	6.5	7.09	13.413	23.961	19.961	55.9	36.0	49.4	29.5	1.68	0.33	46.0	10.0	39.5
173	197.1	0.968	66.9	6.5	7.10	13.490	24.036	20.007	56.0	36.0	49.5	29.5	1.68	0.33	46.0	10.0	39.5
174	197.5	0.973	66.9	6.5	7.10	13.576	24.111	20.051	56.0	36.0	49.5	29.5	1.68	0.32	46.0	10.0	39.5
175	198.0	0.978	66.9	6.5	7.11	13.653	24.186	20.097	56.1	36.0	49.6	29.5	1.68	0.32	46.0	10.0	39.5
176	198.3	0.983	66.9	6.5	7.11	13.729	24.242	20.126	56.1	36.0	49.6	29.5	1.68	0.32	46.0	10.1	39.5
177	198.3	0.987	66.9	6.5	7.12	13.806	24.242	20.108	56.1	36.0	49.6	29.5	1.68	0.32	46.0	10.1	39.5
178	198.8	0.992	66.8	6.4	7.13	13.883	24.316	20.154	56.1	36.0	49.7	29.6	1.68	0.32	46.1	10.1	39.6
179	198.7	0.996	66.8	6.4	7.13	13.959	24.298	20.119	56.1	36.0	49.7	29.6	1.68	0.32	46.0	10.1	39.6
180	198.8	1.001	66.8	6.4	7.14	14.036	24.316	20.116	56.1	36.0	49.7	29.6	1.68	0.32	46.0	10.1	39.6
181	199.3	1.005	66.8	6.4	7.15	14.113	24.410	20.178	56.2	36.0	49.7	29.6	1.68	0.32	46.1	10.1	39.6
182	199.3	1.010	66.8	6.4	7.15	14.190	24.410	20.159	56.1	36.0	49.7	29.6	1.68	0.32	46.1	10.1	39.6

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	199.5	1.015	66.8	6.4	7.16	14.266	24.428	20.156	56.1	36.0	49.7	29.6	1.68	0.32	46.1	10.1	39.6
184	200.0	1.019	66.8	6.3	7.17	14.343	24.522	20.218	56.2	36.0	49.8	29.6	1.68	0.31	46.1	10.1	39.7
185	200.1	1.024	66.7	6.3	7.17	14.420	24.540	20.215	56.2	36.0	49.9	29.7	1.68	0.31	46.1	10.1	39.8
186	200.1	1.029	66.7	6.3	7.18	14.506	24.540	20.194	56.2	36.0	49.9	29.7	1.68	0.31	46.1	10.1	39.8
187	200.3	1.033	66.7	6.3	7.19	14.583	24.559	20.191	56.2	36.0	49.9	29.7	1.68	0.31	46.1	10.1	39.8
188	200.3	1.038	66.7	6.3	7.19	14.659	24.559	20.172	56.2	36.0	49.8	29.7	1.68	0.31	46.1	10.1	39.8
189	200.5	1.043	66.7	6.3	7.20	14.736	24.596	20.185	56.2	36.0	49.9	29.7	1.68	0.31	46.1	10.1	39.8
190	200.8	1.047	66.7	6.3	7.21	14.813	24.652	20.214	56.2	36.0	49.9	29.7	1.68	0.31	46.1	10.1	39.8
191	200.8	1.052	66.6	6.2	7.21	14.889	24.652	20.195	56.2	36.0	50.0	29.8	1.68	0.31	46.1	10.1	39.9
192	201.2	1.056	66.6	6.2	7.22	14.966	24.708	20.224	56.2	36.0	50.0	29.8	1.68	0.31	46.1	10.1	39.9
193	201.4	1.061	66.6	6.2	7.22	15.043	24.746	20.236	56.2	36.0	50.0	29.8	1.68	0.31	46.1	10.1	39.9
194	202.1	1.065	66.6	6.2	7.23	15.120	24.858	20.313	56.3	36.0	50.1	29.8	1.68	0.30	46.1	10.2	39.9
195	202.6	1.070	66.6	6.2	7.24	15.196	24.933	20.357	56.3	36.0	50.1	29.8	1.68	0.30	46.2	10.2	40.0
196	202.7	1.075	66.6	6.2	7.24	15.273	24.951	20.353	56.3	36.0	50.1	29.8	1.68	0.30	46.2	10.2	40.0
197	202.8	1.079	66.5	6.1	7.25	15.350	24.970	20.350	56.3	36.0	50.2	29.9	1.68	0.30	46.2	10.2	40.0
198	202.3	1.084	66.5	6.1	7.26	15.426	24.895	20.268	56.2	36.0	50.2	29.9	1.68	0.30	46.1	10.1	40.0
199	202.3	1.089	66.5	6.1	7.26	15.513	24.895	20.246	56.2	36.0	50.2	29.9	1.68	0.30	46.1	10.1	40.0
200	202.4	1.093	66.5	6.1	7.27	15.589	24.914	20.243	56.2	36.0	50.2	29.9	1.68	0.30	46.1	10.1	40.0
201	202.9	1.098	66.5	6.1	7.28	15.666	24.989	20.287	56.3	36.0	50.2	29.9	1.68	0.30	46.1	10.1	40.1
202	203.6	1.102	66.5	6.1	7.28	15.743	25.101	20.362	56.3	36.0	50.3	29.9	1.68	0.30	46.2	10.2	40.1
203	203.7	1.107	66.4	6.0	7.29	15.819	25.119	20.359	56.3	36.0	50.4	30.0	1.68	0.29	46.2	10.2	40.2
204	204.6	1.112	66.3	5.9	7.30	15.896	25.269	20.465	56.4	36.0	50.5	30.1	1.68	0.29	46.2	10.2	40.3
205	205.4	1.117	66.4	5.9	7.31	15.982	25.399	20.553	56.5	36.0	50.6	30.0	1.68	0.29	46.3	10.3	40.3
206	205.1	1.121	66.4	5.9	7.31	16.059	25.343	20.487	56.5	36.0	50.5	30.0	1.68	0.29	46.2	10.2	40.3
207	205.5	1.126	66.4	5.9	7.32	16.136	25.418	20.530	56.5	36.0	50.6	30.0	1.68	0.29	46.2	10.3	40.3
208	205.9	1.130	66.4	5.9	7.33	16.213	25.474	20.557	56.5	36.0	50.6	30.0	1.68	0.29	46.3	10.3	40.3
209	206.1	1.135	66.3	5.9	7.33	16.289	25.512	20.569	56.5	36.0	50.7	30.1	1.68	0.29	46.3	10.3	40.4
210	206.0	1.140	66.2	5.8	7.34	16.366	25.493	20.534	56.5	36.0	50.7	30.2	1.68	0.28	46.2	10.3	40.5
211	206.3	1.144	66.2	5.8	7.35	16.443	25.549	20.561	56.5	36.0	50.8	30.2	1.68	0.28	46.3	10.3	40.5
212	206.6	1.149	66.2	5.8	7.35	16.519	25.586	20.573	56.6	36.0	50.8	30.2	1.68	0.28	46.3	10.3	40.5
213	206.6	1.153	66.2	5.8	7.36	16.596	25.586	20.553	56.5	36.0	50.7	30.2	1.68	0.28	46.3	10.3	40.5
214	206.6	1.158	66.2	5.8	7.37	16.673	25.586	20.533	56.5	36.0	50.7	30.2	1.68	0.28	46.2	10.3	40.5
215	206.8	1.162	66.2	5.7	7.37	16.749	25.624	20.545	56.5	36.0	50.8	30.2	1.68	0.28	46.3	10.3	40.5
216	207.0	1.168	66.1	5.7	7.38	16.836	25.661	20.554	56.5	36.0	50.9	30.3	1.68	0.28	46.3	10.3	40.6
217	206.8	1.172	66.1	5.7	7.39	16.903	25.624	20.506	56.5	36.0	50.8	30.3	1.68	0.28	46.2	10.3	40.6
218	207.0	1.176	66.1	5.7	7.39	16.980	25.661	20.517	56.5	36.0	50.8	30.3	1.68	0.28	46.2	10.3	40.6
219	207.3	1.181	66.1	5.7	7.40	17.056	25.698	20.528	56.5	36.0	50.8	30.3	1.68	0.28	46.2	10.3	40.6
220	207.5	1.185	66.1	5.7	7.41	17.133	25.736	20.539	56.5	36.0	50.9	30.3	1.68	0.28	46.2	10.3	40.6
221	207.6	1.190	66.0	5.6	7.41	17.210	25.754	20.535	56.5	36.0	50.9	30.4	1.68	0.27	46.2	10.3	40.6
222	207.6	1.194	66.0	5.5	7.42	17.286	25.754	20.515	56.5	36.0	50.9	30.4	1.67	0.27	46.2	10.3	40.7
223	207.7	1.199	65.9	5.5	7.43	17.363	25.773	20.511	56.5	36.0	51.0	30.5	1.67	0.27	46.2	10.3	40.7

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	207.9	1.204	65.9	5.5	7.43	17.440	25.810	20.522	56.5	36.0	51.0	30.5	1.67	0.27	46.2	10.3	40.7
225	207.9	1.208	65.9	5.5	7.44	17.516	25.810	20.502	56.5	36.0	51.0	30.5	1.67	0.27	46.2	10.3	40.7
226	208.1	1.213	65.9	5.5	7.45	17.593	25.829	20.498	56.5	36.0	51.0	30.5	1.67	0.27	46.2	10.2	40.7
227	208.5	1.217	65.9	5.5	7.46	17.670	25.904	20.540	56.5	36.0	51.1	30.5	1.67	0.27	46.2	10.3	40.8
228	209.1	1.222	65.8	5.4	7.46	17.747	25.997	20.597	56.6	36.0	51.2	30.6	1.67	0.26	46.3	10.3	40.9
229	209.8	1.227	65.8	5.4	7.47	17.833	26.109	20.666	56.6	36.0	51.3	30.6	1.68	0.26	46.3	10.3	40.9
230	209.7	1.232	65.8	5.4	7.48	17.910	26.090	20.631	56.6	36.0	51.2	30.6	1.67	0.26	46.3	10.3	40.9
231	210.0	1.236	65.8	5.4	7.48	17.986	26.147	20.657	56.6	36.0	51.3	30.6	1.68	0.26	46.3	10.3	40.9
232	210.6	1.241	65.8	5.3	7.49	18.063	26.240	20.713	56.7	36.0	51.3	30.6	1.68	0.26	46.3	10.4	41.0
233	210.7	1.245	65.8	5.3	7.50	18.140	26.259	20.708	56.7	36.0	51.3	30.6	1.68	0.26	46.3	10.4	41.0
234	211.0	1.250	65.7	5.3	7.51	18.216	26.315	20.734	56.7	36.0	51.4	30.7	1.68	0.25	46.3	10.4	41.1
235	211.8	1.254	65.6	5.2	7.51	18.293	26.445	20.821	56.8	36.0	51.6	30.8	1.68	0.25	46.4	10.4	41.2
236	211.6	1.259	65.6	5.2	7.52	18.379	26.408	20.767	56.7	36.0	51.5	30.8	1.68	0.25	46.4	10.4	41.1
237	211.7	1.264	65.6	5.2	7.53	18.456	26.427	20.762	56.7	36.0	51.5	30.8	1.68	0.25	46.4	10.4	41.1
238	212.2	1.269	65.6	5.2	7.53	18.533	26.501	20.803	56.8	36.0	51.6	30.8	1.68	0.25	46.4	10.4	41.2
239	213.1	1.273	65.6	5.2	7.54	18.609	26.651	20.904	56.9	36.0	51.7	30.8	1.68	0.25	46.4	10.5	41.2
240	213.1	1.278	65.6	5.1	7.55	18.686	26.651	20.884	56.9	36.0	51.7	30.8	1.68	0.25	46.4	10.4	41.3
241	213.0	1.282	65.5	5.1	7.56	18.763	26.632	20.848	56.8	36.0	51.8	30.9	1.67	0.24	46.4	10.4	41.3
242	213.0	1.287	65.5	5.1	7.56	18.840	26.632	20.828	56.8	36.0	51.7	30.9	1.67	0.24	46.4	10.4	41.3
243	213.2	1.291	65.5	5.1	7.57	18.916	26.669	20.838	56.8	36.0	51.8	30.9	1.67	0.24	46.4	10.4	41.3
244	213.3	1.296	65.5	5.1	7.58	18.993	26.688	20.832	56.8	36.0	51.7	30.9	1.67	0.24	46.4	10.4	41.3
245	214.0	1.301	65.5	5.1	7.58	19.070	26.800	20.903	56.9	36.0	51.8	30.9	1.68	0.24	46.4	10.5	41.4
246	214.2	1.305	65.4	5.0	7.59	19.146	26.838	20.912	56.9	36.0	51.9	31.0	1.68	0.24	46.4	10.5	41.4
247	214.2	1.310	65.4	4.9	7.60	19.223	26.838	20.892	56.9	36.0	51.9	31.0	1.67	0.24	46.4	10.4	41.5
248	214.1	1.314	65.3	4.9	7.61	19.300	26.819	20.856	56.8	36.0	51.9	31.1	1.67	0.24	46.4	10.4	41.5
249	214.4	1.319	65.3	4.9	7.61	19.376	26.856	20.865	56.8	36.0	51.9	31.1	1.67	0.23	46.4	10.4	41.5
250	214.9	1.323	65.3	4.9	7.62	19.453	26.950	20.920	56.9	36.0	52.0	31.1	1.67	0.23	46.4	10.5	41.5
251	214.9	1.328	65.3	4.9	7.63	19.530	26.950	20.899	56.9	36.0	52.0	31.1	1.67	0.23	46.4	10.4	41.5
252	214.9	1.333	65.3	4.9	7.63	19.607	26.950	20.879	56.9	36.0	52.0	31.1	1.67	0.23	46.4	10.4	41.6
253	215.3	1.337	65.2	4.8	7.64	19.683	27.006	20.903	56.9	36.0	52.1	31.2	1.67	0.23	46.4	10.5	41.6
254	215.5	1.342	65.2	4.7	7.65	19.760	27.043	20.912	56.9	36.0	52.1	31.2	1.67	0.23	46.4	10.5	41.7
255	216.0	1.346	65.2	4.7	7.66	19.837	27.118	20.951	56.9	36.0	52.2	31.2	1.67	0.23	46.5	10.5	41.7
256	216.4	1.351	65.2	4.7	7.66	19.913	27.192	20.991	57.0	36.0	52.2	31.2	1.67	0.23	46.5	10.5	41.7
257	216.8	1.355	65.2	4.7	7.67	19.990	27.248	21.014	57.0	36.0	52.3	31.2	1.67	0.23	46.5	10.5	41.7
258	216.9	1.357	65.2	4.7	7.67	20.009	27.267	21.024	57.0	36.0	52.3	31.2	1.67	0.23	46.5	10.5	41.7

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)

Sample Falures photograph

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. U-2412B

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project 39406.1.1 **County** GUILFORD **Owner**

Date: Sampled 3/1/13 **Received** 10/31/13 **Reported** 11/1/13

Sampled from RDWY **By** N ROBERSON

Submitted by MASON HURT 1995 **Standard Specifications**

788126 TO 788127
11/7/13

TEST RESULTS

Proj. Sample No.		ST-14 #1	ST-14 #2				
Lab. Sample No.		788126	788127				
Retained #4 Sieve	%	-	-				
Passing #10 Sieve	%	98	97				
Passing #40 Sieve	%	79	77				
Passing #200 Sieve	%	44	45				

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	31.1	30.9				
Fine Sand Ret - #270	%	30.3	29.3				
Silt 0.05 - 0.005 mm	%	36.6	23.8				
Clay < 0.005 mm	%	2.0	16.0				
T-#		T-5779	T-5779				
Specific Gravity		2.675	2.691				

L. L.		37	37				
P. I.		5	5				
AASHTO Classification		A-4(0)	A-4(0)				
Station		404+50	404+50				
Offset		3 FT	3 FT				
Alignment		L	L				
Location		RT	RT				
Depth (Ft)		39.5 FT	39.5 FT				
	to	41.0 FT	41.0 FT				
Final Moisture Content	%	23.5	20.73				

cc: N ROBERSON
SURIYATI BS

Soils Engineer

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	18.29	22.20	**Plastic Limits:**	0	
Dry Density (pcf):	102.32	110.01	**Plasticity Index (%):**	0	
Saturation (%):	74.17	108.85			
Void Ratio:	0.6760	0.5588	**Specific Gravity:**	2.751	Measured

Soil Description: Tannish white colored silt

Project Number: 39406.1.1 **Depth:** 39.5 - 41.0 ft

Sample Number: ST-14 **Boring Number:**

Project: U-2412B

Client: T-5779

Location: Guilford County (Sta. 404+50)

Remarks:
Solid height is .59221 inch; Blows/ft. = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	18.29	22.20	**Plastic Limits:**	0	
Dry Density (pcf):	102.32	110.01	**Plasticity Index (%):**	0	
Saturation (%):	74.17	108.85			
Void Ratio:	0.6760	0.5588	**Specific Gravity:**	2.751	Measured

Soil Description: Tannish white colored silt

Project Number: 39406.1.1 **Depth:** 39.5 - 41.0 ft

Sample Number: ST-14 **Boring Number:**

Project: U-2412B

Client: T-5779

Location: Guilford County (Sta. 404+50)

Remarks:
Solid height is .59221 inch; Blows/ft. = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	18.29	22.20	**Plastic Limits:**	0	
Dry Density (pcf):	102.32	110.01	**Plasticity Index (%):**	0	
Saturation (%):	74.17	108.85			
Void Ratio:	0.6760	0.5588	**Specific Gravity:**	2.751	Measured

Soil Description: Tannish white colored silt

Project Number: 39406.1.1 **Depth:** 39.5 - 41.0 ft

Sample Number: ST-14 **Boring Number:**

Project: U-2412B

Client: T-5779

Location: Guilford County (Sta. 404+50)

Remarks:
Solid height is .59221 inch; Blows/ft. = NA

Consolidation Test Results
Summary

Project: U-2412B
Location: Guilford County (Sta. 404+50)
Job Number: T-5779

Project Number: 39406.1.1

Sample Number: ST-14
Boring Number:
Depth: 39.5 - 41.0 ft
Sample Type: Undisturbed

Soil Description:
Tannish white colored silt
Remarks:
Solid height is .59221 inch; Blows/ft. = NA

Test Number:
Test Date:

Index	Load Sequence (tsf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	0.9913	0.3998	0.00	0.6760	0.000		0.000	
1	0.031	0.0012	0.9901	0.3986	0.12	0.6740	0.088		8659.299	
2	0.063	0.0036	0.9877	0.3962	0.36	0.6699	0.461		1637.487	
3	0.125	0.0072	0.9841	0.3926	0.73	0.6638	0.220		3406.313	
4	0.250	0.0135	0.9778	0.3863	1.36	0.6532	0.250		2959.299	
5	0.500	0.0242	0.9671	0.3756	2.44	0.6351	0.502		1441.677	
6	1.000	0.0387	0.9526	0.3611	3.90	0.6106	0.063		11234.917	
7	2.000	0.0566	0.9347	0.3432	5.71	0.5803	0.212		3188.874	
8	4.000	0.0755	0.9158	0.3243	7.62	0.5483	0.117		5546.821	
9	2.000	0.0733	0.9180	0.3265	7.39	0.5521	0.000		0.000	
10	1.000	0.0698	0.9215	0.3300	7.04	0.5580	0.000		0.000	
11	0.500	0.0650	0.9263	0.3348	6.56	0.5661	0.000		0.000	
12	1.000	0.0672	0.9241	0.3326	6.78	0.5624	0.000		0.000	
13	2.000	0.0713	0.9200	0.3285	7.19	0.5554	0.000		0.000	
14	4.000	0.0781	0.9132	0.3217	7.88	0.5439	0.000		0.000	
15	8.000	0.0964	0.8949	0.3034	9.72	0.5130	0.053		11714.455	
16	16.000	0.1202	0.8711	0.2796	12.13	0.4728	0.226		2598.103	
17	4.000	0.1136	0.8777	0.2862	11.46	0.4839	0.000		0.000	
18	0.016	0.0693	0.9220	0.3305	6.99	0.5588	0.000		0.000	

Tested By:

Checked By:

Consolidation Test
Consolidation Specimen Information

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County (Sta. 404+50)
Job Number: T-5779 **Test Date:**

Sample Number: ST-14 **Soil Description:**
Boring Number: Tannish white colored silt
Depth: 39.5 - 41.0 ft **Remarks:**
Sample Type: Undisturbed Solid height is .59221 inch; Blows/ft. = NA

Test Number:
Liquid Limit: 0.0000 **Initial Void Ratio:** 0.6760 **Initial Height (in):** 0.9913
Plastic Limit: 0.0000 **Plasticity Index (%):** 0.0000 **Initial Diameter (in):** 2.4999
Specific Gravity: 2.7510 Measured **Weight of Ring (g):** 110.9600

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	154.59	159.70
Dry Soil + Container (g)	130.69	130.69
Weight of Container (g)	0.00	0.00
Moisture Content (%)	18.29	22.20
Void Ratio	0.6760	0.5588
Saturation (%)	74.17	108.85
Dry Density (pcf)	102.32	110.01

Tested By: **Checked By:**

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Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date

Tested By:

Effective Stress at Maximum Deviator Stress Criterion

Deviator Stress Vs. Axial Strain

Initial	Specimen A	B	C	D
Water Content (%)	21.4	21.4	18.6	
Dry Density (pcf)	102.2	103.8	105.6	
Saturation (%)	90.35	94.19	84.84	
Void Ratio	0.630	0.604	0.587	
Diameter (in)	2.873	2.898	2.873	
Height (in)	6.120	5.920	6.093	
Specific Gravity	2.67	2.67	2.69	
Liquid Limit	0	0	0	
Plastic Limit	0	0	0	
After Consolidation	**A**	**B**	**C**	**D**
B-Value	0.00	0.00	0.00	
Water Content (%)	22.2	22.1	21.1	
Dry Density (pcf)	104.90	105.02	111.27	
Saturation (%)	100.00	100.00	100.00	
Void Ratio	0.577	0.575	0.487	
Effective Stress (psi)	9.0	18.0	36.0	
Back Press. (psi)	60.5	60.6	62.0	
Rate of Strain	0.009	0.009	0.009	

Maximium Deviator Stress Criterion	
C (psi)	0.0
C' (psi)	0.0
Ø (deg)	0.0
Ø' (deg)	0.0

After Shear	A	B	C	D
σ'1 at Failure (psi)	21.20	77.34	124.70	
σ'3 at Failure (psi)	6.20	28.20	37.75	

Project:	U-2412B	N/A	N/A	N/A	N/A
Location:	Guilford County (Sta. 404+50)				
Project Number:	39406.1.1				
Boring Number:					
Sample Number:	ST-14				
Depth:	39.5 - 41.0 ft				
Sample Type:	Undisturbed	Failure Photographs			
Description:					
Test Type	Consolidated Undrained				
Remarks	Multi-Stage: Sample A and B				

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Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date:

Tested By:

Deviator Stress vs. Axial Strain

Principal Stress Ratio vs. Axial Strain

Change in Pore Pressure vs. Axial Strain
Change in Pore Pressure (psi)
6.0
4.0
2.0
0.0
-2.0
-4.0
-6.0
-8.0
-10.0
-12.0
0.000
5.000
10.000
15.000
20.000
25.000
Axial Strain (%)
Specimen A
Specimen B
Specimen C
Specimen D

Mohr Stress Circles at Maximum Deviator Stress Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at Maximum Principal Stress Ratio Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at 15% Axial Strain Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)
Q (psi)
P' (psi)
0.0
20.0
40.0
60.0
80.0
100.0
Specimen A
Specimen B
Specimen C
Specimen D
Tangent Line

Stress Paths (Total)
(C' = 0.0 Ø' = 0.0)
Q (psi)
P (psi)
0.0
20.0
40.0
60.0
80.0
100.0

Specimen A Shear Data

CU Triaxial Test

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File Location
T-5779.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5779
Sample Location: Guilford County (Sta. 404+50)
Sample Description: Tannish colored silt
Remarks: 30° shear plane.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.675
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.873	2.843	
Height (in)	6.120	6.086	
Weight (grams)	1292.00		1314.00
Moisture (%)	21.43		23.50
Dry Density (pcf)	102.17	104.90	
Saturation (%)	90.35	100.00	
Void Ratio	0.630	0.577	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 69.500
Effective Confining Stress (psi): 9.0
Corrected Peak Deviator Stress (psi): 15.000 at reading number: 21

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	45.2	0.077	60.5	0.0	6.35	0.000	0.000	0.000	9.0	9.0	9.0	9.0	1.00	0.00	9.0	0.0	9.0
1	64.7	0.081	61.7	1.1	6.35	0.068	3.083	3.054	12.0	9.0	10.9	7.8	1.39	0.37	10.5	1.5	9.4
2	73.1	0.085	62.2	1.7	6.36	0.136	4.396	4.337	13.3	9.0	11.6	7.3	1.60	0.40	11.2	2.2	9.4
3	79.1	0.090	62.6	2.1	6.36	0.212	5.344	5.251	14.2	9.0	12.1	6.9	1.76	0.40	11.6	2.6	9.5
4	84.7	0.094	62.8	2.3	6.37	0.287	6.220	6.091	15.1	9.0	12.8	6.7	1.91	0.38	12.0	3.0	9.7
5	88.6	0.098	63.0	2.5	6.37	0.355	6.840	6.678	15.7	9.0	13.2	6.5	2.03	0.37	12.3	3.3	9.8
6	92.9	0.103	63.2	2.6	6.38	0.431	7.515	7.316	16.3	9.0	13.7	6.3	2.15	0.36	12.6	3.7	10.0
7	97.2	0.107	63.3	2.8	6.38	0.499	8.190	7.956	16.9	9.0	14.2	6.2	2.28	0.35	13.0	4.0	10.2
8	101.6	0.111	63.4	2.9	6.39	0.567	8.883	8.613	17.6	9.0	14.7	6.1	2.41	0.33	13.3	4.3	10.4
9	104.3	0.116	63.5	3.0	6.39	0.635	9.321	9.016	18.0	9.0	15.0	6.0	2.50	0.33	13.5	4.5	10.5
10	108.6	0.120	63.5	3.0	6.39	0.711	9.995	9.649	18.6	9.0	15.6	6.0	2.62	0.31	13.8	4.8	10.8
11	112.1	0.124	63.5	3.0	6.40	0.779	10.543	10.159	19.1	9.0	16.1	6.0	2.70	0.30	14.1	5.1	11.0
12	116.1	0.128	63.5	3.0	6.40	0.847	11.181	10.759	19.7	9.0	16.8	6.0	2.79	0.28	14.4	5.4	11.4
13	119.3	0.133	63.6	3.0	6.41	0.915	11.673	11.213	20.2	9.0	17.2	5.9	2.89	0.27	14.6	5.6	11.5
14	123.2	0.137	63.6	3.0	6.41	0.983	12.294	11.792	20.8	9.0	17.7	5.9	2.99	0.26	14.9	5.9	11.8
15	126.3	0.141	63.6	3.0	6.42	1.051	12.786	12.245	21.2	9.0	18.2	5.9	3.06	0.25	15.1	6.1	12.1
16	130.2	0.145	63.6	3.0	6.42	1.127	13.388	12.801	21.8	9.0	18.7	5.9	3.16	0.24	15.4	6.4	12.3
17	132.5	0.150	63.5	3.0	6.43	1.195	13.753	13.126	22.1	9.0	19.1	6.0	3.19	0.23	15.6	6.6	12.6
18	136.2	0.154	63.4	2.9	6.43	1.263	14.336	13.667	22.7	9.0	19.7	6.1	3.26	0.21	15.8	6.8	12.9

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	139.8	0.158	63.4	2.9	6.43	1.338	14.902	14.185	23.2	9.0	20.3	6.1	3.32	0.20	16.1	7.1	13.2
20	143.0	0.162	63.4	2.9	6.44	1.406	15.413	14.652	23.6	9.0	20.8	6.1	3.40	0.20	16.3	7.3	13.4
21	145.4	0.166	63.3	2.8	6.44	1.459	15.796	15.000	24.0	9.0	21.2	6.2	3.42	0.19	16.5	7.5	13.7

Specimen B Shear Data

CU Triaxial Test

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File Location
T-5779.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5779
Sample Location: Guilford County (Sta. 404+50)
Sample Description: Tannish colored silt
Remarks: 30° shear plane. Sample similar to specimen A.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.675
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.898	2.885	
Height (in)	5.920	5.906	
Weight (grams)	1292.00		1314.00
Moisture (%)	21.43		23.50
Dry Density (pcf)	103.81	105.02	
Saturation (%)	94.19	100.00	
Void Ratio	0.604	0.575	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 78.600
Effective Confining Stress (psi): 18.0
Corrected Peak Deviator Stress (psi): 49.141 at reading number: 217

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	145.2	0.180	60.6	0.0	6.54	0.000	0.000	0.000	18.0	18.0	18.0	18.0	1.00	0.00	18.0	0.0	18.0
1	183.3	0.185	62.3	1.7	6.54	0.070	5.830	5.799	23.8	18.0	22.1	16.3	1.36	0.29	20.9	2.9	19.2
2	196.1	0.189	63.0	2.4	6.54	0.140	7.779	7.714	25.7	18.0	23.3	15.6	1.50	0.32	21.9	3.9	19.4
3	204.0	0.193	63.4	2.8	6.55	0.218	9.001	8.899	26.9	18.0	24.1	15.2	1.59	0.32	22.4	4.4	19.6
4	211.2	0.198	63.7	3.1	6.55	0.296	10.100	9.957	28.0	18.0	24.8	14.9	1.67	0.31	23.0	5.0	19.8
5	217.1	0.202	63.9	3.3	6.56	0.374	11.004	10.820	28.8	18.0	25.5	14.7	1.74	0.31	23.4	5.4	20.1
6	223.4	0.207	64.1	3.5	6.56	0.452	11.961	11.734	29.7	18.0	26.2	14.5	1.81	0.30	23.9	5.9	20.3
7	229.3	0.211	64.2	3.6	6.57	0.522	12.864	12.598	30.6	18.0	27.0	14.4	1.88	0.29	24.3	6.3	20.7
8	233.2	0.216	64.2	3.6	6.57	0.600	13.467	13.157	31.2	18.0	27.5	14.4	1.92	0.28	24.6	6.6	20.9
9	237.7	0.220	64.3	3.7	6.58	0.678	14.158	13.803	31.8	18.0	28.1	14.3	1.96	0.27	24.9	6.9	21.2
10	242.0	0.225	64.4	3.8	6.59	0.756	14.813	14.413	32.4	18.0	28.7	14.2	2.01	0.26	25.2	7.2	21.5
11	246.2	0.230	64.4	3.8	6.59	0.834	15.451	15.004	33.0	18.0	29.2	14.2	2.06	0.25	25.5	7.5	21.7
12	250.5	0.234	64.4	3.8	6.59	0.904	16.107	15.617	33.6	18.0	29.8	14.2	2.10	0.24	25.8	7.8	22.0
13	255.0	0.238	64.4	3.8	6.60	0.982	16.798	16.259	34.3	18.0	30.4	14.2	2.15	0.24	26.1	8.1	22.3
14	258.7	0.243	64.4	3.8	6.61	1.060	17.365	16.777	34.8	18.0	31.0	14.2	2.18	0.23	26.4	8.4	22.6
15	262.5	0.247	64.3	3.7	6.61	1.130	17.950	17.316	35.3	18.0	31.6	14.3	2.21	0.21	26.7	8.7	23.0
16	266.2	0.252	64.3	3.7	6.62	1.208	18.517	17.832	35.8	18.0	32.1	14.3	2.25	0.21	26.9	8.9	23.2
17	269.5	0.256	64.3	3.7	6.62	1.278	19.013	18.283	36.3	18.0	32.6	14.3	2.28	0.20	27.1	9.1	23.5
18	272.4	0.260	64.2	3.6	6.63	1.356	19.456	18.675	36.7	18.0	33.0	14.4	2.30	0.19	27.3	9.3	23.7

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	276.6	0.265	64.2	3.6	6.63	1.426	20.111	19.281	37.3	18.0	33.7	14.4	2.34	0.19	27.6	9.6	24.0
20	279.2	0.269	64.1	3.5	6.64	1.504	20.501	19.619	37.6	18.0	34.1	14.5	2.36	0.18	27.8	9.8	24.3
21	281.9	0.273	64.0	3.4	6.64	1.574	20.909	19.979	38.0	18.0	34.6	14.6	2.37	0.17	28.0	10.0	24.6
22	284.5	0.278	63.9	3.3	6.65	1.652	21.316	20.334	38.3	18.0	35.0	14.7	2.39	0.16	28.2	10.2	24.8
23	287.1	0.282	63.9	3.3	6.65	1.722	21.706	20.676	38.7	18.0	35.4	14.7	2.41	0.16	28.3	10.3	25.0
24	290.7	0.287	63.9	3.3	6.66	1.800	22.255	21.168	39.2	18.0	35.9	14.7	2.44	0.15	28.6	10.6	25.3
25	293.1	0.291	63.8	3.2	6.66	1.870	22.628	21.491	39.5	18.0	36.3	14.8	2.45	0.15	28.7	10.7	25.6
26	295.6	0.295	63.8	3.2	6.66	1.940	23.017	21.831	39.8	18.0	36.7	14.8	2.47	0.14	28.9	10.9	25.7
27	298.0	0.300	63.6	3.0	6.67	2.018	23.372	22.137	40.1	18.0	37.1	15.0	2.48	0.14	29.1	11.1	26.0
28	300.9	0.304	63.5	2.9	6.67	2.088	23.815	22.555	40.6	18.0	37.6	15.1	2.50	0.13	29.3	11.3	26.3
29	302.6	0.308	63.5	2.9	6.68	2.166	24.081	22.796	40.8	18.0	37.9	15.1	2.51	0.13	29.4	11.4	26.5
30	304.7	0.312	63.4	2.8	6.68	2.236	24.399	23.091	41.1	18.0	38.3	15.2	2.52	0.12	29.5	11.5	26.7
31	307.1	0.317	63.4	2.8	6.69	2.306	24.772	23.438	41.4	18.0	38.7	15.2	2.54	0.12	29.7	11.7	27.0
32	308.7	0.321	63.3	2.7	6.69	2.384	25.020	23.660	41.7	18.0	39.0	15.3	2.55	0.11	29.8	11.8	27.1
33	312.2	0.325	63.2	2.6	6.70	2.455	25.551	24.161	42.2	18.0	39.6	15.4	2.57	0.11	30.1	12.1	27.5
34	313.9	0.329	63.1	2.5	6.70	2.525	25.817	24.403	42.4	18.0	39.9	15.5	2.57	0.10	30.2	12.2	27.7
35	316.5	0.334	63.0	2.4	6.71	2.603	26.207	24.762	42.8	18.0	40.4	15.6	2.59	0.10	30.4	12.4	28.0
36	318.1	0.338	62.9	2.3	6.71	2.673	26.455	24.985	43.0	18.0	40.6	15.7	2.60	0.09	30.5	12.5	28.1
37	319.5	0.343	62.9	2.3	6.72	2.751	26.668	25.171	43.2	18.0	40.9	15.7	2.60	0.09	30.6	12.6	28.3
38	321.9	0.347	62.8	2.2	6.73	2.821	27.040	25.514	43.5	18.0	41.3	15.8	2.62	0.09	30.8	12.8	28.5
39	323.9	0.352	62.8	2.2	6.73	2.899	27.341	25.786	43.8	18.0	41.6	15.8	2.63	0.08	30.9	12.9	28.7
40	326.0	0.356	62.7	2.1	6.74	2.969	27.660	26.076	44.1	18.0	42.0	15.9	2.64	0.08	31.0	13.0	29.0
41	327.6	0.360	62.5	1.9	6.74	3.047	27.908	26.295	44.3	18.0	42.4	16.1	2.64	0.07	31.1	13.1	29.2
42	329.6	0.365	62.5	1.9	6.75	3.125	28.209	26.565	44.6	18.0	42.7	16.1	2.65	0.07	31.3	13.3	29.4
43	331.8	0.369	62.4	1.8	6.75	3.195	28.546	26.871	44.9	18.0	43.1	16.2	2.66	0.07	31.4	13.4	29.6
44	333.5	0.374	62.4	1.8	6.76	3.273	28.812	27.106	45.1	18.0	43.3	16.2	2.67	0.06	31.6	13.6	29.8
45	335.0	0.378	62.3	1.7	6.76	3.351	29.042	27.306	45.3	18.0	43.6	16.3	2.68	0.06	31.7	13.7	30.0
46	337.1	0.382	62.2	1.6	6.77	3.421	29.361	27.594	45.6	18.0	44.0	16.4	2.68	0.06	31.8	13.8	30.2
47	338.3	0.387	62.1	1.5	6.77	3.499	29.538	27.742	45.7	18.0	44.2	16.5	2.68	0.05	31.9	13.9	30.4
48	340.5	0.392	62.0	1.4	6.78	3.577	29.875	28.044	46.0	18.0	44.6	16.6	2.69	0.05	32.0	14.0	30.6
49	342.4	0.396	61.9	1.3	6.78	3.647	30.176	28.313	46.3	18.0	45.0	16.7	2.70	0.05	32.2	14.2	30.8
50	344.0	0.400	61.9	1.3	6.79	3.725	30.424	28.528	46.5	18.0	45.2	16.7	2.71	0.05	32.3	14.3	31.0
51	345.9	0.405	61.8	1.2	6.79	3.803	30.708	28.777	46.8	18.0	45.5	16.8	2.72	0.04	32.4	14.4	31.2
52	347.3	0.410	61.7	1.1	6.80	3.881	30.920	28.958	47.0	18.0	45.8	16.9	2.72	0.04	32.5	14.5	31.3
53	349.0	0.414	61.6	1.0	6.80	3.958	31.186	29.189	47.2	18.0	46.2	17.0	2.72	0.04	32.6	14.6	31.6
54	350.5	0.419	61.5	0.9	6.81	4.036	31.416	29.386	47.4	18.0	46.4	17.1	2.72	0.03	32.7	14.7	31.8
55	352.8	0.423	61.5	0.9	6.82	4.107	31.771	29.703	47.7	18.0	46.8	17.1	2.74	0.03	32.9	14.9	31.9
56	354.0	0.428	61.4	0.8	6.82	4.184	31.948	29.848	47.8	18.0	47.0	17.2	2.74	0.03	32.9	14.9	32.1
57	355.3	0.432	61.4	0.8	6.83	4.262	32.143	30.010	48.0	18.0	47.2	17.2	2.74	0.03	33.0	15.0	32.2
58	357.6	0.437	61.3	0.7	6.83	4.340	32.497	30.324	48.3	18.0	47.6	17.3	2.75	0.02	33.2	15.2	32.5
59	359.1	0.441	61.2	0.6	6.84	4.418	32.728	30.519	48.5	18.0	47.9	17.4	2.75	0.02	33.3	15.3	32.7

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	360.0	0.446	61.1	0.5	6.84	4.504	32.869	30.626	48.6	18.0	48.2	17.5	2.75	0.02	33.3	15.3	32.8
61	361.9	0.451	61.0	0.4	6.85	4.574	33.153	30.874	48.9	18.0	48.4	17.6	2.76	0.01	33.4	15.4	33.0
62	364.1	0.455	61.0	0.4	6.85	4.652	33.489	31.169	49.2	18.0	48.8	17.6	2.77	0.01	33.6	15.6	33.2
63	365.8	0.460	60.9	0.3	6.86	4.730	33.755	31.396	49.4	18.0	49.1	17.7	2.78	0.01	33.7	15.7	33.4
64	366.7	0.464	60.9	0.3	6.86	4.800	33.897	31.507	49.5	18.0	49.2	17.7	2.78	0.01	33.8	15.8	33.5
65	367.8	0.468	60.7	0.1	6.87	4.878	34.057	31.633	49.6	18.0	49.5	17.9	2.77	0.00	33.8	15.8	33.7
66	369.5	0.473	60.6	0.0	6.88	4.956	34.322	31.859	49.9	18.0	49.9	18.0	2.77	0.00	33.9	15.9	33.9
67	371.1	0.478	60.5	-0.1	6.88	5.034	34.570	32.068	50.1	18.0	50.1	18.1	2.78	0.00	34.0	16.0	34.1
68	372.0	0.482	60.5	-0.1	6.89	5.104	34.694	32.161	50.2	18.0	50.3	18.1	2.78	0.00	34.1	16.1	34.2
69	374.0	0.486	60.5	-0.1	6.89	5.182	35.013	32.436	50.4	18.0	50.6	18.1	2.79	0.00	34.2	16.2	34.4
70	375.2	0.491	60.4	-0.2	6.90	5.252	35.191	32.580	50.6	18.0	50.8	18.2	2.79	-0.01	34.3	16.3	34.5
71	376.1	0.495	60.3	-0.3	6.90	5.322	35.332	32.689	50.7	18.0	51.0	18.3	2.78	-0.01	34.3	16.3	34.7
72	378.1	0.499	60.2	-0.4	6.91	5.400	35.634	32.947	50.9	18.0	51.4	18.4	2.79	-0.01	34.5	16.5	34.9
73	379.7	0.503	60.1	-0.5	6.91	5.470	35.882	33.156	51.2	18.0	51.7	18.5	2.79	-0.02	34.6	16.6	35.1
74	381.3	0.508	60.0	-0.6	6.92	5.548	36.130	33.362	51.4	18.0	51.9	18.6	2.80	-0.02	34.7	16.7	35.2
75	382.4	0.512	60.0	-0.6	6.92	5.618	36.289	33.488	51.5	18.0	52.1	18.6	2.80	-0.02	34.7	16.7	35.4
76	383.9	0.517	59.9	-0.7	6.93	5.696	36.519	33.677	51.7	18.0	52.3	18.7	2.80	-0.02	34.8	16.8	35.5
77	385.7	0.521	59.8	-0.8	6.94	5.766	36.803	33.918	51.9	18.0	52.7	18.8	2.81	-0.02	35.0	17.0	35.7
78	387.4	0.526	59.7	-0.9	6.94	5.844	37.051	34.123	52.1	18.0	53.0	18.9	2.81	-0.03	35.1	17.1	35.9
79	387.9	0.530	59.6	-1.0	6.95	5.914	37.140	34.180	52.2	18.0	53.1	19.0	2.80	-0.03	35.1	17.1	36.1
80	389.8	0.534	59.6	-1.0	6.95	5.984	37.423	34.421	52.4	18.0	53.4	19.0	2.81	-0.03	35.2	17.2	36.2
81	391.3	0.538	59.5	-1.1	6.96	6.062	37.654	34.608	52.6	18.0	53.7	19.1	2.81	-0.03	35.3	17.3	36.4
82	392.9	0.543	59.5	-1.1	6.96	6.132	37.902	34.815	52.8	18.0	54.0	19.1	2.82	-0.03	35.4	17.4	36.5
83	394.8	0.547	59.4	-1.2	6.97	6.210	38.185	35.051	53.1	18.0	54.3	19.2	2.83	-0.03	35.5	17.5	36.7
84	395.9	0.552	59.3	-1.3	6.97	6.288	38.362	35.187	53.2	18.0	54.5	19.3	2.82	-0.04	35.6	17.6	36.9
85	396.9	0.556	59.2	-1.4	6.98	6.358	38.504	35.293	53.3	18.0	54.7	19.4	2.82	-0.04	35.6	17.6	37.1
86	398.7	0.561	59.1	-1.5	6.98	6.436	38.788	35.528	53.5	18.0	55.0	19.5	2.82	-0.04	35.8	17.8	37.3
87	400.3	0.565	59.0	-1.6	6.99	6.514	39.036	35.730	53.7	18.0	55.3	19.6	2.83	-0.04	35.9	17.9	37.4
88	401.8	0.569	59.0	-1.6	7.00	6.584	39.266	35.918	53.9	18.0	55.5	19.6	2.83	-0.04	36.0	18.0	37.6
89	402.4	0.574	58.9	-1.7	7.00	6.662	39.355	35.970	54.0	18.0	55.6	19.7	2.83	-0.05	36.0	18.0	37.7
90	403.9	0.578	58.8	-1.8	7.01	6.740	39.585	36.154	54.2	18.0	55.9	19.8	2.83	-0.05	36.1	18.1	37.8
91	405.7	0.583	58.7	-1.9	7.01	6.818	39.851	36.371	54.4	18.0	56.2	19.9	2.83	-0.05	36.2	18.2	38.1
92	406.7	0.588	58.6	-2.0	7.02	6.896	40.010	36.488	54.5	18.0	56.5	20.0	2.83	-0.05	36.2	18.2	38.2
93	408.3	0.592	58.6	-2.0	7.03	6.974	40.258	36.688	54.7	18.0	56.7	20.0	2.84	-0.05	36.3	18.3	38.3
94	409.1	0.596	58.5	-2.1	7.03	7.044	40.382	36.775	54.8	18.0	56.8	20.1	2.83	-0.06	36.4	18.4	38.4
95	410.4	0.601	58.5	-2.1	7.04	7.122	40.577	36.925	54.9	18.0	57.0	20.1	2.84	-0.06	36.5	18.5	38.6
96	412.0	0.606	58.3	-2.3	7.04	7.200	40.825	37.123	55.1	18.0	57.4	20.3	2.83	-0.06	36.6	18.6	38.8
97	413.9	0.610	58.3	-2.3	7.05	7.278	41.109	37.354	55.4	18.0	57.7	20.3	2.84	-0.06	36.7	18.7	39.0
98	414.8	0.615	58.2	-2.4	7.05	7.356	41.251	37.454	55.5	18.0	57.9	20.4	2.83	-0.06	36.7	18.7	39.2
99	415.6	0.619	58.1	-2.5	7.06	7.434	41.375	37.536	55.5	18.0	58.0	20.5	2.83	-0.07	36.8	18.8	39.2
100	417.7	0.624	58.1	-2.5	7.07	7.504	41.694	37.802	55.8	18.0	58.3	20.5	2.84	-0.07	36.9	18.9	39.4

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	418.3	0.628	58.0	-2.6	7.07	7.582	41.782	37.852	55.9	18.0	58.4	20.6	2.84	-0.07	36.9	18.9	39.5
102	420.1	0.632	57.9	-2.7	7.08	7.652	42.066	38.084	56.1	18.0	58.8	20.7	2.84	-0.07	37.0	19.0	39.8
103	421.3	0.637	57.8	-2.8	7.08	7.730	42.243	38.215	56.2	18.0	59.1	20.8	2.83	-0.07	37.1	19.1	39.9
104	422.4	0.642	57.7	-2.9	7.09	7.808	42.420	38.345	56.3	18.0	59.2	20.9	2.84	-0.07	37.2	19.2	40.0
105	424.3	0.646	57.7	-2.9	7.09	7.886	42.704	38.573	56.6	18.0	59.5	20.9	2.84	-0.08	37.3	19.3	40.2
106	424.4	0.650	57.6	-3.0	7.10	7.956	42.721	38.560	56.6	18.0	59.5	21.0	2.84	-0.08	37.3	19.3	40.3
107	426.1	0.655	57.6	-3.0	7.11	8.034	42.987	38.771	56.8	18.0	59.8	21.0	2.84	-0.08	37.4	19.4	40.4
108	426.8	0.659	57.4	-3.2	7.11	8.112	43.093	38.835	56.8	18.0	60.0	21.2	2.83	-0.08	37.4	19.4	40.6
109	428.1	0.664	57.3	-3.3	7.12	8.182	43.288	38.984	57.0	18.0	60.3	21.3	2.83	-0.08	37.5	19.5	40.8
110	429.9	0.668	57.2	-3.4	7.12	8.260	43.554	39.194	57.2	18.0	60.6	21.4	2.83	-0.09	37.6	19.6	41.0
111	430.8	0.672	57.2	-3.4	7.13	8.330	43.696	39.293	57.3	18.0	60.7	21.4	2.83	-0.09	37.6	19.6	41.1
112	431.8	0.677	57.1	-3.5	7.14	8.408	43.855	39.405	57.4	18.0	60.9	21.5	2.83	-0.09	37.7	19.7	41.2
113	433.3	0.682	57.1	-3.5	7.14	8.486	44.086	39.582	57.6	18.0	61.1	21.5	2.84	-0.09	37.8	19.8	41.3
114	434.4	0.686	57.0	-3.6	7.15	8.556	44.245	39.697	57.7	18.0	61.3	21.6	2.84	-0.09	37.8	19.8	41.5
115	435.4	0.690	56.9	-3.7	7.15	8.634	44.405	39.808	57.8	18.0	61.5	21.7	2.83	-0.09	37.9	19.9	41.6
116	436.1	0.694	56.8	-3.8	7.16	8.704	44.511	39.874	57.9	18.0	61.7	21.8	2.83	-0.10	37.9	19.9	41.8
117	437.1	0.699	56.7	-3.9	7.16	8.782	44.670	39.985	58.0	18.0	61.9	21.9	2.82	-0.10	38.0	20.0	41.9
118	438.4	0.704	56.6	-4.0	7.17	8.860	44.865	40.128	58.1	18.0	62.1	22.0	2.83	-0.10	38.1	20.1	42.0
119	440.4	0.708	56.6	-4.0	7.18	8.930	45.167	40.371	58.4	18.0	62.4	22.0	2.83	-0.10	38.2	20.2	42.2
120	441.2	0.712	56.5	-4.1	7.18	9.000	45.291	40.452	58.5	18.0	62.5	22.1	2.83	-0.10	38.2	20.2	42.3
121	441.9	0.717	56.5	-4.1	7.19	9.078	45.397	40.513	58.5	18.0	62.6	22.1	2.83	-0.10	38.3	20.3	42.4
122	444.0	0.721	56.3	-4.3	7.19	9.148	45.716	40.771	58.8	18.0	63.0	22.3	2.83	-0.10	38.4	20.4	42.7
123	444.9	0.725	56.2	-4.4	7.20	9.226	45.858	40.864	58.9	18.0	63.2	22.4	2.83	-0.11	38.4	20.4	42.8
124	446.1	0.729	56.2	-4.4	7.21	9.296	46.035	40.993	59.0	18.0	63.4	22.4	2.83	-0.11	38.5	20.5	42.9
125	447.9	0.734	56.1	-4.5	7.21	9.366	46.318	41.217	59.2	18.0	63.7	22.5	2.83	-0.11	38.6	20.6	43.1
126	448.8	0.738	56.1	-4.5	7.22	9.444	46.460	41.310	59.3	18.0	63.9	22.5	2.83	-0.11	38.7	20.7	43.2
127	450.0	0.742	56.0	-4.6	7.22	9.514	46.637	41.437	59.4	18.0	64.0	22.6	2.83	-0.11	38.7	20.7	43.3
128	450.8	0.746	55.9	-4.7	7.23	9.584	46.761	41.517	59.5	18.0	64.2	22.7	2.83	-0.11	38.8	20.8	43.4
129	453.0	0.751	55.8	-4.8	7.23	9.662	47.098	41.784	59.8	18.0	64.6	22.8	2.83	-0.12	38.9	20.9	43.7
130	453.7	0.755	55.7	-4.9	7.24	9.732	47.204	41.847	59.8	18.0	64.7	22.9	2.83	-0.12	38.9	20.9	43.8
131	455.1	0.760	55.6	-5.0	7.25	9.810	47.417	42.002	60.0	18.0	65.0	23.0	2.83	-0.12	39.0	21.0	44.0
132	456.3	0.764	55.6	-5.0	7.25	9.881	47.594	42.129	60.1	18.0	65.1	23.0	2.83	-0.12	39.1	21.1	44.1
133	458.0	0.769	55.5	-5.1	7.26	9.958	47.860	42.331	60.3	18.0	65.4	23.1	2.83	-0.12	39.2	21.2	44.2
134	459.0	0.773	55.5	-5.1	7.26	10.029	48.019	42.441	60.4	18.0	65.6	23.1	2.84	-0.12	39.2	21.2	44.3
135	460.1	0.777	55.3	-5.3	7.27	10.107	48.179	42.547	60.5	18.0	65.8	23.3	2.83	-0.12	39.3	21.3	44.5
136	461.8	0.782	55.2	-5.4	7.28	10.184	48.445	42.748	60.7	18.0	66.1	23.4	2.83	-0.13	39.4	21.4	44.7
137	463.3	0.786	55.2	-5.4	7.28	10.255	48.675	42.921	60.9	18.0	66.3	23.4	2.83	-0.13	39.5	21.5	44.9
138	463.8	0.791	55.1	-5.5	7.29	10.332	48.746	42.946	60.9	18.0	66.4	23.5	2.83	-0.13	39.5	21.5	45.0
139	464.8	0.795	55.1	-5.5	7.29	10.403	48.905	43.055	61.1	18.0	66.6	23.5	2.83	-0.13	39.5	21.5	45.0
140	465.6	0.799	55.0	-5.6	7.30	10.481	49.029	43.128	61.1	18.0	66.7	23.6	2.83	-0.13	39.6	21.6	45.2
141	466.9	0.804	54.9	-5.7	7.31	10.558	49.224	43.264	61.3	18.0	66.9	23.7	2.83	-0.13	39.6	21.6	45.3

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	468.1	0.809	54.8	-5.8	7.31	10.636	49.401	43.384	61.4	18.0	67.2	23.8	2.82	-0.13	39.7	21.7	45.5
143	469.0	0.813	54.7	-5.9	7.32	10.714	49.543	43.472	61.5	18.0	67.4	23.9	2.82	-0.14	39.7	21.7	45.6
144	470.7	0.818	54.7	-5.9	7.33	10.792	49.809	43.671	61.7	18.0	67.6	23.9	2.83	-0.14	39.8	21.8	45.8
145	472.0	0.822	54.6	-6.0	7.33	10.870	50.004	43.806	61.8	18.0	67.8	24.0	2.83	-0.14	39.9	21.9	45.9
146	473.2	0.827	54.6	-6.0	7.34	10.948	50.181	43.925	61.9	18.0	68.0	24.0	2.83	-0.14	40.0	22.0	46.0
147	474.6	0.832	54.5	-6.1	7.35	11.026	50.394	44.075	62.1	18.0	68.2	24.1	2.83	-0.14	40.0	22.0	46.1
148	475.0	0.836	54.4	-6.2	7.35	11.096	50.465	44.102	62.1	18.0	68.3	24.2	2.82	-0.14	40.1	22.1	46.3
149	476.6	0.841	54.3	-6.3	7.36	11.182	50.713	44.279	62.3	18.0	68.6	24.3	2.82	-0.14	40.1	22.1	46.5
150	477.8	0.845	54.2	-6.4	7.36	11.252	50.890	44.401	62.4	18.0	68.8	24.4	2.82	-0.14	40.2	22.2	46.6
151	478.7	0.850	54.2	-6.4	7.37	11.330	51.032	44.487	62.5	18.0	68.9	24.4	2.82	-0.14	40.2	22.2	46.6
152	479.9	0.854	54.2	-6.4	7.38	11.408	51.209	44.604	62.6	18.0	69.1	24.4	2.82	-0.14	40.3	22.3	46.7
153	480.9	0.859	54.1	-6.5	7.38	11.486	51.368	44.706	62.7	18.0	69.2	24.5	2.82	-0.15	40.4	22.4	46.9
154	483.2	0.863	54.0	-6.6	7.39	11.556	51.723	44.983	63.0	18.0	69.6	24.6	2.83	-0.15	40.5	22.5	47.1
155	482.5	0.867	53.9	-6.7	7.40	11.634	51.616	44.849	62.8	18.0	69.6	24.7	2.81	-0.15	40.4	22.4	47.2
156	484.2	0.872	53.8	-6.8	7.40	11.712	51.864	45.028	63.0	18.0	69.8	24.8	2.82	-0.15	40.5	22.5	47.3
157	485.7	0.876	53.8	-6.8	7.41	11.782	52.095	45.194	63.2	18.0	70.0	24.8	2.82	-0.15	40.6	22.6	47.4
158	487.2	0.881	53.7	-6.9	7.41	11.860	52.325	45.357	63.4	18.0	70.2	24.9	2.82	-0.15	40.7	22.7	47.5
159	487.2	0.885	53.7	-6.9	7.42	11.930	52.325	45.320	63.3	18.0	70.2	24.9	2.82	-0.15	40.7	22.7	47.6
160	488.9	0.890	53.6	-7.0	7.43	12.008	52.591	45.513	63.5	18.0	70.5	25.0	2.82	-0.15	40.8	22.8	47.8
161	489.6	0.894	53.5	-7.1	7.43	12.078	52.697	45.570	63.6	18.0	70.7	25.1	2.81	-0.16	40.8	22.8	47.9
162	490.6	0.898	53.4	-7.2	7.44	12.156	52.857	45.669	63.7	18.0	70.8	25.2	2.81	-0.16	40.8	22.8	48.0
163	491.3	0.902	53.4	-7.2	7.45	12.226	52.963	45.725	63.7	18.0	71.0	25.2	2.81	-0.16	40.9	22.9	48.1
164	492.7	0.907	53.3	-7.3	7.45	12.304	53.176	45.870	63.9	18.0	71.1	25.3	2.82	-0.16	40.9	22.9	48.2
165	494.0	0.911	53.3	-7.3	7.46	12.374	53.371	46.004	64.0	18.0	71.3	25.3	2.82	-0.16	41.0	23.0	48.3
166	494.5	0.915	53.2	-7.4	7.46	12.444	53.441	46.028	64.0	18.0	71.4	25.4	2.81	-0.16	41.0	23.0	48.4
167	495.7	0.920	53.1	-7.5	7.47	12.522	53.636	46.157	64.2	18.0	71.7	25.5	2.81	-0.16	41.1	23.1	48.6
168	496.6	0.924	53.0	-7.6	7.48	12.592	53.760	46.228	64.2	18.0	71.8	25.6	2.81	-0.16	41.1	23.1	48.7
169	497.1	0.929	53.0	-7.6	7.48	12.670	53.849	46.264	64.3	18.0	71.9	25.6	2.80	-0.17	41.1	23.1	48.8
170	499.1	0.933	52.9	-7.7	7.49	12.740	54.150	46.489	64.5	18.0	72.2	25.7	2.81	-0.17	41.2	23.2	48.9
171	500.8	0.937	52.9	-7.7	7.50	12.810	54.416	46.682	64.7	18.0	72.4	25.7	2.82	-0.17	41.3	23.3	49.0
172	501.7	0.942	52.8	-7.8	7.50	12.888	54.540	46.748	64.7	18.0	72.5	25.8	2.81	-0.17	41.4	23.4	49.1
173	502.9	0.946	52.7	-7.9	7.51	12.966	54.735	46.875	64.9	18.0	72.7	25.9	2.81	-0.17	41.4	23.4	49.3
174	504.0	0.950	52.7	-7.9	7.51	13.036	54.894	46.975	65.0	18.0	72.9	25.9	2.81	-0.17	41.5	23.5	49.4
175	504.7	0.954	52.6	-8.0	7.52	13.107	55.001	47.029	65.0	18.0	73.1	26.0	2.81	-0.17	41.5	23.5	49.5
176	505.2	0.959	52.5	-8.1	7.53	13.184	55.089	47.063	65.1	18.0	73.1	26.1	2.81	-0.17	41.5	23.5	49.6
177	507.1	0.963	52.5	-8.1	7.53	13.255	55.373	47.271	65.3	18.0	73.4	26.1	2.81	-0.17	41.6	23.6	49.7
178	508.8	0.968	52.5	-8.1	7.54	13.332	55.639	47.458	65.5	18.0	73.6	26.1	2.82	-0.17	41.7	23.7	49.9
179	509.2	0.972	52.4	-8.2	7.55	13.403	55.692	47.465	65.5	18.0	73.7	26.2	2.81	-0.17	41.7	23.7	49.9
180	510.6	0.977	52.3	-8.3	7.55	13.481	55.904	47.606	65.6	18.0	73.9	26.3	2.81	-0.17	41.8	23.8	50.1
181	512.3	0.981	52.2	-8.4	7.56	13.558	56.170	47.792	65.8	18.0	74.2	26.4	2.81	-0.18	41.9	23.9	50.3
182	512.3	0.985	52.2	-8.4	7.57	13.629	56.170	47.752	65.8	18.0	74.2	26.4	2.81	-0.18	41.9	23.9	50.3

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	513.5	0.990	52.1	-8.5	7.57	13.707	56.347	47.861	65.9	18.0	74.3	26.5	2.81	-0.18	41.9	23.9	50.4
184	514.9	0.994	52.1	-8.5	7.58	13.784	56.560	48.001	66.0	18.0	74.5	26.5	2.81	-0.18	42.0	24.0	50.5
185	515.5	0.999	52.0	-8.6	7.59	13.855	56.666	48.053	66.1	18.0	74.6	26.6	2.81	-0.18	42.0	24.0	50.6
186	517.1	1.003	51.9	-8.7	7.59	13.933	56.897	48.207	66.2	18.0	74.9	26.7	2.81	-0.18	42.1	24.1	50.8
187	517.4	1.008	51.8	-8.8	7.60	14.010	56.950	48.208	66.2	18.0	75.0	26.8	2.80	-0.18	42.1	24.1	50.9
188	518.8	1.012	51.8	-8.8	7.61	14.088	57.162	48.347	66.3	18.0	75.2	26.8	2.80	-0.18	42.2	24.2	51.0
189	519.4	1.017	51.7	-8.9	7.61	14.158	57.251	48.383	66.4	18.0	75.3	26.9	2.80	-0.18	42.2	24.2	51.1
190	520.2	1.021	51.7	-8.9	7.62	14.236	57.375	48.444	66.4	18.0	75.4	26.9	2.80	-0.18	42.2	24.2	51.1
191	521.6	1.026	51.7	-8.9	7.63	14.314	57.588	48.582	66.6	18.0	75.5	26.9	2.80	-0.18	42.3	24.3	51.2
192	521.3	1.030	51.6	-9.0	7.63	14.392	57.552	48.507	66.5	18.0	75.5	27.0	2.80	-0.18	42.3	24.3	51.2
193	521.7	1.035	51.5	-9.1	7.64	14.462	57.605	48.512	66.5	18.0	75.6	27.1	2.79	-0.19	42.3	24.3	51.3
194	519.4	1.039	51.5	-9.1	7.65	14.540	57.251	48.164	66.2	18.0	75.3	27.1	2.77	-0.19	42.1	24.1	51.2
195	520.9	1.044	51.4	-9.2	7.65	14.618	57.481	48.316	66.3	18.0	75.5	27.2	2.78	-0.19	42.2	24.2	51.3
196	521.3	1.048	51.4	-9.2	7.66	14.696	57.552	48.332	66.3	18.0	75.5	27.2	2.78	-0.19	42.2	24.2	51.4
197	523.1	1.053	51.4	-9.2	7.67	14.774	57.818	48.513	66.5	18.0	75.7	27.2	2.78	-0.19	42.3	24.3	51.5
198	523.7	1.057	51.3	-9.3	7.67	14.844	57.907	48.548	66.5	18.0	75.8	27.3	2.78	-0.19	42.3	24.3	51.6
199	524.1	1.062	51.2	-9.4	7.68	14.922	57.978	48.563	66.6	18.0	75.9	27.4	2.77	-0.19	42.3	24.3	51.7
200	525.5	1.066	51.1	-9.5	7.69	15.000	58.190	48.699	66.7	18.0	76.2	27.5	2.77	-0.19	42.3	24.3	51.8
201	526.3	1.070	51.1	-9.5	7.69	15.070	58.314	48.764	66.8	18.0	76.3	27.5	2.77	-0.20	42.4	24.4	51.9
202	526.4	1.075	51.0	-9.6	7.70	15.148	58.332	48.733	66.7	18.0	76.3	27.6	2.77	-0.20	42.4	24.4	51.9
203	527.2	1.080	51.0	-9.6	7.71	15.226	58.456	48.793	66.8	18.0	76.4	27.6	2.77	-0.20	42.4	24.4	52.0
204	528.4	1.084	51.0	-9.6	7.72	15.304	58.633	48.897	66.9	18.0	76.5	27.6	2.77	-0.20	42.4	24.4	52.1
205	528.6	1.088	51.0	-9.6	7.72	15.374	58.669	48.886	66.9	18.0	76.5	27.6	2.77	-0.20	42.4	24.4	52.1
206	528.7	1.092	50.9	-9.7	7.73	15.444	58.686	48.860	66.9	18.0	76.6	27.7	2.76	-0.20	42.4	24.4	52.2
207	529.7	1.097	50.8	-9.8	7.74	15.522	58.828	48.934	66.9	18.0	76.8	27.8	2.76	-0.20	42.5	24.5	52.3
208	530.3	1.101	50.7	-9.9	7.74	15.592	58.917	48.968	67.0	18.0	76.8	27.9	2.76	-0.20	42.5	24.5	52.4
209	531.2	1.106	50.7	-9.9	7.75	15.670	59.058	49.041	67.0	18.0	76.9	27.9	2.76	-0.20	42.5	24.5	52.4
210	530.0	1.110	50.7	-9.9	7.76	15.740	58.881	48.851	66.8	18.0	76.7	27.9	2.75	-0.20	42.4	24.4	52.3
211	531.1	1.115	50.7	-9.9	7.76	15.818	59.041	48.939	66.9	18.0	76.9	27.9	2.75	-0.20	42.5	24.5	52.4
212	531.3	1.119	50.6	-10.0	7.77	15.888	59.076	48.927	66.9	18.0	76.9	28.0	2.75	-0.20	42.5	24.5	52.4
213	532.7	1.123	50.5	-10.1	7.78	15.958	59.289	49.065	67.1	18.0	77.1	28.1	2.75	-0.20	42.5	24.5	52.6
214	533.0	1.127	50.5	-10.1	7.78	16.036	59.342	49.063	67.1	18.0	77.2	28.1	2.74	-0.21	42.5	24.5	52.7
215	533.3	1.132	50.4	-10.2	7.79	16.107	59.377	49.051	67.1	18.0	77.2	28.2	2.74	-0.21	42.5	24.5	52.7
216	534.3	1.136	50.4	-10.2	7.80	16.184	59.537	49.138	67.1	18.0	77.3	28.2	2.74	-0.21	42.6	24.6	52.8
217	534.7	1.140	50.4	-10.2	7.80	16.255	59.590	49.141	67.1	18.0	77.3	28.2	2.74	-0.21	42.6	24.6	52.8
218	533.4	1.145	50.4	-10.2	7.81	16.333	59.395	48.932	66.9	18.0	77.2	28.2	2.73	-0.21	42.5	24.5	52.7
219	534.2	1.149	50.3	-10.3	7.82	16.403	59.519	48.994	67.0	18.0	77.3	28.3	2.73	-0.21	42.5	24.5	52.8
220	534.8	1.153	50.3	-10.3	7.82	16.473	59.608	49.026	67.0	18.0	77.4	28.3	2.73	-0.21	42.5	24.5	52.9
221	535.7	1.158	50.2	-10.4	7.83	16.551	59.750	49.098	67.1	18.0	77.5	28.4	2.73	-0.21	42.5	24.5	53.0
222	536.3	1.162	50.2	-10.4	7.84	16.629	59.838	49.125	67.1	18.0	77.6	28.4	2.73	-0.21	42.6	24.6	53.0
223	536.5	1.167	50.1	-10.5	7.85	16.699	59.874	49.113	67.1	18.0	77.6	28.5	2.73	-0.21	42.6	24.6	53.0

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	536.0	1.171	50.1	-10.5	7.85	16.777	59.803	49.007	67.0	18.0	77.5	28.5	2.72	-0.21	42.5	24.5	53.0
225	536.9	1.175	50.1	-10.5	7.86	16.847	59.927	49.068	67.1	18.0	77.6	28.5	2.72	-0.21	42.5	24.5	53.0
226	537.7	1.180	50.0	-10.6	7.87	16.925	60.051	49.125	67.1	18.0	77.7	28.6	2.72	-0.22	42.6	24.6	53.1
227	537.4	1.185	50.0	-10.6	7.87	17.003	60.015	49.048	67.0	18.0	77.7	28.6	2.71	-0.22	42.5	24.5	53.2
228	536.3	1.189	49.9	-10.7	7.88	17.081	59.838	48.855	66.9	18.0	77.5	28.7	2.70	-0.22	42.4	24.4	53.1
229	537.2	1.193	49.9	-10.7	7.89	17.151	59.980	48.930	66.9	18.0	77.6	28.7	2.71	-0.22	42.5	24.5	53.1
230	537.1	1.198	49.9	-10.7	7.90	17.229	59.962	48.869	66.9	18.0	77.5	28.7	2.70	-0.22	42.4	24.4	53.1
231	537.7	1.202	49.9	-10.7	7.90	17.307	60.051	48.895	66.9	18.0	77.6	28.7	2.71	-0.22	42.4	24.4	53.1
232	534.1	1.207	49.9	-10.7	7.91	17.384	59.501	48.395	66.4	18.0	77.1	28.7	2.68	-0.22	42.2	24.2	52.9
233	538.0	1.212	49.8	-10.8	7.92	17.462	60.104	48.846	66.8	18.0	77.6	28.8	2.70	-0.22	42.4	24.4	53.2
234	540.1	1.216	49.8	-10.8	7.93	17.540	60.423	49.062	67.1	18.0	77.9	28.8	2.70	-0.22	42.5	24.5	53.3
235	540.3	1.220	49.8	-10.8	7.93	17.610	60.458	49.049	67.0	18.0	77.9	28.8	2.70	-0.22	42.5	24.5	53.3
236	537.4	1.225	49.8	-10.8	7.94	17.688	60.015	48.637	66.6	18.0	77.4	28.8	2.69	-0.22	42.3	24.3	53.1
237	538.9	1.230	49.8	-10.8	7.95	17.766	60.246	48.780	66.8	18.0	77.6	28.8	2.69	-0.22	42.4	24.4	53.2
238	538.2	1.234	49.8	-10.8	7.95	17.844	60.139	48.645	66.6	18.0	77.5	28.8	2.69	-0.22	42.3	24.3	53.2
239	538.4	1.238	49.7	-10.9	7.96	17.914	60.157	48.618	66.6	18.0	77.5	28.9	2.68	-0.22	42.3	24.3	53.2
240	539.2	1.243	49.6	-11.0	7.97	17.992	60.281	48.672	66.7	18.0	77.6	29.0	2.68	-0.23	42.3	24.3	53.3
241	538.1	1.248	49.7	-10.9	7.98	18.070	60.122	48.495	66.5	18.0	77.4	28.9	2.68	-0.23	42.2	24.2	53.2
242	539.7	1.252	49.7	-10.9	7.98	18.140	60.370	48.656	66.7	18.0	77.6	28.9	2.68	-0.22	42.3	24.3	53.3
243	540.2	1.256	49.7	-10.9	7.99	18.218	60.441	48.667	66.7	18.0	77.6	28.9	2.68	-0.22	42.3	24.3	53.3
244	541.1	1.260	49.7	-10.9	8.00	18.288	60.582	48.740	66.7	18.0	77.7	28.9	2.68	-0.22	42.4	24.4	53.3
245	539.9	1.265	49.6	-11.0	8.01	18.366	60.387	48.534	66.5	18.0	77.5	29.0	2.67	-0.23	42.3	24.3	53.3
246	540.3	1.270	49.6	-11.0	8.01	18.444	60.458	48.545	66.5	18.0	77.6	29.0	2.67	-0.23	42.3	24.3	53.3
247	541.5	1.274	49.6	-11.0	8.02	18.514	60.635	48.647	66.6	18.0	77.7	29.0	2.67	-0.23	42.3	24.3	53.4
248	541.9	1.278	49.6	-11.0	8.03	18.592	60.706	48.657	66.7	18.0	77.7	29.0	2.68	-0.23	42.3	24.3	53.4
249	542.8	1.283	49.6	-11.0	8.03	18.662	60.830	48.715	66.7	18.0	77.8	29.0	2.68	-0.23	42.4	24.4	53.4
250	543.5	1.287	49.6	-11.0	8.04	18.740	60.937	48.754	66.8	18.0	77.8	29.0	2.68	-0.23	42.4	24.4	53.4
251	543.2	1.292	49.5	-11.1	8.05	18.818	60.901	48.678	66.7	18.0	77.8	29.1	2.67	-0.23	42.3	24.3	53.4
252	543.3	1.296	49.5	-11.1	8.06	18.888	60.919	48.650	66.6	18.0	77.8	29.1	2.67	-0.23	42.3	24.3	53.5
253	542.5	1.301	49.5	-11.1	8.06	18.966	60.795	48.502	66.5	18.0	77.6	29.1	2.66	-0.23	42.3	24.3	53.4
254	543.2	1.305	49.5	-11.1	8.07	19.044	60.901	48.540	66.5	18.0	77.7	29.1	2.67	-0.23	42.3	24.3	53.4
255	543.9	1.309	49.5	-11.1	8.08	19.114	61.008	48.584	66.6	18.0	77.7	29.1	2.67	-0.23	42.3	24.3	53.4
256	544.5	1.314	49.5	-11.1	8.09	19.192	61.096	48.608	66.6	18.0	77.7	29.1	2.67	-0.23	42.3	24.3	53.4
257	545.8	1.318	49.5	-11.1	8.09	19.262	61.291	48.722	66.7	18.0	77.9	29.1	2.67	-0.23	42.4	24.4	53.5
258	546.2	1.323	49.4	-11.2	8.10	19.340	61.362	48.732	66.7	18.0	77.9	29.2	2.67	-0.23	42.4	24.4	53.6
259	545.3	1.327	49.3	-11.3	8.11	19.410	61.220	48.574	66.6	18.0	77.9	29.3	2.66	-0.23	42.3	24.3	53.6
260	546.6	1.331	49.3	-11.3	8.12	19.488	61.415	48.684	66.7	18.0	77.9	29.3	2.66	-0.23	42.3	24.3	53.6
261	547.3	1.335	49.3	-11.3	8.12	19.558	61.521	48.726	66.7	18.0	78.0	29.3	2.67	-0.23	42.4	24.4	53.6
262	544.0	1.340	49.4	-11.2	8.13	19.629	61.025	48.284	66.3	18.0	77.5	29.2	2.65	-0.23	42.1	24.1	53.4
263	544.7	1.344	49.4	-11.2	8.14	19.707	61.132	48.322	66.3	18.0	77.5	29.2	2.65	-0.23	42.2	24.2	53.4
264	545.9	1.349	49.3	-11.3	8.15	19.784	61.309	48.417	66.4	18.0	77.7	29.3	2.65	-0.23	42.2	24.2	53.5

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
265	547.0	1.353	49.3	-11.3	8.15	19.855	61.486	48.516	66.5	18.0	77.9	29.3	2.65	-0.23	42.3	24.3	53.6
266	547.5	1.358	49.2	-11.4	8.16	19.933	61.557	48.524	66.5	18.0	77.9	29.4	2.65	-0.23	42.3	24.3	53.6
267	548.9	1.362	49.3	-11.3	8.17	20.003	61.769	48.651	66.7	18.0	78.0	29.3	2.66	-0.23	42.3	24.3	53.7
268	549.2	1.362	49.3	-11.3	8.17	20.010	61.823	48.689	66.7	18.0	78.0	29.3	2.66	-0.23	42.3	24.3	53.7

Specimen C Shear Data

CU Triaxial Test

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File Location
T-5779.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5779
Sample Location: Guilford County (Sta. 404+50)
Sample Description: Tan colored silt
Remarks: 35° shear plane.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.691
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.873	2.824	
Height (in)	6.093	5.988	
Weight (grams)	1299.00		1322.00
Moisture (%)	18.63		20.73
Dry Density (pcf)	105.60	111.27	
Saturation (%)	84.84	100.00	
Void Ratio	0.587	0.487	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 98.000
Effective Confining Stress (psi): 36.0
Corrected Peak Deviator Stress (psi): 86.946 at reading number: 66

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	83.7	0.155	62.0	0.0	6.26	0.000	0.000	0.000	36.0	36.0	36.0	36.0	1.00	0.00	36.0	0.0	36.0
1	93.9	0.157	61.7	-0.2	6.26	0.029	1.636	1.624	37.7	36.0	37.9	36.3	1.04	-0.14	36.8	0.8	37.1
2	99.1	0.158	61.5	-0.4	6.26	0.048	2.463	2.444	38.5	36.0	38.9	36.5	1.07	-0.18	37.3	1.2	37.7
3	115.0	0.161	62.2	0.3	6.27	0.096	5.000	4.958	41.0	36.0	40.7	35.8	1.14	0.05	38.5	2.5	38.2
4	115.5	0.163	61.6	-0.3	6.27	0.134	5.074	5.015	41.0	36.0	41.4	36.4	1.14	-0.06	38.5	2.5	38.9
5	116.3	0.165	61.4	-0.6	6.27	0.153	5.203	5.135	41.2	36.0	41.8	36.6	1.14	-0.12	38.6	2.6	39.2
6	118.8	0.166	61.3	-0.7	6.27	0.172	5.607	5.530	41.6	36.0	42.3	36.7	1.15	-0.13	38.8	2.8	39.5
7	122.8	0.166	61.3	-0.6	6.27	0.182	6.250	6.168	42.2	36.0	42.8	36.7	1.17	-0.10	39.1	3.1	39.8
8	133.3	0.168	61.9	-0.1	6.27	0.211	7.923	7.825	43.9	36.0	44.0	36.1	1.22	-0.01	39.9	3.9	40.1
9	146.3	0.171	62.4	0.5	6.28	0.268	10.001	9.869	45.9	36.0	45.4	35.6	1.28	0.05	41.0	4.9	40.5
10	159.3	0.175	62.8	0.8	6.28	0.326	12.078	11.912	47.9	36.0	47.2	35.2	1.34	0.07	42.0	6.0	41.2
11	170.2	0.178	62.9	0.9	6.29	0.383	13.824	13.622	49.7	36.0	48.7	35.1	1.39	0.07	42.8	6.8	41.9
12	181.3	0.182	62.9	0.9	6.29	0.441	15.589	15.349	51.4	36.0	50.4	35.1	1.44	0.06	43.7	7.7	42.8
13	193.8	0.186	63.0	1.0	6.29	0.508	17.593	17.306	53.3	36.0	52.3	35.0	1.49	0.06	44.7	8.7	43.7
14	202.1	0.189	62.8	0.8	6.30	0.565	18.917	18.590	54.6	36.0	53.8	35.2	1.53	0.04	45.3	9.3	44.5
15	203.7	0.190	62.1	0.2	6.30	0.584	19.174	18.834	54.9	36.0	54.7	35.9	1.53	0.01	45.4	9.4	45.3
16	205.2	0.191	61.7	-0.3	6.30	0.594	19.413	19.066	55.1	36.0	55.4	36.3	1.53	-0.01	45.6	9.5	45.8
17	206.6	0.191	61.5	-0.5	6.30	0.594	19.634	19.286	55.3	36.0	55.8	36.5	1.53	-0.03	45.7	9.6	46.2
18	208.3	0.191	61.4	-0.6	6.30	0.594	19.909	19.560	55.6	36.0	56.2	36.6	1.53	-0.03	45.8	9.8	46.4

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	210.0	0.192	61.3	-0.7	6.30	0.603	20.167	19.810	55.8	36.0	56.5	36.7	1.54	-0.04	45.9	9.9	46.6
20	211.7	0.192	61.2	-0.8	6.30	0.603	20.443	20.084	56.1	36.0	56.9	36.8	1.55	-0.04	46.1	10.0	46.8
21	224.6	0.193	61.7	-0.3	6.30	0.623	22.502	22.119	58.2	36.0	58.4	36.3	1.61	-0.01	47.1	11.1	47.4
22	239.1	0.197	62.2	0.3	6.30	0.690	24.818	24.378	60.4	36.0	60.1	35.8	1.68	0.01	48.2	12.2	48.0
23	251.3	0.201	62.4	0.4	6.31	0.766	26.767	26.263	62.3	36.0	61.9	35.6	1.74	0.02	49.2	13.1	48.7
24	263.9	0.206	62.5	0.6	6.31	0.843	28.789	28.218	64.2	36.0	63.7	35.5	1.80	0.02	50.1	14.1	49.6
25	276.3	0.210	62.6	0.6	6.32	0.910	30.756	30.121	66.2	36.0	65.6	35.4	1.85	0.02	51.1	15.1	50.5
26	288.2	0.215	62.5	0.6	6.32	0.987	32.668	31.961	68.0	36.0	67.4	35.5	1.90	0.02	52.0	16.0	51.5
27	299.6	0.219	62.5	0.5	6.33	1.063	34.488	33.707	69.7	36.0	69.2	35.5	1.95	0.01	52.9	16.9	52.4
28	312.7	0.224	62.4	0.5	6.33	1.140	36.583	35.722	71.8	36.0	71.3	35.6	2.00	0.01	53.9	17.9	53.4
29	325.6	0.229	62.4	0.4	6.34	1.226	38.642	37.691	73.7	36.0	73.3	35.6	2.06	0.01	54.9	18.8	54.5
30	337.4	0.233	62.3	0.3	6.34	1.303	40.518	39.482	75.5	36.0	75.2	35.7	2.11	0.01	55.8	19.7	55.4
31	349.1	0.238	62.3	0.3	6.35	1.379	42.393	41.270	77.3	36.0	77.0	35.7	2.16	0.01	56.7	20.6	56.3
32	361.6	0.243	62.3	0.3	6.35	1.466	44.378	43.157	79.2	36.0	78.9	35.7	2.21	0.01	57.6	21.6	57.3
33	374.0	0.248	62.2	0.2	6.36	1.542	46.364	45.048	81.1	36.0	80.8	35.8	2.26	0.01	58.6	22.5	58.3
34	386.3	0.252	62.1	0.2	6.36	1.619	48.331	46.917	82.9	36.0	82.8	35.9	2.31	0.00	59.5	23.5	59.3
35	398.8	0.257	62.1	0.1	6.37	1.696	50.334	48.820	84.9	36.0	84.8	35.9	2.36	0.00	60.4	24.4	60.4
36	412.1	0.262	62.0	0.0	6.37	1.772	52.448	50.829	86.9	36.0	86.8	36.0	2.41	0.00	61.4	25.4	61.4
37	424.9	0.266	62.0	0.0	6.38	1.839	54.489	52.770	88.8	36.0	88.8	36.0	2.46	0.00	62.4	26.4	62.4
38	436.7	0.270	61.9	-0.1	6.38	1.916	56.383	54.556	90.6	36.0	90.6	36.1	2.51	0.00	63.3	27.3	63.4
39	449.3	0.275	61.9	-0.1	6.39	1.992	58.386	56.447	92.5	36.0	92.6	36.1	2.56	0.00	64.3	28.2	64.4
40	461.9	0.279	61.8	-0.1	6.39	2.060	60.409	58.385	94.4	36.0	94.6	36.2	2.61	0.00	65.2	29.2	65.4
41	473.7	0.283	61.7	-0.2	6.40	2.136	62.284	60.174	96.2	36.0	96.4	36.3	2.66	0.00	66.1	30.1	66.4
42	484.6	0.287	61.6	-0.3	6.40	2.203	64.030	61.840	97.9	36.0	98.2	36.4	2.70	-0.01	67.0	30.9	67.3
43	495.7	0.292	61.6	-0.4	6.41	2.280	65.795	63.516	99.5	36.0	99.9	36.4	2.74	-0.01	67.8	31.8	68.2
44	507.1	0.297	61.5	-0.4	6.41	2.357	67.615	65.242	101.3	36.0	101.7	36.5	2.79	-0.01	68.7	32.6	69.1
45	516.7	0.301	61.5	-0.5	6.42	2.424	69.159	66.704	102.7	36.0	103.2	36.5	2.83	-0.01	69.4	33.4	69.9
46	526.6	0.306	61.4	-0.6	6.42	2.510	70.740	68.186	104.2	36.0	104.8	36.6	2.86	-0.01	70.1	34.1	70.7
47	535.9	0.311	61.3	-0.6	6.43	2.596	72.229	69.575	105.6	36.0	106.2	36.7	2.90	-0.01	70.8	34.8	71.5
48	545.4	0.315	61.2	-0.7	6.43	2.673	73.737	70.987	107.0	36.0	107.7	36.8	2.93	-0.01	71.5	35.5	72.3
49	554.1	0.320	61.2	-0.8	6.44	2.749	75.134	72.289	108.3	36.0	109.1	36.8	2.96	-0.01	72.2	36.1	73.0
50	563.0	0.325	61.2	-0.8	6.44	2.826	76.549	73.607	109.6	36.0	110.5	36.8	3.00	-0.01	72.8	36.8	73.7
51	572.1	0.329	61.1	-0.9	6.45	2.893	78.002	74.966	111.0	36.0	111.9	36.9	3.03	-0.01	73.5	37.5	74.4
52	581.1	0.333	61.0	-0.9	6.45	2.960	79.436	76.305	112.3	36.0	113.3	37.0	3.06	-0.01	74.2	38.2	75.1
53	589.1	0.337	61.0	-1.0	6.46	3.027	80.723	77.500	113.5	36.0	114.5	37.0	3.09	-0.01	74.8	38.7	75.8
54	596.5	0.341	60.9	-1.1	6.46	3.104	81.899	78.578	114.6	36.0	115.7	37.1	3.12	-0.01	75.3	39.3	76.4
55	604.2	0.345	60.8	-1.2	6.47	3.171	83.131	79.716	115.7	36.0	116.9	37.2	3.14	-0.01	75.9	39.9	77.1
56	611.5	0.349	60.8	-1.2	6.47	3.238	84.289	80.781	116.8	36.0	118.0	37.2	3.17	-0.01	76.4	40.4	77.6
57	617.6	0.353	60.7	-1.2	6.48	3.305	85.263	81.666	117.7	36.0	118.9	37.3	3.19	-0.01	76.9	40.8	78.1
58	622.8	0.357	60.7	-1.3	6.48	3.372	86.109	82.426	118.5	36.0	119.7	37.3	3.21	-0.02	77.2	41.2	78.5
59	629.6	0.362	60.6	-1.3	6.49	3.449	87.194	83.407	119.4	36.0	120.8	37.4	3.23	-0.02	77.7	41.7	79.1

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	635.6	0.366	60.5	-1.4	6.49	3.516	88.149	84.271	120.3	36.0	121.7	37.5	3.25	-0.02	78.2	42.1	79.6
61	639.7	0.371	60.5	-1.5	6.49	3.592	88.793	84.824	120.9	36.0	122.3	37.5	3.26	-0.02	78.4	42.4	79.9
62	643.6	0.375	60.4	-1.5	6.50	3.659	89.418	85.367	121.4	36.0	122.9	37.6	3.27	-0.02	78.7	42.7	80.3
63	648.2	0.379	60.4	-1.6	6.50	3.736	90.153	86.006	122.0	36.0	123.6	37.6	3.29	-0.02	79.0	43.0	80.6
64	651.4	0.383	60.4	-1.6	6.51	3.803	90.668	86.441	122.5	36.0	124.1	37.6	3.30	-0.02	79.3	43.2	80.9
65	653.7	0.387	60.3	-1.7	6.51	3.870	91.036	86.733	122.8	36.0	124.4	37.7	3.30	-0.02	79.4	43.4	81.1
66	655.5	0.392	60.2	-1.7	6.52	3.947	91.330	86.946	123.0	36.0	124.7	37.8	3.30	-0.02	79.5	43.5	81.2
67	654.8	0.396	60.2	-1.8	6.52	4.023	91.220	86.770	122.8	36.0	124.6	37.8	3.29	-0.02	79.4	43.4	81.2
68	654.4	0.401	60.1	-1.8	6.53	4.100	91.146	86.630	122.7	36.0	124.5	37.9	3.29	-0.02	79.3	43.3	81.2
69	653.4	0.406	60.1	-1.9	6.53	4.177	90.981	86.402	122.4	36.0	124.3	37.9	3.28	-0.02	79.2	43.2	81.1
70	649.7	0.411	60.1	-1.9	6.54	4.263	90.392	85.760	121.8	36.0	123.7	37.9	3.26	-0.02	78.9	42.9	80.8
71	645.1	0.415	60.0	-1.9	6.55	4.339	89.657	84.987	121.0	36.0	122.9	38.0	3.24	-0.02	78.5	42.5	80.4
72	638.0	0.420	60.0	-2.0	6.55	4.426	88.536	83.838	119.9	36.0	121.8	38.0	3.21	-0.02	78.0	41.9	79.9
73	630.0	0.425	59.9	-2.0	6.56	4.502	87.249	82.541	118.6	36.0	120.6	38.1	3.17	-0.02	77.3	41.3	79.3
74	625.2	0.430	59.9	-2.0	6.56	4.588	86.477	81.729	117.8	36.0	119.8	38.1	3.15	-0.02	76.9	40.9	78.9
75	617.7	0.435	59.9	-2.0	6.57	4.665	85.282	80.524	116.6	36.0	118.6	38.1	3.11	-0.03	76.3	40.3	78.3
76	610.8	0.439	60.0	-2.0	6.57	4.742	84.179	79.408	115.4	36.0	117.4	38.0	3.09	-0.02	75.7	39.7	77.7
77	604.8	0.444	60.0	-2.0	6.58	4.818	83.223	78.434	114.5	36.0	116.4	38.0	3.06	-0.02	75.2	39.2	77.2
78	602.7	0.449	60.0	-2.0	6.58	4.895	82.892	78.055	114.1	36.0	116.0	38.0	3.05	-0.03	75.1	39.0	77.0
79	598.3	0.453	60.0	-1.9	6.59	4.962	82.193	77.336	113.4	36.0	115.3	38.0	3.04	-0.02	74.7	38.7	76.6
80	594.9	0.457	60.0	-2.0	6.59	5.039	81.642	76.749	112.8	36.0	114.7	38.0	3.02	-0.03	74.4	38.4	76.4
81	591.5	0.462	60.0	-2.0	6.60	5.115	81.109	76.180	112.2	36.0	114.2	38.0	3.01	-0.03	74.1	38.1	76.1
82	588.7	0.466	60.1	-1.9	6.60	5.192	80.649	75.683	111.7	36.0	113.6	37.9	3.00	-0.03	73.9	37.8	75.8
83	587.5	0.471	60.1	-1.9	6.61	5.269	80.465	75.447	111.5	36.0	113.3	37.9	2.99	-0.02	73.8	37.7	75.6
84	583.7	0.475	60.1	-1.9	6.62	5.345	79.858	74.811	110.8	36.0	112.7	37.9	2.97	-0.02	73.4	37.4	75.3
85	580.3	0.480	60.1	-1.8	6.62	5.422	79.307	74.228	110.3	36.0	112.1	37.9	2.96	-0.02	73.1	37.1	75.0
86	578.5	0.485	60.1	-1.9	6.63	5.499	79.031	73.907	109.9	36.0	111.8	37.9	2.95	-0.03	73.0	37.0	74.9
87	576.8	0.489	60.1	-1.8	6.63	5.575	78.755	73.586	109.6	36.0	111.5	37.9	2.94	-0.02	72.8	36.8	74.7
88	575.3	0.494	60.2	-1.8	6.64	5.652	78.516	73.300	109.3	36.0	111.1	37.8	2.94	-0.02	72.7	36.6	74.5
89	570.7	0.499	60.1	-1.9	6.64	5.738	77.781	72.539	108.6	36.0	110.4	37.9	2.91	-0.03	72.3	36.3	74.2
90	566.4	0.504	60.2	-1.8	6.65	5.824	77.101	71.831	107.9	36.0	109.7	37.8	2.90	-0.03	71.9	35.9	73.8
91	562.3	0.509	60.2	-1.8	6.65	5.910	76.439	71.142	107.2	36.0	109.0	37.8	2.88	-0.03	71.6	35.6	73.4
92	561.0	0.514	60.2	-1.7	6.66	5.997	76.237	70.886	106.9	36.0	108.7	37.8	2.88	-0.02	71.5	35.4	73.2
93	560.8	0.519	60.2	-1.8	6.67	6.073	76.200	70.793	106.8	36.0	108.6	37.8	2.87	-0.03	71.4	35.4	73.2
94	558.7	0.523	60.2	-1.8	6.67	6.140	75.869	70.431	106.5	36.0	108.2	37.8	2.86	-0.03	71.2	35.2	73.0
95	555.7	0.528	60.2	-1.7	6.68	6.217	75.391	69.925	106.0	36.0	107.7	37.8	2.85	-0.03	71.0	35.0	72.7
96	556.0	0.532	60.2	-1.7	6.68	6.284	75.428	69.909	105.9	36.0	107.7	37.8	2.85	-0.02	71.0	35.0	72.7
97	557.8	0.536	60.3	-1.7	6.69	6.361	75.722	70.127	106.2	36.0	107.8	37.7	2.86	-0.02	71.1	35.1	72.8
98	556.2	0.540	60.3	-1.6	6.69	6.428	75.465	69.835	105.9	36.0	107.5	37.7	2.85	-0.02	70.9	34.9	72.6
99	557.2	0.544	60.3	-1.6	6.70	6.495	75.630	69.939	106.0	36.0	107.6	37.7	2.86	-0.02	71.0	35.0	72.6
100	552.2	0.548	60.2	-1.7	6.70	6.562	74.821	69.133	105.2	36.0	106.9	37.8	2.83	-0.03	70.6	34.6	72.3

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	551.1	0.552	60.3	-1.7	6.71	6.629	74.656	68.928	105.0	36.0	106.6	37.7	2.83	-0.02	70.5	34.5	72.2
102	551.4	0.557	60.3	-1.6	6.71	6.705	74.693	68.905	104.9	36.0	106.6	37.7	2.83	-0.02	70.5	34.5	72.1
103	549.3	0.561	60.3	-1.6	6.72	6.773	74.362	68.546	104.6	36.0	106.2	37.7	2.82	-0.02	70.3	34.3	71.9
104	547.7	0.565	60.3	-1.6	6.72	6.840	74.104	68.257	104.3	36.0	105.9	37.7	2.81	-0.02	70.2	34.1	71.8
105	546.5	0.569	60.3	-1.6	6.73	6.907	73.921	68.036	104.1	36.0	105.7	37.7	2.81	-0.02	70.0	34.0	71.7
106	544.8	0.573	60.3	-1.7	6.73	6.974	73.645	67.730	103.8	36.0	105.4	37.7	2.80	-0.02	69.9	33.9	71.6
107	544.5	0.578	60.3	-1.7	6.74	7.050	73.590	67.622	103.7	36.0	105.3	37.7	2.79	-0.02	69.8	33.8	71.5
108	544.6	0.582	60.3	-1.6	6.74	7.117	73.608	67.590	103.6	36.0	105.3	37.7	2.79	-0.02	69.8	33.8	71.5
109	547.1	0.586	60.4	-1.6	6.75	7.194	74.012	67.909	103.9	36.0	105.5	37.6	2.80	-0.02	70.0	34.0	71.6
110	547.8	0.590	60.4	-1.6	6.75	7.261	74.123	67.962	104.0	36.0	105.6	37.6	2.81	-0.02	70.0	34.0	71.6
111	547.0	0.595	60.4	-1.6	6.76	7.338	73.994	67.785	103.8	36.0	105.4	37.6	2.80	-0.02	69.9	33.9	71.5
112	545.7	0.599	60.3	-1.6	6.76	7.414	73.792	67.542	103.6	36.0	105.2	37.7	2.79	-0.02	69.8	33.8	71.4
113	546.1	0.604	60.3	-1.6	6.77	7.491	73.847	67.536	103.6	36.0	105.2	37.7	2.79	-0.02	69.8	33.8	71.4
114	545.7	0.609	60.3	-1.7	6.77	7.577	73.792	67.421	103.5	36.0	105.1	37.7	2.79	-0.02	69.7	33.7	71.4
115	545.0	0.614	60.4	-1.6	6.78	7.654	73.682	67.263	103.3	36.0	104.9	37.6	2.79	-0.02	69.7	33.6	71.3
116	545.3	0.619	60.3	-1.6	6.79	7.740	73.718	67.233	103.3	36.0	104.9	37.7	2.79	-0.02	69.6	33.6	71.3
117	546.2	0.623	60.4	-1.6	6.79	7.817	73.865	67.312	103.3	36.0	104.9	37.6	2.79	-0.02	69.7	33.7	71.3
118	547.5	0.628	60.4	-1.6	6.80	7.893	74.068	67.442	103.5	36.0	105.1	37.6	2.79	-0.02	69.8	33.7	71.4
119	546.0	0.633	60.3	-1.6	6.80	7.970	73.829	67.165	103.2	36.0	104.8	37.7	2.78	-0.02	69.6	33.6	71.2
120	548.0	0.638	60.3	-1.6	6.81	8.056	74.160	67.406	103.4	36.0	105.1	37.7	2.79	-0.02	69.7	33.7	71.4
121	548.5	0.642	60.4	-1.6	6.82	8.133	74.233	67.417	103.4	36.0	105.0	37.6	2.79	-0.02	69.7	33.7	71.3
122	548.1	0.646	60.4	-1.6	6.82	8.200	74.178	67.316	103.3	36.0	104.9	37.6	2.79	-0.02	69.7	33.7	71.3
123	546.9	0.651	60.4	-1.6	6.83	8.276	73.976	67.074	103.1	36.0	104.7	37.6	2.78	-0.02	69.6	33.5	71.1
124	547.3	0.656	60.4	-1.6	6.83	8.353	74.049	67.085	103.1	36.0	104.7	37.6	2.78	-0.02	69.6	33.5	71.2
125	545.7	0.660	60.3	-1.6	6.84	8.430	73.792	66.792	102.8	36.0	104.5	37.7	2.77	-0.02	69.4	33.4	71.1
126	545.0	0.665	60.3	-1.7	6.84	8.506	73.682	66.635	102.7	36.0	104.3	37.7	2.77	-0.02	69.3	33.3	71.0
127	544.0	0.669	60.3	-1.7	6.85	8.583	73.516	66.427	102.5	36.0	104.1	37.7	2.76	-0.03	69.2	33.2	70.9
128	545.7	0.674	60.3	-1.6	6.86	8.660	73.792	66.623	102.7	36.0	104.3	37.7	2.77	-0.02	69.3	33.3	71.0
129	544.5	0.679	60.3	-1.6	6.86	8.736	73.590	66.381	102.4	36.0	104.0	37.7	2.76	-0.02	69.2	33.2	70.9
130	542.2	0.683	60.4	-1.6	6.87	8.813	73.222	65.990	102.0	36.0	103.6	37.6	2.75	-0.02	69.0	33.0	70.6
131	543.7	0.688	60.4	-1.6	6.87	8.890	73.461	66.151	102.2	36.0	103.8	37.6	2.76	-0.02	69.1	33.1	70.7
132	545.7	0.693	60.3	-1.6	6.88	8.976	73.792	66.389	102.4	36.0	104.1	37.7	2.76	-0.02	69.2	33.2	70.9
133	549.4	0.698	60.3	-1.6	6.89	9.062	74.380	66.861	102.9	36.0	104.5	37.7	2.78	-0.02	69.5	33.4	71.1
134	551.6	0.703	60.3	-1.6	6.89	9.139	74.729	67.121	103.2	36.0	104.8	37.7	2.78	-0.02	69.6	33.6	71.2
135	552.7	0.708	60.3	-1.6	6.90	9.225	74.913	67.223	103.3	36.0	104.9	37.7	2.78	-0.02	69.6	33.6	71.3
136	554.2	0.712	60.3	-1.6	6.90	9.301	75.152	67.383	103.4	36.0	105.0	37.7	2.79	-0.02	69.7	33.7	71.4
137	554.4	0.718	60.3	-1.6	6.91	9.388	75.171	67.335	103.4	36.0	105.0	37.7	2.79	-0.02	69.7	33.7	71.3
138	552.5	0.722	60.3	-1.7	6.92	9.455	74.877	67.018	103.0	36.0	104.7	37.7	2.78	-0.02	69.5	33.5	71.2
139	551.9	0.726	60.2	-1.7	6.92	9.531	74.785	66.877	102.9	36.0	104.6	37.8	2.77	-0.03	69.5	33.4	71.2
140	552.9	0.730	60.3	-1.7	6.93	9.598	74.932	66.960	103.0	36.0	104.7	37.7	2.78	-0.03	69.5	33.5	71.2
141	554.6	0.734	60.3	-1.7	6.93	9.665	75.207	67.159	103.2	36.0	104.9	37.7	2.78	-0.02	69.6	33.6	71.3

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	555.6	0.739	60.3	-1.7	6.94	9.742	75.373	67.251	103.3	36.0	105.0	37.7	2.78	-0.03	69.7	33.6	71.3
143	556.1	0.742	60.3	-1.7	6.94	9.800	75.446	67.274	103.3	36.0	105.0	37.7	2.78	-0.03	69.7	33.6	71.4
144	554.5	0.747	60.2	-1.7	6.95	9.876	75.189	66.984	103.0	36.0	104.8	37.8	2.77	-0.03	69.5	33.5	71.3
145	550.9	0.751	60.2	-1.7	6.95	9.943	74.619	66.420	102.5	36.0	104.2	37.8	2.76	-0.03	69.2	33.2	71.0
146	549.5	0.755	60.2	-1.7	6.96	10.010	74.399	66.172	102.2	36.0	103.9	37.8	2.75	-0.03	69.1	33.1	70.8
147	547.0	0.759	60.2	-1.7	6.96	10.077	73.994	65.758	101.8	36.0	103.5	37.8	2.74	-0.03	68.9	32.9	70.7
148	545.5	0.763	60.2	-1.7	6.97	10.144	73.755	65.494	101.5	36.0	103.2	37.8	2.73	-0.03	68.8	32.7	70.5
149	543.5	0.767	60.2	-1.7	6.97	10.212	73.443	65.164	101.2	36.0	102.9	37.8	2.73	-0.03	68.6	32.6	70.3
150	543.0	0.771	60.2	-1.7	6.98	10.288	73.351	65.025	101.1	36.0	102.8	37.8	2.72	-0.03	68.5	32.5	70.3
151	542.3	0.775	60.2	-1.7	6.98	10.355	73.240	64.877	100.9	36.0	102.7	37.8	2.72	-0.03	68.5	32.4	70.2
152	542.3	0.780	60.2	-1.7	6.99	10.432	73.240	64.821	100.9	36.0	102.6	37.8	2.72	-0.03	68.4	32.4	70.2
153	540.7	0.784	60.2	-1.7	7.00	10.499	72.983	64.541	100.6	36.0	102.3	37.8	2.71	-0.03	68.3	32.3	70.0
154	539.4	0.789	60.2	-1.7	7.00	10.576	72.781	64.305	100.3	36.0	102.1	37.8	2.70	-0.03	68.2	32.2	69.9
155	539.9	0.793	60.3	-1.7	7.01	10.652	72.854	64.315	100.3	36.0	102.0	37.7	2.70	-0.03	68.2	32.2	69.9
156	539.7	0.798	60.3	-1.7	7.01	10.738	72.836	64.235	100.3	36.0	102.0	37.7	2.70	-0.03	68.1	32.1	69.8
157	540.4	0.802	60.2	-1.7	7.02	10.805	72.946	64.285	100.3	36.0	102.0	37.8	2.70	-0.03	68.2	32.1	69.9
158	540.8	0.808	60.2	-1.7	7.03	10.892	73.001	64.271	100.3	36.0	102.1	37.8	2.70	-0.03	68.2	32.1	69.9
159	540.5	0.813	60.2	-1.7	7.03	10.978	72.965	64.176	100.2	36.0	102.0	37.8	2.70	-0.03	68.1	32.1	69.9
160	539.4	0.817	60.2	-1.7	7.04	11.054	72.781	63.956	100.0	36.0	101.7	37.8	2.69	-0.03	68.0	32.0	69.7
161	539.5	0.822	60.2	-1.7	7.05	11.141	72.799	63.910	99.9	36.0	101.7	37.8	2.69	-0.03	68.0	32.0	69.7
162	537.9	0.827	60.2	-1.7	7.05	11.217	72.542	63.625	99.7	36.0	101.4	37.8	2.68	-0.03	67.8	31.8	69.6
163	535.7	0.832	60.2	-1.7	7.06	11.294	72.193	63.260	99.3	36.0	101.0	37.8	2.67	-0.03	67.7	31.6	69.4
164	535.0	0.836	60.2	-1.8	7.06	11.361	72.082	63.114	99.1	36.0	100.9	37.8	2.67	-0.03	67.6	31.6	69.4
165	533.4	0.840	60.2	-1.7	7.07	11.438	71.825	62.831	98.9	36.0	100.6	37.8	2.66	-0.03	67.4	31.4	69.2
166	532.0	0.845	60.2	-1.7	7.08	11.514	71.604	62.580	98.6	36.0	100.4	37.8	2.66	-0.03	67.3	31.3	69.1
167	532.4	0.849	60.2	-1.7	7.08	11.591	71.659	62.574	98.6	36.0	100.3	37.8	2.66	-0.03	67.3	31.3	69.0
168	531.3	0.854	60.2	-1.7	7.09	11.668	71.494	62.373	98.4	36.0	100.1	37.8	2.65	-0.03	67.2	31.2	68.9
169	530.0	0.859	60.2	-1.7	7.09	11.744	71.273	62.124	98.2	36.0	99.9	37.8	2.64	-0.03	67.1	31.1	68.8
170	528.7	0.863	60.2	-1.8	7.10	11.821	71.071	61.891	97.9	36.0	99.7	37.8	2.64	-0.03	67.0	30.9	68.8
171	527.2	0.867	60.2	-1.7	7.11	11.888	70.832	61.633	97.7	36.0	99.4	37.8	2.63	-0.03	66.8	30.8	68.6
172	525.8	0.872	60.2	-1.7	7.11	11.965	70.612	61.384	97.4	36.0	99.2	37.8	2.62	-0.03	66.7	30.7	68.5
173	523.7	0.876	60.2	-1.7	7.12	12.041	70.281	61.039	97.1	36.0	98.8	37.8	2.62	-0.03	66.6	30.5	68.3
174	523.4	0.881	60.2	-1.7	7.12	12.118	70.225	60.937	97.0	36.0	98.7	37.8	2.61	-0.03	66.5	30.5	68.2
175	523.3	0.886	60.2	-1.7	7.13	12.194	70.207	60.867	96.9	36.0	98.6	37.8	2.61	-0.03	66.5	30.4	68.2
176	522.2	0.890	60.2	-1.7	7.14	12.271	70.042	60.668	96.7	36.0	98.4	37.8	2.61	-0.03	66.4	30.3	68.1
177	521.7	0.895	60.2	-1.8	7.14	12.348	69.950	60.533	96.6	36.0	98.3	37.8	2.60	-0.03	66.3	30.3	68.1
178	522.6	0.900	60.2	-1.7	7.15	12.434	70.097	60.602	96.6	36.0	98.4	37.8	2.60	-0.03	66.3	30.3	68.1
179	522.7	0.905	60.2	-1.7	7.16	12.511	70.115	60.564	96.6	36.0	98.3	37.8	2.60	-0.03	66.3	30.3	68.0
180	523.1	0.910	60.3	-1.7	7.16	12.597	70.170	60.552	96.6	36.0	98.3	37.7	2.61	-0.03	66.3	30.3	68.0
181	523.1	0.914	60.2	-1.7	7.17	12.673	70.170	60.498	96.5	36.0	98.3	37.8	2.60	-0.03	66.3	30.2	68.0
182	523.3	0.919	60.2	-1.8	7.18	12.750	70.207	60.477	96.5	36.0	98.3	37.8	2.60	-0.03	66.3	30.2	68.0

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	522.4	0.923	60.2	-1.8	7.18	12.817	70.060	60.301	96.3	36.0	98.1	37.8	2.59	-0.03	66.2	30.2	68.0
184	519.9	0.927	60.2	-1.7	7.19	12.894	69.674	59.911	95.9	36.0	97.7	37.8	2.59	-0.03	66.0	30.0	67.7
185	518.7	0.931	60.2	-1.7	7.19	12.961	69.472	59.689	95.7	36.0	97.5	37.8	2.58	-0.03	65.9	29.8	67.6
186	517.2	0.936	60.2	-1.7	7.20	13.037	69.233	59.427	95.5	36.0	97.2	37.8	2.57	-0.03	65.7	29.7	67.5
187	515.9	0.940	60.2	-1.7	7.21	13.104	69.031	59.205	95.2	36.0	97.0	37.8	2.57	-0.03	65.6	29.6	67.4
188	515.7	0.944	60.2	-1.8	7.21	13.171	68.994	59.127	95.2	36.0	96.9	37.8	2.56	-0.03	65.6	29.6	67.4
189	514.8	0.949	60.2	-1.8	7.22	13.248	68.847	58.947	95.0	36.0	96.8	37.8	2.56	-0.03	65.5	29.5	67.3
190	514.0	0.953	60.2	-1.7	7.22	13.315	68.718	58.789	94.8	36.0	96.6	37.8	2.56	-0.03	65.4	29.4	67.2
191	513.4	0.957	60.2	-1.7	7.23	13.382	68.626	58.663	94.7	36.0	96.4	37.8	2.55	-0.03	65.4	29.3	67.1
192	512.5	0.961	60.2	-1.7	7.24	13.459	68.479	58.483	94.5	36.0	96.2	37.8	2.55	-0.03	65.3	29.2	67.0
193	511.3	0.965	60.2	-1.7	7.24	13.526	68.295	58.278	94.3	36.0	96.0	37.8	2.54	-0.03	65.2	29.1	66.9
194	511.3	0.970	60.2	-1.8	7.25	13.603	68.295	58.226	94.3	36.0	96.0	37.8	2.54	-0.03	65.1	29.1	66.9
195	510.5	0.974	60.2	-1.8	7.25	13.670	68.166	58.069	94.1	36.0	95.9	37.8	2.54	-0.03	65.1	29.0	66.8
196	508.5	0.978	60.2	-1.8	7.26	13.746	67.854	57.747	93.8	36.0	95.6	37.8	2.53	-0.03	64.9	28.9	66.7
197	509.0	0.983	60.2	-1.7	7.27	13.823	67.928	57.759	93.8	36.0	95.5	37.8	2.53	-0.03	64.9	28.9	66.7
198	508.1	0.988	60.2	-1.7	7.27	13.900	67.780	57.580	93.6	36.0	95.3	37.8	2.53	-0.03	64.8	28.8	66.5
199	507.7	0.992	60.2	-1.7	7.28	13.976	67.725	57.481	93.5	36.0	95.2	37.8	2.52	-0.03	64.8	28.7	66.5
200	506.5	0.997	60.2	-1.7	7.29	14.053	67.523	57.255	93.3	36.0	95.0	37.8	2.52	-0.03	64.7	28.6	66.4
201	506.6	1.001	60.2	-1.7	7.29	14.129	67.541	57.219	93.3	36.0	95.0	37.8	2.51	-0.03	64.6	28.6	66.4
202	507.3	1.006	60.2	-1.7	7.30	14.206	67.652	57.262	93.3	36.0	95.0	37.8	2.52	-0.03	64.7	28.6	66.4
203	507.2	1.011	60.2	-1.7	7.31	14.292	67.633	57.188	93.2	36.0	94.9	37.8	2.51	-0.03	64.6	28.6	66.3
204	506.9	1.016	60.2	-1.7	7.31	14.369	67.597	57.105	93.1	36.0	94.9	37.8	2.51	-0.03	64.6	28.6	66.3
205	505.7	1.020	60.2	-1.7	7.32	14.446	67.394	56.880	92.9	36.0	94.6	37.8	2.51	-0.03	64.5	28.4	66.2
206	506.6	1.025	60.3	-1.7	7.33	14.522	67.541	56.954	93.0	36.0	94.7	37.7	2.51	-0.03	64.5	28.5	66.2
207	506.7	1.030	60.2	-1.7	7.33	14.599	67.560	56.918	92.9	36.0	94.7	37.8	2.51	-0.03	64.5	28.5	66.2
208	506.9	1.034	60.2	-1.8	7.34	14.666	67.597	56.904	92.9	36.0	94.7	37.8	2.50	-0.03	64.5	28.5	66.3
209	508.0	1.038	60.2	-1.7	7.34	14.742	67.762	56.993	93.0	36.0	94.7	37.8	2.51	-0.03	64.5	28.5	66.2
210	506.2	1.043	60.2	-1.7	7.35	14.819	67.486	56.706	92.7	36.0	94.5	37.8	2.50	-0.03	64.4	28.4	66.1
211	504.7	1.047	60.2	-1.7	7.36	14.896	67.247	56.451	92.5	36.0	94.2	37.8	2.50	-0.03	64.3	28.2	66.0
212	505.2	1.052	60.2	-1.7	7.36	14.972	67.321	56.462	92.5	36.0	94.2	37.8	2.50	-0.03	64.3	28.2	66.0
213	505.9	1.056	60.2	-1.7	7.37	15.039	67.431	56.511	92.5	36.0	94.3	37.8	2.50	-0.03	64.3	28.3	66.0
214	506.8	1.061	60.2	-1.7	7.38	15.116	67.578	56.584	92.6	36.0	94.4	37.8	2.50	-0.03	64.3	28.3	66.1
215	506.0	1.065	60.2	-1.8	7.38	15.193	67.450	56.423	92.5	36.0	94.3	37.8	2.49	-0.03	64.2	28.2	66.1
216	505.3	1.070	60.2	-1.7	7.39	15.269	67.339	56.278	92.3	36.0	94.1	37.8	2.49	-0.03	64.2	28.1	65.9
217	503.3	1.074	60.2	-1.8	7.40	15.346	67.008	55.946	92.0	36.0	93.8	37.8	2.48	-0.03	64.0	28.0	65.8
218	502.1	1.079	60.2	-1.7	7.40	15.423	66.824	55.739	91.8	36.0	93.5	37.8	2.48	-0.03	63.9	27.9	65.7
219	501.2	1.083	60.2	-1.7	7.41	15.499	66.677	55.564	91.6	36.0	93.3	37.8	2.47	-0.03	63.8	27.8	65.6
220	501.3	1.088	60.2	-1.8	7.42	15.576	66.696	55.528	91.6	36.0	93.3	37.8	2.47	-0.03	63.8	27.8	65.6
221	502.0	1.093	60.2	-1.7	7.42	15.653	66.806	55.570	91.6	36.0	93.4	37.8	2.47	-0.03	63.8	27.8	65.6
222	501.1	1.098	60.2	-1.7	7.43	15.739	66.659	55.389	91.4	36.0	93.2	37.8	2.47	-0.03	63.7	27.7	65.5
223	499.9	1.102	60.2	-1.7	7.44	15.815	66.475	55.183	91.2	36.0	93.0	37.8	2.46	-0.03	63.6	27.6	65.4

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	499.8	1.108	60.2	-1.7	7.45	15.902	66.457	55.110	91.1	36.0	92.9	37.8	2.46	-0.03	63.6	27.6	65.3
225	499.8	1.112	60.2	-1.7	7.45	15.978	66.457	55.059	91.1	36.0	92.8	37.8	2.46	-0.03	63.6	27.5	65.3
226	498.4	1.117	60.2	-1.7	7.46	16.055	66.236	54.823	90.9	36.0	92.6	37.8	2.45	-0.03	63.4	27.4	65.2
227	497.4	1.121	60.2	-1.8	7.47	16.131	66.071	54.633	90.7	36.0	92.4	37.8	2.44	-0.03	63.3	27.3	65.1
228	496.1	1.125	60.2	-1.8	7.47	16.199	65.869	54.420	90.5	36.0	92.3	37.8	2.44	-0.03	63.2	27.2	65.0
229	495.4	1.129	60.2	-1.8	7.48	16.266	65.758	54.283	90.3	36.0	92.1	37.8	2.44	-0.03	63.2	27.1	65.0
230	494.5	1.134	60.2	-1.7	7.48	16.342	65.611	54.110	90.1	36.0	91.9	37.8	2.43	-0.03	63.1	27.1	64.8
231	492.9	1.138	60.2	-1.8	7.49	16.409	65.354	53.851	89.9	36.0	91.7	37.8	2.42	-0.03	63.0	26.9	64.7
232	492.5	1.143	60.2	-1.7	7.50	16.486	65.299	53.754	89.8	36.0	91.5	37.8	2.42	-0.03	62.9	26.9	64.7
233	492.7	1.147	60.2	-1.7	7.50	16.553	65.317	53.726	89.8	36.0	91.5	37.8	2.42	-0.03	62.9	26.9	64.6
234	491.3	1.151	60.2	-1.8	7.51	16.620	65.096	53.498	89.5	36.0	91.3	37.8	2.41	-0.03	62.8	26.7	64.6
235	490.6	1.155	60.2	-1.8	7.52	16.697	64.986	53.356	89.4	36.0	91.2	37.8	2.41	-0.03	62.7	26.7	64.5
236	490.5	1.159	60.2	-1.8	7.52	16.764	64.968	53.298	89.3	36.0	91.1	37.8	2.41	-0.03	62.7	26.6	64.5
237	490.4	1.163	60.2	-1.7	7.53	16.831	64.949	53.239	89.3	36.0	91.0	37.8	2.41	-0.03	62.7	26.6	64.4
238	487.7	1.168	60.2	-1.8	7.54	16.907	64.527	52.838	88.9	36.0	90.6	37.8	2.40	-0.03	62.5	26.4	64.2
239	488.6	1.172	60.2	-1.8	7.54	16.974	64.674	52.916	88.9	36.0	90.7	37.8	2.40	-0.03	62.5	26.5	64.3
240	488.2	1.176	60.2	-1.8	7.55	17.051	64.600	52.806	88.8	36.0	90.6	37.8	2.40	-0.03	62.4	26.4	64.2
241	487.1	1.180	60.2	-1.8	7.55	17.118	64.435	52.625	88.7	36.0	90.4	37.8	2.39	-0.03	62.3	26.3	64.1
242	485.6	1.185	60.2	-1.8	7.56	17.195	64.196	52.378	88.4	36.0	90.2	37.8	2.39	-0.03	62.2	26.2	64.0
243	485.2	1.190	60.2	-1.7	7.57	17.271	64.122	52.268	88.3	36.0	90.0	37.8	2.38	-0.03	62.2	26.1	63.9
244	485.3	1.194	60.2	-1.7	7.58	17.348	64.140	52.234	88.3	36.0	90.0	37.8	2.38	-0.03	62.1	26.1	63.9
245	485.1	1.199	60.2	-1.7	7.58	17.425	64.104	52.155	88.2	36.0	89.9	37.8	2.38	-0.03	62.1	26.1	63.8
246	483.2	1.204	60.2	-1.8	7.59	17.511	63.810	51.857	87.9	36.0	89.7	37.8	2.37	-0.03	62.0	25.9	63.7
247	483.0	1.208	60.2	-1.8	7.60	17.588	63.773	51.778	87.8	36.0	89.6	37.8	2.37	-0.03	61.9	25.9	63.7
248	482.5	1.213	60.2	-1.7	7.60	17.664	63.699	51.668	87.7	36.0	89.4	37.8	2.37	-0.03	61.9	25.8	63.6
249	481.4	1.218	60.2	-1.7	7.61	17.741	63.515	51.468	87.5	36.0	89.2	37.8	2.36	-0.03	61.8	25.7	63.5
250	480.2	1.222	60.2	-1.7	7.62	17.817	63.332	51.268	87.3	36.0	89.0	37.8	2.36	-0.03	61.7	25.6	63.4
251	480.3	1.227	60.2	-1.7	7.63	17.904	63.350	51.229	87.3	36.0	89.0	37.8	2.36	-0.03	61.6	25.6	63.4
252	480.7	1.232	60.2	-1.7	7.63	17.980	63.405	51.226	87.3	36.0	89.0	37.8	2.36	-0.03	61.6	25.6	63.4
253	479.5	1.236	60.2	-1.8	7.64	18.047	63.221	51.032	87.1	36.0	88.8	37.8	2.35	-0.03	61.5	25.5	63.3
254	478.5	1.241	60.2	-1.8	7.65	18.124	63.056	50.848	86.9	36.0	88.7	37.8	2.34	-0.03	61.5	25.4	63.2
255	478.5	1.245	60.2	-1.8	7.65	18.201	63.056	50.800	86.8	36.0	88.6	37.8	2.34	-0.04	61.4	25.4	63.2
256	477.7	1.250	60.2	-1.7	7.66	18.277	62.927	50.647	86.7	36.0	88.4	37.8	2.34	-0.03	61.4	25.3	63.1
257	476.7	1.254	60.2	-1.8	7.67	18.354	62.762	50.463	86.5	36.0	88.3	37.8	2.33	-0.04	61.3	25.2	63.0
258	476.4	1.259	60.2	-1.7	7.68	18.431	62.725	50.385	86.4	36.0	88.2	37.8	2.33	-0.03	61.2	25.2	63.0
259	475.5	1.264	60.2	-1.8	7.68	18.507	62.578	50.217	86.2	36.0	88.1	37.8	2.33	-0.04	61.1	25.1	62.9
260	475.5	1.268	60.2	-1.8	7.69	18.584	62.578	50.169	86.2	36.0	88.0	37.8	2.33	-0.04	61.1	25.1	62.9
261	475.2	1.273	60.2	-1.7	7.70	18.660	62.523	50.077	86.1	36.0	87.9	37.8	2.33	-0.03	61.1	25.0	62.8
262	475.3	1.277	60.2	-1.7	7.71	18.737	62.541	50.044	86.1	36.0	87.8	37.8	2.32	-0.03	61.1	25.0	62.8
263	475.7	1.282	60.2	-1.7	7.71	18.814	62.615	50.055	86.1	36.0	87.8	37.8	2.32	-0.03	61.1	25.0	62.8
264	475.9	1.286	60.2	-1.7	7.72	18.890	62.633	50.022	86.1	36.0	87.8	37.8	2.33	-0.03	61.0	25.0	62.8

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
265	474.8	1.291	60.2	-1.8	7.73	18.967	62.468	49.840	85.9	36.0	87.7	37.8	2.32	-0.04	61.0	24.9	62.7
266	475.4	1.296	60.2	-1.8	7.73	19.044	62.559	49.867	85.9	36.0	87.7	37.8	2.32	-0.04	61.0	24.9	62.7
267	475.3	1.300	60.2	-1.8	7.74	19.120	62.541	49.804	85.8	36.0	87.6	37.8	2.32	-0.04	60.9	24.9	62.7
268	474.6	1.305	60.2	-1.7	7.75	19.197	62.431	49.667	85.7	36.0	87.4	37.8	2.31	-0.04	60.9	24.8	62.6
269	473.7	1.309	60.2	-1.7	7.76	19.273	62.284	49.500	85.5	36.0	87.3	37.8	2.31	-0.04	60.8	24.8	62.5
270	473.1	1.314	60.2	-1.7	7.76	19.350	62.192	49.378	85.4	36.0	87.2	37.8	2.31	-0.04	60.7	24.7	62.5
271	473.9	1.318	60.2	-1.7	7.77	19.417	62.321	49.440	85.5	36.0	87.2	37.8	2.31	-0.03	60.8	24.7	62.5
272	473.1	1.323	60.2	-1.8	7.78	19.494	62.192	49.289	85.3	36.0	87.1	37.8	2.30	-0.04	60.7	24.6	62.5
273	471.7	1.327	60.2	-1.8	7.78	19.561	61.971	49.070	85.1	36.0	86.9	37.8	2.30	-0.04	60.6	24.5	62.4
274	472.2	1.331	60.2	-1.8	7.79	19.628	62.045	49.087	85.1	36.0	86.9	37.8	2.30	-0.04	60.6	24.5	62.4
275	472.2	1.335	60.2	-1.7	7.80	19.705	62.045	49.040	85.1	36.0	86.8	37.8	2.30	-0.04	60.6	24.5	62.3
276	471.0	1.339	60.2	-1.7	7.80	19.772	61.861	48.851	84.9	36.0	86.6	37.8	2.29	-0.04	60.5	24.4	62.2
277	470.2	1.343	60.2	-1.7	7.81	19.839	61.732	48.706	84.7	36.0	86.5	37.8	2.29	-0.04	60.4	24.4	62.1
278	471.4	1.348	60.2	-1.7	7.82	19.915	61.916	48.806	84.8	36.0	86.6	37.8	2.29	-0.04	60.4	24.4	62.2
279	471.9	1.352	60.2	-1.8	7.83	19.982	62.008	48.838	84.9	36.0	86.6	37.8	2.29	-0.04	60.5	24.4	62.2
280	471.6	1.354	60.2	-1.8	7.83	20.011	61.953	48.776	84.8	36.0	86.6	37.8	2.29	-0.04	60.4	24.4	62.2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. U-2412B

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project 39406.1.1 **County** GUILFORD **Owner**

Date: Sampled 3/1/13 **Received** 10/31/13 **Reported** 11/1/13

Sampled from RDWY **By** N ROBERSON

Submitted by MASON HURT 1995 **Standard Specifications**

788125 TO 788125
11/11/13

TEST RESULTS

Proj. Sample No.		ST-15 #1					
Lab. Sample No.		788125					
Retained #4 Sieve	%	-					
Passing #10 Sieve	%	98					
Passing #40 Sieve	%	77					
Passing #200 Sieve	%	38					

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	35.5					
Fine Sand Ret - #270	%	30.1					
Silt 0.05 - 0.005 mm	%	22.4					
Clay < 0.005 mm	%	12.0					
T-#		T-5780					
Specific Gravity		2.691					

L. L.		34					
P. I.		4					
AASHTO Classification		A-4(0)					
Station		404+50					
Offset		3 FT					
Alignment		L					
Location		RT					
Depth (Ft)		44.5 FT					
	to	45.9 FT					
Final Moisture Content	%	21.8					

cc: N ROBERSON
SURIYATI BS

Soils Engineer

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	18.06	21.42	**Plastic Limits:**	0	
Dry Density (pcf):	104.06	110.48	**Plasticity Index (%):**	0	
Saturation (%):	79.34	111.13			
Void Ratio:	0.6122	0.5184	**Specific Gravity:**	2.686	Measured

Soil Description: Tan yellowish-white colored silt

Project Number: 39406.1.1 **Depth:** 44.5 - 45.9 ft

Sample Number: ST-15 **Boring Number:**

Project: U-2412B

Client: T-5780

Location: Guilford County (Sta. 404+50)

Remarks:
Solid height is 0.62182 inch; Blows/ft = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	18.06	21.42	**Plastic Limits:**	0	
Dry Density (pcf):	104.06	110.48	**Plasticity Index (%):**	0	
Saturation (%):	79.34	111.13			
Void Ratio:	0.6122	0.5184	**Specific Gravity:**	2.686	Measured

Soil Description: Tan yellowish-white colored silt

Project Number: 39406.1.1 **Depth:** 44.5 - 45.9 ft

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Client: T-5780

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Solid height is 0.62182 inch; Blows/ft = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	18.06	21.42	**Plastic Limits:**	0	
Dry Density (pcf):	104.06	110.48	**Plasticity Index (%):**	0	
Saturation (%):	79.34	111.13			
Void Ratio:	0.6122	0.5184	**Specific Gravity:**	2.686	Measured

Soil Description: Tan yellowish-white colored silt

Project Number: 39406.1.1 **Depth:** 44.5 - 45.9 ft

Sample Number: ST-15 **Boring Number:**

Project: U-2412B

Client: T-5780

Location: Guilford County (Sta. 404+50)

Remarks:
Solid height is 0.62182 inch; Blows/ft = NA

Consolidation Test Results
Summary

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County (Sta. 404+50)
Job Number: T-5780

Sample Number: ST-15 **Soil Description:**
Boring Number: Tan yellowish-white colored silt
Depth: 44.5 - 45.9 ft **Remarks:** **Test Number:**
Sample Type: Undisturbed Solid height is 0.62182 inch; Blows/ft = NA **Test Date:**

Index	Load Sequence (tsf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	0.9993	0.3795	0.00	0.6122	0.000		0.000	
1	0.031	0.0014	0.9979	0.3781	0.14	0.6099	0.191		4025.880	
2	0.063	0.0033	0.9960	0.3762	0.33	0.6069	0.144		5315.941	
3	0.125	0.0075	0.9918	0.3720	0.75	0.6001	0.160		4757.261	
4	0.250	0.0127	0.9866	0.3668	1.27	0.5917	0.152		4955.271	
5	0.500	0.0204	0.9789	0.3591	2.04	0.5793	0.293		2530.683	
6	1.000	0.0305	0.9688	0.3490	3.05	0.5630	0.051		14353.125	
7	2.000	0.0441	0.9552	0.3354	4.41	0.5410	0.063		11296.330	
8	4.000	0.0600	0.9393	0.3195	6.00	0.5154	0.063		10923.388	
9	2.000	0.0580	0.9413	0.3215	5.80	0.5186	0.000		0.000	
10	1.000	0.0552	0.9441	0.3243	5.52	0.5231	0.000		0.000	
11	0.500	0.0512	0.9481	0.3283	5.12	0.5296	0.000		0.000	
12	1.000	0.0532	0.9461	0.3263	5.32	0.5264	0.000		0.000	
13	2.000	0.0566	0.9427	0.3229	5.66	0.5209	0.000		0.000	
14	4.000	0.0624	0.9369	0.3171	6.24	0.5115	0.000		0.000	
15	8.000	0.0786	0.9207	0.3009	7.87	0.4854	0.063		10495.063	
16	16.000	0.1025	0.8968	0.2770	10.26	0.4468	0.336		1852.169	
17	4.000	0.0974	0.9019	0.2821	9.75	0.4550	0.000		0.000	
18	0.016	0.0581	0.9412	0.3214	5.81	0.5184	0.000		0.000	

Tested By: **Checked By:**

Consolidation Test
Consolidation Specimen Information

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County (Sta. 404+50)
Job Number: T-5780 **Test Date:**

Sample Number: ST-15 **Soil Description:**
Boring Number: Tan yellowish-white colored silt
Depth: 44.5 - 45.9 ft **Remarks:**
Sample Type: Undisturbed Solid height is 0.62182 inch; Blows/ft = NA

Test Number:
Liquid Limit: 0.0000 **Initial Void Ratio:** 0.6122 **Initial Height (in):** 0.9993
Plastic Limit: 0.0000 **Plasticity Index (%):** 0.0000 **Initial Diameter (in):** 2.4998
Specific Gravity: 2.6860 Measured **Weight of Ring (g):** 111.1300

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	158.16	162.66
Dry Soil + Container (g)	133.97	133.97
Weight of Container (g)	0.00	0.00
Moisture Content (%)	18.06	21.42
Void Ratio	0.6122	0.5184
Saturation (%)	79.34	111.13
Dry Density (pcf)	104.06	110.48

Tested By: **Checked By:**

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Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date

Tested By:

Effective Stress at Maximum Deviator Stress Criterion

Deviator Stress Vs. Axial Strain

Initial	Specimen A	B	C	D
Water Content (%)	19.4	19.4	19.4	
Dry Density (pcf)	105.9	109.0	109.4	
Saturation (%)	88.88	96.35	97.30	
Void Ratio	0.582	0.537	0.531	
Diameter (in)	2.865	2.876	2.933	
Height (in)	5.964	5.752	5.509	
Specific Gravity	2.69	2.69	2.69	
Liquid Limit	0	0	0	
Plastic Limit	0	0	0	
After Consolidation	**A**	**B**	**C**	**D**
B-Value	0.00	0.00	0.00	
Water Content (%)	20.2	20.1	20.0	
Dry Density (pcf)	108.10	110.38	110.72	
Saturation (%)	100.00	100.00	100.00	
Void Ratio	0.530	0.499	0.517	
Effective Stress (psi)	8.9	18.0	36.0	
Back Press. (psi)	60.1	60.2	60.2	
Rate of Strain	0.009	0.009	0.009	

Maximium Deviator Stress Criterion	
C (psi)	0.0
C' (psi)	0.0
Ø (deg)	0.0
Ø' (deg)	0.0

After Shear	A	B	C	D
σ'1 at Failure (psi)	13.75	24.06	61.14	
σ'3 at Failure (psi)	5.77	12.90	28.19	

Project:	U-2412B	N/A	N/A	N/A	N/A
Location:	Guilford County (Sta. 404+50)				
Project Number:	39406.1.1				
Boring Number:	0				
Sample Number:	ST-15				
Depth:	44.5 - 45.9 ft				
Sample Type:	Undisturbed	Failure Photographs			
Description:					
Test Type	Consolidated Undrained				
Remarks	Multi-Stage				

ncdot

Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date:

Tested By:

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)

Change in Pore Pressure vs. Axial Strain

Deviator Stress vs. Axial Strain

Principal Stress Ratio vs. Axial Strain

Change in Pore Pressure vs. Axial Strain

Mohr Stress Circles at Maximum Deviator Stress Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at Maximum Principal Stress Ratio Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at 15% Axial Strain Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)
Q (psi)
P' (psi)
0.0
10.0
20.0
30.0
40.0
50.0
Specimen A
Specimen B
Specimen C
Specimen D
Tangent Line

Stress Paths (Total)
(C' = 0.0 Ø' = 0.0)
Q (psi)
P (psi)
0.0
15.0
30.0
45.0
60.0

Specimen A Shear Data

CU Triaxial Test

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File Location
T-5780.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5780
Sample Location: Guilford County (Sta. 404+50)
Sample Description: Tan colored silt
Remarks: 30° and 40° shear planes.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.691
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.865	2.850	
Height (in)	5.964	5.905	
Weight (grams)	1276.00		1302.00
Moisture (%)	19.36		21.80
Dry Density (pcf)	105.91	108.10	
Saturation (%)	88.88	100.00	
Void Ratio	0.582	0.530	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 69.000
Effective Confining Stress (psi): 8.9
Corrected Peak Deviator Stress (psi): 7.975 at reading number: 11

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	37.2	0.103	60.1	0.0	6.38	0.000	0.000	0.000	8.9	8.9	8.9	8.9	1.00	0.00	8.9	0.0	8.9
1	61.2	0.108	61.4	1.2	6.39	0.078	3.771	3.738	12.6	8.9	11.4	7.6	1.49	0.33	10.7	1.9	9.5
2	70.0	0.112	62.0	1.9	6.39	0.155	5.142	5.074	14.0	8.9	12.0	7.0	1.73	0.38	11.4	2.5	9.5
3	75.1	0.117	62.4	2.3	6.40	0.233	5.936	5.832	14.7	8.9	12.4	6.6	1.88	0.39	11.8	2.9	9.5
4	78.6	0.122	62.6	2.5	6.40	0.311	6.495	6.355	15.2	8.9	12.7	6.4	2.00	0.40	12.1	3.2	9.5
5	81.5	0.126	62.8	2.7	6.41	0.389	6.946	6.769	15.6	8.9	12.9	6.2	2.10	0.40	12.3	3.4	9.6
6	83.3	0.131	63.0	2.8	6.41	0.466	7.235	7.021	15.9	8.9	13.1	6.0	2.16	0.40	12.4	3.5	9.6
7	85.2	0.135	63.0	2.9	6.42	0.544	7.523	7.272	16.2	8.9	13.2	6.0	2.22	0.40	12.5	3.6	9.6
8	87.1	0.140	63.1	3.0	6.42	0.622	7.830	7.541	16.4	8.9	13.4	5.9	2.28	0.40	12.7	3.8	9.7
9	88.9	0.144	63.2	3.1	6.42	0.690	8.101	7.779	16.7	8.9	13.6	5.8	2.34	0.39	12.8	3.9	9.7
10	89.8	0.148	63.2	3.1	6.43	0.758	8.245	7.890	16.8	8.9	13.7	5.8	2.36	0.39	12.8	3.9	9.8
11	90.4	0.149	63.2	3.1	6.43	0.767	8.335	7.975	16.9	8.9	13.7	5.8	2.38	0.39	12.9	4.0	9.8

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)

Specimen B Shear Data

CU Triaxial Test

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File Location
T-5780.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5780
Sample Location: Guilford County (Sta. 404+50)
Sample Description: Tan colored silt
Remarks: Same as Sample A

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.691
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.875	2.860	
Height (in)	5.752	5.741	
Weight (grams)	1276.00		1302.00
Moisture (%)	19.36		21.80
Dry Density (pcf)	109.04	110.38	
Saturation (%)	96.35	100.00	
Void Ratio	0.537	0.499	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 78.200
Effective Confining Stress (psi): 18.0
Corrected Peak Deviator Stress (psi): 11.164 at reading number: 20

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	88.6	0.172	60.2	0.0	6.43	0.000	0.000	0.000	18.0	18.0	18.0	18.0	1.00	0.00	18.0	0.0	18.0
1	98.5	0.173	60.9	0.7	6.43	0.010	1.541	1.537	19.5	18.0	18.9	17.3	1.09	0.44	18.8	0.8	18.1
2	110.2	0.174	61.8	1.6	6.43	0.030	3.350	3.337	21.3	18.0	19.8	16.4	1.20	0.47	19.7	1.7	18.1
3	115.0	0.174	62.4	2.2	6.43	0.040	4.102	4.085	22.1	18.0	19.9	15.8	1.26	0.54	20.0	2.0	17.9
4	115.7	0.177	62.6	2.4	6.43	0.080	4.210	4.176	22.2	18.0	19.8	15.6	1.27	0.57	20.1	2.1	17.7
5	117.2	0.178	62.8	2.6	6.43	0.110	4.443	4.396	22.4	18.0	19.8	15.4	1.28	0.58	20.2	2.2	17.6
6	121.8	0.181	63.0	2.8	6.44	0.150	5.159	5.094	23.1	18.0	20.3	15.2	1.33	0.55	20.5	2.5	17.8
7	130.8	0.184	63.6	3.4	6.44	0.210	6.557	6.462	24.5	18.0	21.1	14.6	1.44	0.52	21.2	3.2	17.8
8	134.2	0.186	63.9	3.7	6.44	0.240	7.094	6.985	25.0	18.0	21.3	14.3	1.49	0.53	21.5	3.5	17.8
9	140.4	0.189	64.3	4.1	6.44	0.300	8.061	7.922	25.9	18.0	21.9	13.9	1.57	0.51	22.0	4.0	17.9
10	144.7	0.193	64.6	4.4	6.45	0.370	8.724	8.550	26.6	18.0	22.2	13.6	1.63	0.51	22.3	4.3	17.9
11	148.3	0.197	64.7	4.5	6.45	0.430	9.280	9.074	27.1	18.0	22.5	13.5	1.67	0.50	22.5	4.5	18.0
12	151.1	0.201	64.9	4.7	6.46	0.499	9.727	9.487	27.5	18.0	22.7	13.3	1.72	0.50	22.7	4.7	18.0
13	153.4	0.204	65.0	4.8	6.46	0.559	10.086	9.814	27.8	18.0	23.0	13.2	1.74	0.49	22.9	4.9	18.1
14	155.5	0.208	65.1	4.9	6.47	0.629	10.408	10.101	28.1	18.0	23.2	13.1	1.77	0.49	23.1	5.1	18.1
15	157.8	0.212	65.2	5.0	6.47	0.699	10.766	10.422	28.4	18.0	23.4	13.0	1.80	0.48	23.2	5.2	18.2
16	159.1	0.216	65.2	5.0	6.48	0.769	10.963	10.583	28.6	18.0	23.6	13.0	1.82	0.47	23.3	5.3	18.3
17	160.7	0.221	65.3	5.1	6.48	0.849	11.214	10.792	28.8	18.0	23.7	12.9	1.83	0.47	23.4	5.4	18.3
18	162.1	0.225	65.3	5.1	6.49	0.919	11.429	10.971	29.0	18.0	23.9	12.9	1.85	0.47	23.5	5.5	18.4

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	163.1	0.229	65.3	5.1	6.49	0.989	11.590	11.095	29.1	18.0	24.0	12.9	1.86	0.46	23.5	5.5	18.4
20	163.7	0.231	65.3	5.1	6.49	1.029	11.680	11.164	29.2	18.0	24.1	12.9	1.87	0.46	23.6	5.6	18.5

Specimen C Shear Data

CU Triaxial Test

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File Location
T-5780.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5780
Sample Location: Guilford County (Sta. 404+50)
Sample Description: Tan colored silt.
Remarks: Similar to sample A and B.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.691
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.933	2.918	
Height (in)	5.509	5.501	
Weight (grams)	1276.00		1302.00
Moisture (%)	19.36		21.80
Dry Density (pcf)	109.41	110.72	
Saturation (%)	97.30	100.00	
Void Ratio	0.531	0.517	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 96.200
Effective Confining Stress (psi): 36.0
Corrected Peak Deviator Stress (psi): 32.954 at reading number: 159

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	120.2	0.243	60.2	0.0	6.69	0.000	0.000	0.000	36.0	36.0	36.0	36.0	1.00	0.00	36.0	0.0	36.0
1	170.1	0.247	64.0	3.8	6.69	0.073	7.471	7.438	43.4	36.0	39.6	32.2	1.23	0.51	39.7	3.7	35.9
2	198.2	0.251	66.6	6.4	6.70	0.146	11.671	11.599	47.6	36.0	41.2	29.6	1.39	0.55	41.8	5.8	35.4
3	201.1	0.252	67.5	7.2	6.70	0.167	12.102	12.018	48.0	36.0	40.8	28.7	1.42	0.60	42.0	6.0	34.8
4	202.9	0.252	67.9	7.7	6.70	0.177	12.377	12.288	48.2	36.0	40.6	28.3	1.43	0.62	42.1	6.1	34.5
5	204.8	0.253	68.3	8.0	6.70	0.188	12.652	12.558	48.5	36.0	40.5	27.9	1.45	0.64	42.2	6.3	34.2
6	206.7	0.253	68.5	8.3	6.70	0.188	12.945	12.850	48.8	36.0	40.5	27.7	1.46	0.65	42.4	6.4	34.1
7	208.9	0.254	68.8	8.6	6.70	0.198	13.272	13.171	49.1	36.0	40.6	27.4	1.48	0.65	42.5	6.6	34.0
8	210.9	0.254	69.1	8.9	6.70	0.198	13.565	13.463	49.4	36.0	40.6	27.1	1.50	0.66	42.7	6.7	33.8
9	222.2	0.256	69.6	9.4	6.70	0.240	15.252	15.125	51.1	36.0	41.7	26.6	1.57	0.62	43.5	7.6	34.2
10	232.2	0.261	70.3	10.1	6.71	0.334	16.749	16.568	52.5	36.0	42.4	25.9	1.64	0.61	44.2	8.3	34.2
11	239.0	0.266	70.8	10.6	6.71	0.417	17.765	17.534	53.5	36.0	42.9	25.4	1.69	0.60	44.7	8.8	34.1
12	243.2	0.270	71.2	11.0	6.72	0.501	18.402	18.121	54.1	36.0	43.1	25.0	1.73	0.61	45.0	9.1	34.0
13	247.9	0.275	71.5	11.3	6.73	0.584	19.108	18.776	54.7	36.0	43.5	24.7	1.76	0.60	45.3	9.4	34.1
14	251.6	0.279	71.7	11.5	6.73	0.667	19.659	19.276	55.2	36.0	43.8	24.5	1.79	0.60	45.6	9.6	34.1
15	254.3	0.283	71.9	11.6	6.74	0.740	20.054	19.627	55.6	36.0	43.9	24.3	1.81	0.59	45.8	9.8	34.1
16	257.0	0.288	72.0	11.8	6.74	0.824	20.468	19.988	55.9	36.0	44.1	24.2	1.83	0.59	46.0	10.0	34.2
17	258.5	0.293	72.2	11.9	6.75	0.907	20.691	20.162	56.1	36.0	44.2	24.0	1.84	0.59	46.0	10.1	34.1
18	260.8	0.297	72.2	12.0	6.75	0.991	21.036	20.454	56.4	36.0	44.4	24.0	1.85	0.59	46.2	10.2	34.2

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	261.9	0.302	72.3	12.1	6.76	1.074	21.191	20.558	56.5	36.0	44.4	23.9	1.86	0.59	46.2	10.3	34.2
20	262.3	0.306	72.4	12.1	6.77	1.157	21.259	20.577	56.5	36.0	44.4	23.8	1.86	0.59	46.2	10.3	34.1
21	263.9	0.310	72.4	12.2	6.77	1.230	21.500	20.772	56.7	36.0	44.6	23.8	1.87	0.59	46.3	10.4	34.2
22	265.3	0.315	72.4	12.2	6.78	1.324	21.707	20.920	56.9	36.0	44.7	23.8	1.88	0.58	46.4	10.5	34.2
23	266.1	0.319	72.5	12.2	6.78	1.397	21.828	20.996	57.0	36.0	44.7	23.7	1.89	0.58	46.5	10.5	34.2
24	267.5	0.325	72.5	12.3	6.79	1.491	22.034	21.143	57.1	36.0	44.8	23.7	1.89	0.58	46.5	10.6	34.3
25	266.8	0.329	72.5	12.3	6.79	1.575	21.931	20.992	57.0	36.0	44.7	23.7	1.89	0.58	46.5	10.5	34.2
26	268.7	0.334	72.6	12.3	6.80	1.668	22.206	21.207	57.2	36.0	44.8	23.6	1.90	0.58	46.6	10.6	34.2
27	269.7	0.340	72.6	12.3	6.81	1.762	22.361	21.303	57.3	36.0	44.9	23.6	1.90	0.58	46.6	10.7	34.3
28	270.4	0.344	72.6	12.3	6.81	1.846	22.464	21.354	57.3	36.0	45.0	23.6	1.90	0.58	46.6	10.7	34.3
29	268.7	0.349	72.6	12.3	6.82	1.929	22.206	21.051	57.0	36.0	44.7	23.6	1.89	0.59	46.5	10.5	34.2
30	271.0	0.353	72.6	12.3	6.82	2.002	22.550	21.345	57.3	36.0	45.0	23.6	1.90	0.58	46.6	10.7	34.3
31	271.8	0.357	72.6	12.3	6.83	2.085	22.671	21.444	57.4	36.0	45.1	23.6	1.91	0.57	46.7	10.7	34.4
32	273.0	0.361	72.6	12.4	6.83	2.158	22.860	21.613	57.6	36.0	45.2	23.6	1.92	0.57	46.8	10.8	34.4
33	273.7	0.365	72.6	12.3	6.84	2.231	22.964	21.697	57.7	36.0	45.3	23.6	1.92	0.57	46.8	10.8	34.5
34	274.6	0.369	72.6	12.3	6.84	2.304	23.101	21.815	57.8	36.0	45.5	23.6	1.92	0.56	46.9	10.9	34.5
35	274.9	0.374	72.6	12.3	6.85	2.388	23.136	21.829	57.8	36.0	45.5	23.6	1.92	0.56	46.9	10.9	34.6
36	276.6	0.378	72.6	12.3	6.86	2.461	23.394	22.064	58.0	36.0	45.7	23.6	1.93	0.56	47.0	11.0	34.7
37	277.6	0.382	72.6	12.3	6.86	2.534	23.549	22.198	58.2	36.0	45.8	23.6	1.94	0.55	47.1	11.1	34.7
38	278.9	0.386	72.6	12.4	6.87	2.607	23.738	22.365	58.3	36.0	46.0	23.6	1.95	0.55	47.1	11.2	34.8
39	278.9	0.390	72.6	12.3	6.87	2.680	23.738	22.348	58.3	36.0	46.0	23.6	1.95	0.55	47.1	11.2	34.8
40	278.4	0.395	72.5	12.3	6.88	2.763	23.669	22.261	58.2	36.0	45.9	23.7	1.94	0.55	47.1	11.1	34.8
41	279.7	0.399	72.5	12.3	6.88	2.836	23.859	22.428	58.4	36.0	46.1	23.7	1.95	0.55	47.2	11.2	34.9
42	280.4	0.403	72.5	12.2	6.89	2.920	23.962	22.508	58.5	36.0	46.2	23.7	1.95	0.54	47.2	11.3	35.0
43	281.6	0.407	72.5	12.2	6.89	2.993	24.134	22.658	58.6	36.0	46.4	23.7	1.96	0.54	47.3	11.3	35.1
44	281.2	0.412	72.4	12.2	6.90	3.076	24.083	22.588	58.5	36.0	46.3	23.8	1.95	0.54	47.3	11.3	35.1
45	282.6	0.416	72.4	12.2	6.90	3.160	24.289	22.768	58.7	36.0	46.5	23.8	1.96	0.54	47.3	11.4	35.1
46	284.7	0.421	72.4	12.2	6.91	3.243	24.599	23.047	59.0	36.0	46.8	23.8	1.97	0.53	47.5	11.5	35.3
47	285.1	0.426	72.4	12.2	6.92	3.326	24.668	23.093	59.1	36.0	46.9	23.8	1.97	0.53	47.5	11.5	35.3
48	286.3	0.430	72.4	12.1	6.92	3.410	24.840	23.239	59.2	36.0	47.1	23.8	1.97	0.52	47.6	11.6	35.5
49	286.7	0.435	72.3	12.1	6.93	3.493	24.909	23.285	59.2	36.0	47.2	23.9	1.98	0.52	47.6	11.6	35.5
50	287.4	0.439	72.3	12.1	6.93	3.577	25.012	23.364	59.3	36.0	47.2	23.9	1.98	0.52	47.6	11.7	35.6
51	287.7	0.445	72.3	12.0	6.94	3.670	25.047	23.373	59.3	36.0	47.3	23.9	1.98	0.52	47.6	11.7	35.6
52	289.0	0.450	72.2	12.0	6.95	3.764	25.253	23.549	59.5	36.0	47.5	24.0	1.98	0.51	47.7	11.8	35.7
53	290.8	0.454	72.2	12.0	6.95	3.848	25.511	23.776	59.7	36.0	47.8	24.0	1.99	0.50	47.8	11.9	35.9
54	291.1	0.459	72.2	11.9	6.96	3.942	25.563	23.801	59.8	36.0	47.8	24.0	1.99	0.50	47.9	11.9	35.9
55	288.2	0.465	72.1	11.9	6.97	4.035	25.133	23.364	59.3	36.0	47.4	24.1	1.97	0.51	47.6	11.7	35.8
56	290.4	0.469	72.1	11.9	6.97	4.108	25.460	23.660	59.6	36.0	47.7	24.1	1.98	0.50	47.8	11.8	35.9
57	292.0	0.473	72.1	11.9	6.98	4.192	25.701	23.869	59.8	36.0	47.9	24.1	1.99	0.50	47.9	11.9	36.0
58	293.1	0.478	72.1	11.8	6.99	4.275	25.856	23.996	60.0	36.0	48.1	24.1	1.99	0.49	48.0	12.0	36.1
59	294.0	0.482	72.0	11.8	6.99	4.359	25.993	24.106	60.1	36.0	48.3	24.2	2.00	0.49	48.0	12.1	36.2

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	295.4	0.487	72.0	11.8	7.00	4.442	26.200	24.282	60.2	36.0	48.5	24.2	2.00	0.48	48.1	12.1	36.3
61	296.2	0.492	72.0	11.7	7.00	4.525	26.320	24.375	60.3	36.0	48.6	24.2	2.01	0.48	48.1	12.2	36.4
62	296.1	0.496	71.9	11.7	7.01	4.609	26.303	24.337	60.3	36.0	48.6	24.3	2.00	0.48	48.1	12.2	36.4
63	296.7	0.501	71.9	11.7	7.02	4.692	26.406	24.413	60.4	36.0	48.7	24.3	2.01	0.48	48.2	12.2	36.5
64	294.3	0.505	71.8	11.6	7.02	4.776	26.045	24.047	60.0	36.0	48.4	24.4	1.99	0.48	48.0	12.0	36.4
65	297.0	0.509	71.8	11.6	7.03	4.849	26.441	24.405	60.4	36.0	48.8	24.4	2.00	0.47	48.2	12.2	36.6
66	299.3	0.514	71.8	11.5	7.03	4.943	26.785	24.707	60.7	36.0	49.1	24.4	2.01	0.47	48.3	12.4	36.8
67	299.2	0.519	71.7	11.5	7.04	5.026	26.768	24.669	60.6	36.0	49.1	24.5	2.01	0.47	48.3	12.3	36.8
68	300.1	0.524	71.7	11.4	7.05	5.109	26.906	24.777	60.7	36.0	49.3	24.5	2.01	0.46	48.3	12.4	36.9
69	301.0	0.528	71.6	11.4	7.05	5.193	27.043	24.885	60.8	36.0	49.4	24.6	2.01	0.46	48.4	12.4	37.0
70	301.5	0.533	71.6	11.4	7.06	5.287	27.112	24.925	60.9	36.0	49.5	24.6	2.01	0.46	48.4	12.5	37.1
71	302.5	0.538	71.6	11.3	7.07	5.370	27.267	25.049	61.0	36.0	49.7	24.6	2.02	0.45	48.5	12.5	37.2
72	303.7	0.543	71.5	11.3	7.07	5.464	27.439	25.186	61.1	36.0	49.9	24.7	2.02	0.45	48.6	12.6	37.3
73	304.2	0.547	71.5	11.2	7.08	5.537	27.525	25.247	61.2	36.0	50.0	24.7	2.02	0.45	48.6	12.6	37.3
74	300.2	0.551	71.4	11.2	7.08	5.610	26.923	24.659	60.6	36.0	49.5	24.8	1.99	0.45	48.3	12.3	37.1
75	303.1	0.556	71.4	11.2	7.09	5.693	27.353	25.042	61.0	36.0	49.8	24.8	2.01	0.45	48.5	12.5	37.3
76	304.2	0.560	71.4	11.2	7.10	5.766	27.525	25.184	61.1	36.0	50.0	24.8	2.02	0.44	48.6	12.6	37.4
77	304.7	0.564	71.3	11.1	7.10	5.839	27.594	25.229	61.2	36.0	50.1	24.9	2.01	0.44	48.6	12.6	37.5
78	306.1	0.568	71.3	11.1	7.11	5.912	27.801	25.403	61.4	36.0	50.3	24.9	2.02	0.44	48.7	12.7	37.6
79	307.1	0.572	71.3	11.0	7.11	5.985	27.956	25.529	61.5	36.0	50.4	24.9	2.02	0.43	48.7	12.8	37.7
80	308.9	0.576	71.2	11.0	7.12	6.058	28.231	25.767	61.7	36.0	50.7	25.0	2.03	0.43	48.8	12.9	37.8
81	311.0	0.580	71.2	11.0	7.12	6.142	28.541	26.034	62.0	36.0	51.0	25.0	2.04	0.42	49.0	13.0	38.0
82	312.2	0.584	71.2	11.0	7.13	6.215	28.713	26.175	62.1	36.0	51.2	25.0	2.05	0.42	49.0	13.1	38.1
83	313.8	0.588	71.2	10.9	7.14	6.288	28.954	26.380	62.3	36.0	51.4	25.0	2.05	0.41	49.2	13.2	38.2
84	314.8	0.592	71.1	10.9	7.14	6.361	29.109	26.504	62.5	36.0	51.6	25.1	2.06	0.41	49.2	13.3	38.3
85	311.0	0.597	71.1	10.8	7.15	6.444	28.541	25.948	61.9	36.0	51.1	25.1	2.03	0.42	48.9	13.0	38.1
86	313.6	0.602	71.0	10.8	7.15	6.528	28.920	26.278	62.2	36.0	51.4	25.2	2.04	0.41	49.1	13.1	38.3
87	316.1	0.606	71.0	10.8	7.16	6.601	29.298	26.611	62.6	36.0	51.8	25.2	2.06	0.41	49.3	13.3	38.5
88	317.2	0.610	71.0	10.7	7.17	6.684	29.471	26.747	62.7	36.0	52.0	25.2	2.06	0.40	49.3	13.4	38.6
89	318.3	0.615	70.9	10.7	7.17	6.767	29.625	26.867	62.8	36.0	52.1	25.3	2.06	0.40	49.4	13.4	38.7
90	319.4	0.619	70.9	10.6	7.18	6.851	29.798	27.002	63.0	36.0	52.3	25.3	2.07	0.39	49.5	13.5	38.8
91	320.3	0.624	70.8	10.6	7.19	6.934	29.935	27.106	63.1	36.0	52.5	25.4	2.07	0.39	49.5	13.6	38.9
92	321.2	0.629	70.8	10.6	7.19	7.018	30.056	27.193	63.2	36.0	52.6	25.4	2.07	0.39	49.6	13.6	39.0
93	321.5	0.634	70.8	10.5	7.20	7.111	30.107	27.212	63.2	36.0	52.6	25.4	2.07	0.39	49.6	13.6	39.0
94	322.9	0.638	70.7	10.5	7.21	7.195	30.314	27.379	63.3	36.0	52.9	25.5	2.07	0.38	49.7	13.7	39.2
95	319.0	0.644	70.6	10.4	7.21	7.289	29.729	26.808	62.8	36.0	52.4	25.6	2.05	0.39	49.4	13.4	39.0
96	320.9	0.649	70.6	10.3	7.22	7.383	30.021	27.051	63.0	36.0	52.7	25.6	2.06	0.38	49.5	13.5	39.2
97	322.4	0.653	70.5	10.3	7.23	7.466	30.245	27.233	63.2	36.0	52.9	25.7	2.06	0.38	49.6	13.6	39.3
98	324.3	0.658	70.5	10.3	7.23	7.549	30.521	27.463	63.4	36.0	53.1	25.7	2.07	0.37	49.7	13.7	39.4
99	325.8	0.662	70.5	10.2	7.24	7.633	30.744	27.644	63.6	36.0	53.4	25.7	2.08	0.37	49.8	13.8	39.5
100	327.6	0.667	70.4	10.2	7.25	7.716	31.020	27.872	63.8	36.0	53.6	25.8	2.08	0.37	49.9	13.9	39.7

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	328.1	0.672	70.4	10.1	7.25	7.800	31.089	27.910	63.9	36.0	53.7	25.8	2.08	0.36	49.9	14.0	39.8
102	328.9	0.676	70.3	10.1	7.26	7.883	31.209	27.995	64.0	36.0	53.9	25.9	2.08	0.36	50.0	14.0	39.9
103	329.0	0.680	70.3	10.0	7.26	7.956	31.226	27.988	63.9	36.0	53.9	25.9	2.08	0.36	50.0	14.0	39.9
104	329.3	0.685	70.2	10.0	7.27	8.040	31.278	28.009	64.0	36.0	54.0	26.0	2.08	0.36	50.0	14.0	40.0
105	330.1	0.689	70.2	10.0	7.28	8.123	31.399	28.094	64.1	36.0	54.1	26.0	2.08	0.35	50.0	14.0	40.0
106	329.3	0.694	70.2	10.0	7.28	8.206	31.278	27.957	63.9	36.0	54.0	26.0	2.08	0.36	49.9	14.0	40.0
107	330.6	0.699	70.2	9.9	7.29	8.290	31.467	28.105	64.1	36.0	54.1	26.0	2.08	0.35	50.0	14.1	40.1
108	330.5	0.703	70.0	9.8	7.30	8.363	31.450	28.066	64.0	36.0	54.2	26.2	2.07	0.35	50.0	14.0	40.2
109	331.6	0.708	70.0	9.8	7.30	8.457	31.622	28.194	64.2	36.0	54.4	26.2	2.08	0.35	50.1	14.1	40.3
110	333.2	0.712	70.0	9.7	7.31	8.530	31.863	28.392	64.4	36.0	54.6	26.2	2.08	0.34	50.2	14.2	40.4
111	334.4	0.716	70.0	9.7	7.32	8.613	32.035	28.522	64.5	36.0	54.8	26.2	2.09	0.34	50.2	14.3	40.5
112	336.1	0.721	69.9	9.7	7.32	8.696	32.294	28.731	64.7	36.0	55.0	26.3	2.09	0.34	50.3	14.4	40.6
113	337.5	0.726	69.9	9.6	7.33	8.780	32.500	28.893	64.9	36.0	55.2	26.3	2.10	0.33	50.4	14.4	40.8
114	338.1	0.731	69.8	9.6	7.34	8.874	32.586	28.941	64.9	36.0	55.3	26.4	2.10	0.33	50.4	14.5	40.8
115	339.3	0.735	69.8	9.6	7.34	8.957	32.776	29.086	65.0	36.0	55.5	26.4	2.10	0.33	50.5	14.5	40.9
116	339.7	0.740	69.7	9.5	7.35	9.041	32.827	29.106	65.1	36.0	55.6	26.5	2.10	0.33	50.5	14.6	41.0
117	339.5	0.744	69.7	9.4	7.36	9.124	32.793	29.047	65.0	36.0	55.6	26.5	2.10	0.33	50.5	14.5	41.0
118	340.6	0.748	69.6	9.4	7.36	9.197	32.965	29.179	65.1	36.0	55.7	26.6	2.10	0.32	50.6	14.6	41.1
119	334.8	0.753	69.6	9.4	7.37	9.270	32.104	28.374	64.3	36.0	54.9	26.6	2.07	0.33	50.1	14.2	40.7
120	338.3	0.757	69.6	9.3	7.38	9.353	32.621	28.816	64.8	36.0	55.4	26.6	2.08	0.32	50.4	14.4	41.0
121	339.7	0.761	69.5	9.2	7.38	9.426	32.827	28.979	64.9	36.0	55.7	26.7	2.08	0.32	50.5	14.5	41.2
122	341.5	0.766	69.4	9.2	7.39	9.510	33.103	29.201	65.2	36.0	56.0	26.8	2.09	0.32	50.6	14.6	41.4
123	342.8	0.770	69.4	9.2	7.40	9.583	33.292	29.348	65.3	36.0	56.1	26.8	2.10	0.31	50.6	14.7	41.5
124	345.0	0.774	69.4	9.2	7.40	9.656	33.619	29.619	65.6	36.0	56.4	26.8	2.11	0.31	50.8	14.8	41.6
125	346.4	0.778	69.4	9.1	7.41	9.739	33.826	29.777	65.7	36.0	56.6	26.8	2.11	0.31	50.8	14.9	41.7
126	348.1	0.782	69.3	9.0	7.41	9.812	34.084	29.986	65.9	36.0	56.9	26.9	2.11	0.30	51.0	15.0	41.9
127	348.8	0.787	69.2	9.0	7.42	9.896	34.187	30.050	66.0	36.0	57.0	27.0	2.12	0.30	51.0	15.0	42.0
128	350.2	0.791	69.2	9.0	7.43	9.969	34.394	30.211	66.2	36.0	57.2	27.0	2.12	0.30	51.1	15.1	42.1
129	344.9	0.796	69.2	9.0	7.43	10.052	33.602	29.470	65.4	36.0	56.5	27.0	2.09	0.30	50.7	14.7	41.7
130	349.4	0.800	69.2	9.0	7.44	10.135	34.273	30.046	66.0	36.0	57.0	27.0	2.11	0.30	51.0	15.0	42.0
131	351.0	0.804	69.2	8.9	7.45	10.208	34.514	30.237	66.2	36.0	57.3	27.0	2.12	0.30	51.1	15.1	42.1
132	352.7	0.809	69.1	8.9	7.45	10.292	34.773	30.440	66.4	36.0	57.5	27.1	2.12	0.29	51.2	15.2	42.3
133	355.2	0.813	69.1	8.9	7.46	10.375	35.151	30.750	66.7	36.0	57.9	27.1	2.13	0.29	51.3	15.4	42.5
134	355.9	0.818	69.0	8.8	7.47	10.459	35.255	30.813	66.8	36.0	58.0	27.2	2.13	0.29	51.4	15.4	42.6
135	357.9	0.822	69.0	8.8	7.47	10.542	35.547	31.046	67.0	36.0	58.2	27.2	2.14	0.28	51.5	15.5	42.7
136	359.3	0.827	69.0	8.8	7.48	10.626	35.754	31.201	67.2	36.0	58.4	27.2	2.15	0.28	51.6	15.6	42.8
137	360.7	0.832	68.9	8.7	7.49	10.709	35.978	31.371	67.3	36.0	58.6	27.3	2.15	0.28	51.6	15.7	43.0
138	361.9	0.836	68.9	8.7	7.50	10.792	36.150	31.494	67.5	36.0	58.8	27.3	2.15	0.28	51.7	15.7	43.0
139	361.9	0.841	68.9	8.6	7.50	10.876	36.150	31.464	67.4	36.0	58.8	27.3	2.15	0.27	51.7	15.7	43.1
140	364.0	0.846	68.9	8.6	7.51	10.970	36.460	31.706	67.7	36.0	59.1	27.3	2.16	0.27	51.8	15.9	43.2
141	359.8	0.851	68.8	8.6	7.52	11.053	35.840	31.124	67.1	36.0	58.5	27.4	2.14	0.28	51.5	15.6	43.0

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	362.4	0.855	68.8	8.5	7.52	11.136	36.219	31.431	67.4	36.0	58.9	27.4	2.15	0.27	51.7	15.7	43.1
143	363.9	0.860	68.7	8.5	7.53	11.220	36.442	31.600	67.6	36.0	59.1	27.5	2.15	0.27	51.8	15.8	43.3
144	364.5	0.864	68.7	8.4	7.54	11.293	36.546	31.665	67.6	36.0	59.2	27.5	2.15	0.27	51.8	15.8	43.4
145	367.0	0.868	68.6	8.4	7.55	11.376	36.907	31.954	67.9	36.0	59.5	27.6	2.16	0.26	51.9	16.0	43.6
146	368.0	0.873	68.6	8.3	7.55	11.460	37.062	32.061	68.0	36.0	59.7	27.6	2.16	0.26	52.0	16.0	43.7
147	370.1	0.878	68.6	8.3	7.56	11.543	37.372	32.304	68.3	36.0	59.9	27.6	2.17	0.26	52.1	16.2	43.8
148	371.2	0.882	68.5	8.3	7.57	11.627	37.544	32.425	68.4	36.0	60.1	27.7	2.17	0.26	52.2	16.2	43.9
149	372.0	0.887	68.5	8.3	7.57	11.710	37.664	32.500	68.5	36.0	60.2	27.7	2.17	0.25	52.2	16.3	44.0
150	372.6	0.891	68.5	8.2	7.58	11.783	37.751	32.548	68.5	36.0	60.3	27.7	2.17	0.25	52.2	16.3	44.0
151	362.0	0.896	68.3	8.1	7.59	11.877	36.167	31.117	67.1	36.0	59.0	27.9	2.12	0.26	51.5	15.6	43.4
152	371.1	0.900	68.3	8.1	7.59	11.950	37.527	32.288	68.2	36.0	60.2	27.9	2.16	0.25	52.1	16.1	44.0
153	373.6	0.905	68.3	8.1	7.60	12.044	37.905	32.586	68.5	36.0	60.5	27.9	2.17	0.25	52.3	16.3	44.2
154	374.1	0.910	68.3	8.0	7.61	12.127	37.974	32.615	68.6	36.0	60.6	27.9	2.17	0.25	52.3	16.3	44.3
155	374.4	0.914	68.2	7.9	7.62	12.200	38.026	32.633	68.6	36.0	60.7	28.0	2.16	0.24	52.3	16.3	44.3
156	376.3	0.919	68.2	7.9	7.62	12.294	38.301	32.839	68.8	36.0	60.9	28.0	2.17	0.24	52.4	16.4	44.4
157	376.1	0.923	68.1	7.9	7.63	12.377	38.267	32.777	68.7	36.0	60.9	28.1	2.17	0.24	52.3	16.4	44.5
158	376.6	0.928	68.1	7.8	7.64	12.461	38.353	32.820	68.8	36.0	61.0	28.1	2.17	0.24	52.4	16.4	44.6
159	377.9	0.933	68.0	7.8	7.65	12.544	38.542	32.954	68.9	36.0	61.1	28.2	2.17	0.24	52.4	16.5	44.7
160	364.8	0.937	69.9	9.6	7.65	12.628	36.580	31.207	67.2	36.0	57.5	26.3	2.19	0.31	51.6	15.6	41.9
161	353.4	0.942	71.0	10.8	7.66	12.711	34.876	29.689	65.6	36.0	54.8	25.2	2.18	0.36	50.8	14.8	40.0
162	344.6	0.946	71.7	11.4	7.67	12.784	33.568	28.522	64.5	36.0	53.0	24.5	2.16	0.40	50.2	14.3	38.8
163	345.4	0.950	71.9	11.6	7.67	12.867	33.688	28.599	64.6	36.0	52.9	24.3	2.18	0.41	50.3	14.3	38.6
164	345.3	0.954	72.0	11.8	7.68	12.940	33.671	28.560	64.5	36.0	52.8	24.2	2.18	0.41	50.2	14.3	38.5
165	346.0	0.958	72.2	11.9	7.69	13.013	33.774	28.625	64.6	36.0	52.7	24.0	2.19	0.42	50.3	14.3	38.4
166	345.8	0.963	72.3	12.1	7.69	13.097	33.740	28.567	64.5	36.0	52.4	23.9	2.20	0.42	50.2	14.3	38.2
167	344.5	0.967	72.5	12.2	7.70	13.170	33.550	28.378	64.3	36.0	52.1	23.7	2.20	0.43	50.1	14.2	37.9
168	345.7	0.972	72.6	12.4	7.71	13.253	33.722	28.499	64.5	36.0	52.1	23.6	2.21	0.43	50.2	14.2	37.9
169	346.0	0.976	72.6	12.4	7.71	13.326	33.774	28.519	64.5	36.0	52.1	23.6	2.21	0.43	50.2	14.3	37.8
170	345.1	0.980	72.6	12.4	7.72	13.399	33.636	28.375	64.3	36.0	51.9	23.6	2.20	0.44	50.1	14.2	37.7
171	344.3	0.984	72.7	12.5	7.73	13.483	33.516	28.243	64.2	36.0	51.7	23.5	2.20	0.44	50.1	14.1	37.6
172	340.8	0.989	72.8	12.5	7.74	13.566	32.999	27.769	63.7	36.0	51.2	23.4	2.18	0.45	49.8	13.9	37.3
173	341.3	0.993	72.9	12.6	7.74	13.639	33.068	27.804	63.8	36.0	51.1	23.3	2.19	0.45	49.9	13.9	37.2
174	341.8	0.997	73.0	12.8	7.75	13.722	33.137	27.836	63.8	36.0	51.0	23.2	2.20	0.46	49.9	13.9	37.1
175	341.4	1.001	73.1	12.9	7.76	13.795	33.086	27.767	63.7	36.0	50.9	23.1	2.20	0.46	49.8	13.9	37.0
176	341.6	1.006	73.2	13.0	7.76	13.879	33.120	27.769	63.7	36.0	50.7	23.0	2.21	0.47	49.8	13.9	36.8
177	342.4	1.011	73.3	13.0	7.77	13.962	33.240	27.845	63.8	36.0	50.8	22.9	2.21	0.47	49.9	13.9	36.8
178	341.2	1.015	73.4	13.1	7.78	14.046	33.051	27.655	63.6	36.0	50.5	22.8	2.21	0.47	49.8	13.8	36.7
179	341.3	1.020	73.4	13.2	7.79	14.129	33.068	27.642	63.6	36.0	50.4	22.8	2.21	0.48	49.8	13.8	36.6
180	337.7	1.024	73.5	13.2	7.79	14.213	32.535	27.157	63.1	36.0	49.9	22.7	2.20	0.49	49.5	13.6	36.3
181	339.0	1.030	73.5	13.3	7.80	14.306	32.724	27.288	63.2	36.0	50.0	22.7	2.20	0.49	49.6	13.6	36.3
182	340.0	1.034	73.6	13.3	7.81	14.390	32.879	27.394	63.4	36.0	50.0	22.6	2.21	0.49	49.7	13.7	36.3

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	341.5	1.039	73.6	13.4	7.82	14.473	33.103	27.558	63.5	36.0	50.2	22.6	2.22	0.48	49.7	13.8	36.4
184	341.8	1.044	73.6	13.4	7.83	14.567	33.137	27.556	63.5	36.0	50.2	22.6	2.22	0.48	49.7	13.8	36.4
185	342.2	1.048	73.6	13.4	7.83	14.650	33.206	27.587	63.5	36.0	50.2	22.6	2.22	0.49	49.8	13.8	36.4
186	341.9	1.053	73.7	13.4	7.84	14.734	33.154	27.515	63.5	36.0	50.0	22.5	2.22	0.49	49.7	13.8	36.3
187	341.3	1.057	73.7	13.5	7.85	14.807	33.068	27.418	63.4	36.0	49.9	22.5	2.22	0.49	49.7	13.7	36.2
188	340.9	1.062	73.8	13.5	7.86	14.890	33.017	27.346	63.3	36.0	49.8	22.4	2.22	0.49	49.6	13.7	36.1
189	335.7	1.067	73.8	13.6	7.87	14.984	32.225	26.642	62.6	36.0	49.0	22.4	2.19	0.51	49.3	13.3	35.7
190	338.9	1.071	73.8	13.6	7.87	15.068	32.707	27.025	63.0	36.0	49.4	22.4	2.21	0.50	49.5	13.5	35.9
191	339.8	1.075	73.9	13.7	7.88	15.141	32.845	27.118	63.1	36.0	49.4	22.3	2.22	0.50	49.5	13.6	35.8
192	340.0	1.080	74.0	13.7	7.89	15.224	32.879	27.119	63.1	36.0	49.4	22.2	2.22	0.51	49.5	13.6	35.8
193	339.7	1.085	74.0	13.8	7.90	15.307	32.827	27.048	63.0	36.0	49.3	22.2	2.22	0.51	49.5	13.5	35.7
194	341.2	1.089	74.0	13.8	7.90	15.391	33.051	27.210	63.2	36.0	49.4	22.2	2.23	0.51	49.6	13.6	35.8
195	341.2	1.094	74.1	13.8	7.91	15.474	33.051	27.183	63.1	36.0	49.3	22.1	2.23	0.51	49.6	13.6	35.7
196	339.1	1.098	74.1	13.8	7.92	15.558	32.741	26.893	62.9	36.0	49.0	22.1	2.22	0.51	49.4	13.4	35.6
197	341.8	1.103	74.2	13.9	7.93	15.641	33.137	27.200	63.2	36.0	49.2	22.0	2.23	0.51	49.6	13.6	35.6
198	342.6	1.108	74.2	14.0	7.93	15.725	33.258	27.274	63.2	36.0	49.3	22.0	2.24	0.51	49.6	13.6	35.6
199	342.6	1.112	74.3	14.0	7.94	15.808	33.258	27.246	63.2	36.0	49.2	21.9	2.24	0.52	49.6	13.6	35.6
200	341.9	1.117	74.4	14.1	7.95	15.891	33.154	27.132	63.1	36.0	49.0	21.8	2.24	0.52	49.5	13.6	35.4
201	341.9	1.121	74.4	14.2	7.96	15.975	33.154	27.104	63.1	36.0	48.9	21.8	2.24	0.52	49.5	13.6	35.4
202	341.3	1.126	74.5	14.2	7.97	16.058	33.068	27.004	63.0	36.0	48.7	21.7	2.24	0.53	49.5	13.5	35.2
203	339.9	1.130	74.5	14.3	7.97	16.142	32.862	26.803	62.8	36.0	48.5	21.7	2.24	0.53	49.4	13.4	35.1
204	341.3	1.135	74.6	14.4	7.98	16.225	33.068	26.949	62.9	36.0	48.6	21.6	2.25	0.53	49.4	13.5	35.1
205	343.6	1.139	74.7	14.4	7.99	16.298	33.413	27.213	63.2	36.0	48.7	21.5	2.26	0.53	49.6	13.6	35.1
206	344.5	1.144	74.7	14.5	8.00	16.381	33.550	27.300	63.3	36.0	48.8	21.5	2.27	0.53	49.6	13.7	35.1
207	343.5	1.148	74.8	14.5	8.00	16.454	33.395	27.146	63.1	36.0	48.6	21.4	2.27	0.53	49.5	13.6	35.0
208	344.4	1.152	74.8	14.5	8.01	16.527	33.533	27.237	63.2	36.0	48.7	21.4	2.27	0.53	49.6	13.6	35.1
209	345.0	1.156	74.8	14.6	8.02	16.600	33.619	27.284	63.2	36.0	48.7	21.4	2.27	0.53	49.6	13.6	35.1
210	345.1	1.160	74.8	14.6	8.02	16.673	33.636	27.274	63.2	36.0	48.6	21.4	2.28	0.53	49.6	13.6	35.0
211	345.3	1.164	74.9	14.6	8.03	16.757	33.671	27.275	63.2	36.0	48.6	21.3	2.28	0.54	49.6	13.6	35.0
212	341.2	1.169	74.9	14.7	8.04	16.840	33.051	26.731	62.7	36.0	48.0	21.3	2.26	0.55	49.3	13.4	34.7
213	343.3	1.173	74.9	14.7	8.05	16.913	33.361	26.965	62.9	36.0	48.3	21.3	2.27	0.54	49.4	13.5	34.8
214	344.1	1.178	75.0	14.7	8.06	16.997	33.481	27.037	63.0	36.0	48.3	21.2	2.27	0.54	49.5	13.5	34.8
215	345.9	1.182	75.0	14.8	8.06	17.070	33.757	27.241	63.2	36.0	48.5	21.2	2.28	0.54	49.6	13.6	34.8
216	346.4	1.186	75.0	14.8	8.07	17.153	33.826	27.270	63.2	36.0	48.4	21.2	2.29	0.54	49.6	13.6	34.8
217	346.2	1.191	75.1	14.8	8.08	17.236	33.809	27.227	63.2	36.0	48.4	21.1	2.29	0.54	49.6	13.6	34.7
218	345.8	1.195	75.1	14.9	8.09	17.320	33.740	27.142	63.1	36.0	48.2	21.1	2.29	0.55	49.5	13.6	34.7
219	345.3	1.200	75.1	14.9	8.10	17.403	33.671	27.057	63.0	36.0	48.1	21.1	2.28	0.55	49.5	13.5	34.6
220	347.7	1.204	75.1	14.9	8.10	17.476	34.032	27.331	63.3	36.0	48.4	21.1	2.30	0.55	49.6	13.7	34.7
221	349.0	1.208	75.2	15.0	8.11	17.560	34.222	27.458	63.4	36.0	48.4	21.0	2.31	0.55	49.7	13.7	34.7
222	349.1	1.214	75.3	15.0	8.12	17.654	34.239	27.441	63.4	36.0	48.4	20.9	2.31	0.55	49.7	13.7	34.7
223	347.2	1.218	75.3	15.0	8.13	17.727	33.946	27.175	63.1	36.0	48.1	20.9	2.30	0.55	49.5	13.6	34.5

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	348.1	1.223	75.3	15.1	8.14	17.820	34.084	27.256	63.2	36.0	48.1	20.9	2.30	0.55	49.6	13.6	34.5
225	345.3	1.227	75.3	15.1	8.15	17.904	33.671	26.888	62.8	36.0	47.8	20.9	2.29	0.56	49.4	13.4	34.3
226	346.5	1.233	75.3	15.1	8.15	17.998	33.843	26.998	63.0	36.0	47.8	20.9	2.29	0.56	49.5	13.5	34.4
227	348.0	1.237	75.4	15.1	8.16	18.071	34.067	27.157	63.1	36.0	48.0	20.8	2.30	0.56	49.5	13.6	34.4
228	346.6	1.242	75.4	15.2	8.17	18.165	33.860	26.956	62.9	36.0	47.7	20.8	2.30	0.56	49.4	13.5	34.2
229	346.6	1.246	75.5	15.2	8.18	18.248	33.860	26.927	62.9	36.0	47.7	20.7	2.30	0.57	49.4	13.5	34.2
230	347.5	1.250	75.5	15.3	8.19	18.321	33.998	27.015	63.0	36.0	47.7	20.7	2.31	0.57	49.5	13.5	34.2
231	347.9	1.255	75.5	15.3	8.20	18.404	34.050	27.029	63.0	36.0	47.7	20.7	2.31	0.57	49.5	13.5	34.2
232	348.8	1.260	75.6	15.3	8.20	18.488	34.187	27.113	63.1	36.0	47.7	20.6	2.32	0.57	49.5	13.6	34.2
233	346.1	1.264	75.6	15.3	8.21	18.571	33.791	26.762	62.7	36.0	47.4	20.6	2.30	0.57	49.3	13.4	34.0
234	346.9	1.269	75.7	15.4	8.22	18.655	33.912	26.832	62.8	36.0	47.4	20.5	2.31	0.58	49.4	13.4	33.9
235	346.9	1.273	75.7	15.4	8.23	18.728	33.912	26.807	62.8	36.0	47.3	20.5	2.31	0.58	49.4	13.4	33.9
236	346.6	1.277	75.7	15.5	8.24	18.811	33.860	26.737	62.7	36.0	47.2	20.5	2.30	0.58	49.3	13.4	33.9
237	346.8	1.282	75.7	15.5	8.24	18.894	33.895	26.736	62.7	36.0	47.2	20.5	2.31	0.58	49.3	13.4	33.8
238	346.6	1.286	75.8	15.5	8.25	18.978	33.860	26.680	62.6	36.0	47.1	20.4	2.31	0.58	49.3	13.3	33.8
239	348.3	1.291	75.8	15.6	8.26	19.061	34.118	26.861	62.8	36.0	47.2	20.4	2.32	0.58	49.4	13.4	33.8
240	348.0	1.295	75.8	15.6	8.27	19.134	34.067	26.794	62.8	36.0	47.2	20.4	2.32	0.58	49.4	13.4	33.8
241	347.9	1.300	75.9	15.6	8.28	19.218	34.050	26.752	62.7	36.0	47.1	20.3	2.32	0.58	49.3	13.4	33.7
242	345.2	1.304	75.9	15.7	8.29	19.301	33.654	26.404	62.4	36.0	46.7	20.3	2.30	0.59	49.2	13.2	33.5
243	346.4	1.309	76.0	15.7	8.29	19.385	33.826	26.515	62.5	36.0	46.7	20.2	2.31	0.59	49.2	13.3	33.5
244	347.6	1.313	76.0	15.8	8.30	19.468	34.015	26.639	62.6	36.0	46.8	20.2	2.32	0.59	49.3	13.3	33.5
245	347.2	1.318	76.1	15.8	8.31	19.551	33.946	26.555	62.5	36.0	46.7	20.1	2.32	0.60	49.2	13.3	33.4
246	346.0	1.323	76.1	15.9	8.32	19.635	33.774	26.389	62.3	36.0	46.5	20.1	2.31	0.60	49.2	13.2	33.3
247	346.7	1.327	76.1	15.9	8.33	19.718	33.877	26.443	62.4	36.0	46.5	20.1	2.32	0.60	49.2	13.2	33.3
248	343.4	1.332	76.2	15.9	8.34	19.802	33.378	26.015	62.0	36.0	46.0	20.0	2.30	0.61	49.0	13.0	33.0
249	345.4	1.336	76.2	16.0	8.35	19.885	33.688	26.235	62.2	36.0	46.2	20.0	2.31	0.61	49.1	13.1	33.1
250	345.4	1.340	76.3	16.1	8.35	19.958	33.688	26.211	62.2	36.0	46.1	19.9	2.32	0.61	49.1	13.1	33.0
251	347.1	1.343	76.3	16.1	8.36	20.000	33.929	26.389	62.4	36.0	46.3	19.9	2.33	0.61	49.2	13.2	33.1

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)

Sample Failure Photographs

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. U-2412 B

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project 39406.1.1 **County** GUILFORD **Owner**

Date: Sampled 3/1/13 **Received** 11/8/13 **Reported** 11/12/13

Sampled from RDWY **By** N. ROBERSON

Submitted by M. HURT 1995 **Standard Specifications**

788288 TO 788288
11/14/13

TEST RESULTS

Proj. Sample No.		ST-16 # 1					
Lab. Sample No.		788288					
Retained #4 Sieve	%	-					
Passing #10 Sieve	%	97					
Passing #40 Sieve	%	79					
Passing #200 Sieve	%	45					

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	31.4					
Fine Sand Ret - #270	%	28.2					
Silt 0.05 - 0.005 mm	%	32.4					
Clay < 0.005 mm	%	8.0					
T-#		T-5781					
Specific Gravity		2.724					

L. L.		35					
P. I.		4					
AASHTO Classification		A-4(0)					
Station		404+50					
Offset		3 FT RT					
Alignment		L					
Location							
Depth (Ft)		49.5 FT					
	to	50.7 FT					
Final Moisture Content	%	22.95					

cc: N. ROBERSON
SURIYATI BS

Soils Engineer

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	17.40	23.10	**Plastic Limits:**	0	
Dry Density (pcf):	98.18	110.14	**Plasticity Index (%):**	0	
Saturation (%):	67.23	121.74			
Void Ratio:	0.6834	0.5006	**Specific Gravity:**	2.652	Measured

Soil Description: Tan yellowish-white colored silt

Project Number: 39406.1.1 **Depth:** 49.5 - 50.7 ft

Sample Number: ST-16 **Boring Number:**

Project: U-2412B

Client: T-5781

Location: Guilford County (Sta. 404+50)

Remarks:
Solid height is 0.59426 inch; Blows/ft = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	17.40	23.10	**Plastic Limits:**	0	
Dry Density (pcf):	98.18	110.14	**Plasticity Index (%):**	0	
Saturation (%):	67.23	121.74			
Void Ratio:	0.6834	0.5006	**Specific Gravity:**	2.652	Measured

Soil Description: Tan yellowish-white colored silt

Project Number: 39406.1.1 **Depth:** 49.5 - 50.7 ft

Sample Number: ST-16 **Boring Number:**

Project: U-2412B

Client: T-5781

Location: Guilford County (Sta. 404+50)

Remarks: Solid height is 0.59426 inch; Blows/ft = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	17.40	23.10	**Plastic Limits:**	0	
Dry Density (pcf):	98.18	110.14	**Plasticity Index (%):**	0	
Saturation (%):	67.23	121.74			
Void Ratio:	0.6834	0.5006	**Specific Gravity:**	2.652	Measured

Soil Description: Tan yellowish-white colored silt

Project Number: 39406.1.1 **Depth:** 49.5 - 50.7 ft

Sample Number: ST-16 **Boring Number:**

Project: U-2412B

Client: T-5781

Location: Guilford County (Sta. 404+50)

Remarks:
Solid height is 0.59426 inch; Blows/ft = NA

Consolidation Test Results
Summary

Project: U-2412B
Location: Guilford County (Sta. 404+50)
Job Number: T-5781

Project Number: 39406.1.1

Sample Number: ST-16
Boring Number:
Depth: 49.5 - 50.7 ft
Sample Type: Undisturbed

Soil Description:
Tan yellowish-white colored silt
Remarks:
Solid height is 0.59426 inch; Blows/ft = NA

Test Number:
Test Date:

Index	Load Sequence (tsf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	0.9994	0.4057	0.00	0.6834	0.000		0.000	
1	0.031	0.0027	0.9967	0.4030	0.27	0.6788	0.132		5823.496	
2	0.063	0.0067	0.9927	0.3990	0.67	0.6721	0.160		4765.899	
3	0.125	0.0128	0.9866	0.3929	1.28	0.6618	0.160		4707.507	
4	0.250	0.0239	0.9755	0.3818	2.39	0.6431	0.160		4602.177	
5	0.500	0.0382	0.9612	0.3675	3.82	0.6190	0.116		6163.087	
6	1.000	0.0564	0.9430	0.3493	5.64	0.5884	0.082		8432.610	
7	2.000	0.0776	0.9218	0.3281	7.76	0.5527	0.090		7305.664	
8	4.000	0.1054	0.8940	0.3003	10.55	0.5058	0.063		9895.182	
9	2.000	0.1023	0.8971	0.3034	10.24	0.5111	0.000		0.000	
10	1.000	0.0980	0.9014	0.3077	9.81	0.5183	0.000		0.000	
11	0.500	0.0927	0.9067	0.3130	9.28	0.5272	0.000		0.000	
12	1.000	0.0956	0.9038	0.3101	9.57	0.5223	0.000		0.000	
13	2.000	0.1004	0.8990	0.3053	10.05	0.5143	0.000		0.000	
14	4.000	0.1081	0.8913	0.2976	10.82	0.5013	0.000		0.000	
15	8.000	0.1348	0.8646	0.2709	13.49	0.4563	0.058		10042.383	
16	16.000	0.1668	0.8326	0.2389	16.69	0.4024	0.218		2460.623	
17	4.000	0.1601	0.8393	0.2456	16.02	0.4137	0.000		0.000	
18	0.016	0.1085	0.8909	0.2972	10.86	0.5006	0.000		0.000	

Tested By:

Checked By:

Consolidation Test
Consolidation Specimen Information

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County (Sta. 404+50)
Job Number: T-5781 **Test Date:**

Sample Number: ST-16 **Soil Description:**
Boring Number: Tan yellowish-white colored silt
Depth: 49.5 - 50.7 ft **Remarks:**
Sample Type: Undisturbed Solid height is 0.59426 inch; Blows/ft = NA

Test Number:
Liquid Limit: 0.0000 **Initial Void Ratio:** 0.6834 **Initial Height (in):** 0.9994
Plastic Limit: 0.0000 **Plasticity Index (%):** 0.0000 **Initial Diameter (in):** 2.4998
Specific Gravity: 2.6520 Measured **Weight of Ring (g):** 109.8600

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	148.40	155.61
Dry Soil + Container (g)	126.41	126.41
Weight of Container (g)	0.00	0.00
Moisture Content (%)	17.40	23.10
Void Ratio	0.6834	0.5006
Saturation (%)	67.23	121.74
Dry Density (pcf)	98.18	110.14

Tested By: **Checked By:**

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Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date

Tested By:

Effective Stress at Maximum Deviator Stress Criterion

Deviator Stress Vs. Axial Strain

Initial	Specimen A	B	C	D
Water Content (%)	19.2	19.2	19.2	
Dry Density (pcf)	105.5	111.3	111.1	
Saturation (%)	85.31	98.87	98.34	
Void Ratio	0.608	0.524	0.527	
Diameter (in)	2.872	2.889	2.985	
Height (in)	6.021	5.640	5.294	
Specific Gravity	2.72	2.72	2.72	
Liquid Limit	0	0	0	
Plastic Limit	0	0	0	
After Consolidation	**A**	**B**	**C**	**D**
B-Value	0.00	0.00	0.00	
Water Content (%)	19.7	19.8	19.8	
Dry Density (pcf)	111.94	112.59	112.46	
Saturation (%)	100.00	100.00	100.00	
Void Ratio	0.519	0.510	0.512	
Effective Stress (psi)	9.0	18.0	36.0	
Back Press. (psi)	60.5	60.6	60.8	
Rate of Strain	0.009	0.009	0.009	

Maximium Deviator Stress Criterion		After Shear	A	B	C	D
C (psi)	0.0	σ'1 at Failure (psi)	23.28	31.81	73.97	
C' (psi)	0.0	σ'3 at Failure (psi)	6.05	13.54	36.14	
Ø (deg)	0.0					
Ø' (deg)	0.0					

Project:	U-2412B	N/A	N/A	N/A	N/A
Location:	Guilford County (Sta. 404+50)				
Project Number:	39406.1.1				
Boring Number:					
Sample Number:	ST-16				
Depth:	49.5 - 50.7 ft				
Sample Type:	Undisturbed	Failure Photographs			
Description:					
Test Type	Consolidated Undrained				
Remarks	Multi-Stage				

ncdot

Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date:

Tested By:

Deviator Stress vs. Axial Strain

Principal Stress Ratio vs. Axial Strain

Change in Pore Pressure vs. Axial Strain

Mohr Stress Circles at Maximum Deviator Stress Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at Maximum Principal Stress Ratio Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at 15% Axial Strain Criterion

Effective Stress
(C' = 0.0 Ø' = 0.0)

Total Stress
(C = 0.0 Ø = 0.0)

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)
Q (psi)
60.0
45.0
30.0
15.0
0.0
0.0
15.0
30.0
45.0
60.0
P' (psi)
Specimen A
Specimen B
Specimen C
Specimen D
Tangent Line

Stress Paths (Total)
(C' = 0.0 Ø' = 0.0)
Q (psi)
60.0
45.0
30.0
15.0
0.0
0.0
15.0
30.0
45.0
60.0
P (psi)

Specimen A Shear Data

CU Triaxial Test

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File Location
T-5781.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5781
Sample Location: Guilford County (Sta. 404+50)
Sample Description: Tan colored silt
Remarks: 43° shear plane with slicken side.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.724
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.872	2.814	
Height (in)	6.021	5.910	
Weight (grams)	1287.00		1328.00
Moisture (%)	19.16		22.95
Dry Density (pcf)	105.50	111.94	
Saturation (%)	85.31	100.00	
Void Ratio	0.608	0.519	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 69.500
Effective Confining Stress (psi): 9.0
Corrected Peak Deviator Stress (psi): 17.225 at reading number: 26

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	35.0	0.150	60.5	0.0	6.22	0.000	0.000	0.000	9.0	9.0	9.0	9.0	1.00	0.00	9.0	0.0	9.0
1	56.1	0.155	61.5	1.0	6.22	0.087	3.391	3.354	12.3	9.0	11.3	8.0	1.42	0.31	10.7	1.7	9.6
2	65.2	0.160	62.1	1.6	6.23	0.164	4.866	4.794	13.8	9.0	12.2	7.4	1.65	0.34	11.4	2.4	9.8
3	71.6	0.164	62.5	2.0	6.23	0.242	5.898	5.789	14.8	9.0	12.8	7.0	1.83	0.34	11.9	2.9	9.9
4	77.0	0.170	62.8	2.3	6.24	0.328	6.764	6.614	15.6	9.0	13.3	6.7	1.99	0.35	12.3	3.3	10.0
5	81.6	0.174	63.0	2.5	6.24	0.406	7.502	7.313	16.3	9.0	13.8	6.5	2.13	0.35	12.6	3.7	10.1
6	86.1	0.179	63.2	2.7	6.25	0.483	8.220	7.992	17.0	9.0	14.2	6.3	2.28	0.34	13.0	4.0	10.3
7	90.4	0.183	63.4	2.9	6.25	0.560	8.921	8.652	17.6	9.0	14.8	6.1	2.42	0.33	13.3	4.3	10.4
8	94.2	0.188	63.5	3.0	6.26	0.647	9.529	9.214	18.2	9.0	15.2	6.0	2.53	0.32	13.6	4.6	10.6
9	98.2	0.193	63.6	3.1	6.26	0.725	10.174	9.817	18.8	9.0	15.8	5.9	2.65	0.31	13.9	4.9	10.8
10	101.9	0.198	63.6	3.1	6.27	0.802	10.764	10.364	19.4	9.0	16.2	5.9	2.76	0.30	14.2	5.2	11.1
11	105.6	0.202	63.7	3.2	6.27	0.879	11.354	10.910	19.9	9.0	16.7	5.8	2.89	0.29	14.4	5.5	11.2
12	109.1	0.207	63.8	3.3	6.28	0.956	11.925	11.437	20.4	9.0	17.2	5.7	3.00	0.28	14.7	5.7	11.4
13	112.7	0.212	63.8	3.3	6.28	1.043	12.497	11.958	20.9	9.0	17.7	5.7	3.10	0.27	15.0	6.0	11.7
14	116.0	0.216	63.8	3.3	6.29	1.121	13.031	12.447	21.4	9.0	18.1	5.7	3.20	0.27	15.2	6.2	11.9
15	119.6	0.221	63.8	3.3	6.29	1.198	13.602	12.971	22.0	9.0	18.6	5.7	3.29	0.26	15.5	6.5	12.2
16	123.1	0.226	63.8	3.3	6.30	1.275	14.174	13.495	22.5	9.0	19.2	5.7	3.37	0.24	15.7	6.7	12.4
17	126.3	0.230	63.8	3.3	6.30	1.352	14.690	13.963	22.9	9.0	19.7	5.7	3.45	0.24	16.0	7.0	12.7
18	129.6	0.235	63.8	3.3	6.31	1.430	15.224	14.448	23.4	9.0	20.1	5.7	3.53	0.23	16.2	7.2	12.9

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	132.9	0.239	63.8	3.3	6.31	1.507	15.740	14.914	23.9	9.0	20.6	5.7	3.60	0.22	16.4	7.5	13.2
20	135.8	0.244	63.7	3.2	6.32	1.594	16.220	15.338	24.3	9.0	21.1	5.8	3.66	0.21	16.7	7.7	13.4
21	138.7	0.249	63.7	3.2	6.33	1.671	16.680	15.748	24.7	9.0	21.5	5.8	3.72	0.20	16.9	7.9	13.7
22	141.7	0.253	63.6	3.1	6.33	1.748	17.160	16.176	25.2	9.0	22.1	5.9	3.75	0.19	17.1	8.1	14.0
23	144.2	0.258	63.6	3.1	6.34	1.826	17.565	16.531	25.5	9.0	22.5	5.9	3.79	0.18	17.3	8.3	14.2
24	146.5	0.263	63.5	3.0	6.34	1.903	17.934	16.849	25.8	9.0	22.8	6.0	3.81	0.18	17.4	8.4	14.4
25	148.6	0.268	63.5	3.0	6.35	1.990	18.266	17.124	26.1	9.0	23.1	6.0	3.84	0.17	17.5	8.6	14.6
26	149.3	0.269	63.4	2.9	6.35	2.009	18.376	17.225	26.2	9.0	23.3	6.1	3.85	0.17	17.6	8.6	14.7

Specimen B Shear Data

CU Triaxial Test

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File Location
T-5781.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5781
Sample Location: Guilford County (Sta. 404+50)
Sample Description: Same as Specimen A
Remarks: Same as Specimen A

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.724
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.889	2.874	
Height (in)	5.640	5.635	
Weight (grams)	1287.00		1328.10
Moisture (%)	19.16		22.95
Dry Density (pcf)	111.30	112.59	
Saturation (%)	98.87	100.00	
Void Ratio	0.524	0.510	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 78.600
Effective Confining Stress (psi): 18.0
Corrected Peak Deviator Stress (psi): 18.274 at reading number: 14

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	113.0	0.275	60.6	0.0	6.49	0.000	0.000	0.000	18.0	18.0	18.0	18.0	1.00	0.00	18.0	0.0	18.0
1	155.7	0.279	62.6	2.1	6.49	0.061	6.575	6.548	24.6	18.0	22.5	16.0	1.41	0.31	21.3	3.3	19.2
2	173.6	0.283	63.7	3.1	6.49	0.132	9.332	9.269	27.3	18.0	24.2	14.9	1.62	0.33	22.7	4.6	19.6
3	185.2	0.287	64.3	3.7	6.50	0.213	11.135	11.030	29.1	18.0	25.4	14.3	1.77	0.34	23.5	5.5	19.8
4	194.4	0.291	64.7	4.1	6.50	0.284	12.549	12.405	30.4	18.0	26.4	13.9	1.89	0.33	24.2	6.2	20.2
5	201.9	0.296	64.9	4.3	6.51	0.365	13.698	13.508	31.5	18.0	27.2	13.7	1.99	0.32	24.8	6.8	20.4
6	208.6	0.300	65.1	4.5	6.51	0.446	14.740	14.504	32.5	18.0	28.0	13.5	2.07	0.31	25.3	7.3	20.8
7	214.2	0.305	65.2	4.6	6.52	0.527	15.606	15.323	33.4	18.0	28.7	13.4	2.14	0.30	25.7	7.7	21.1
8	219.3	0.309	65.2	4.7	6.52	0.598	16.384	16.057	34.1	18.0	29.4	13.4	2.20	0.29	26.1	8.0	21.4
9	223.8	0.313	65.3	4.7	6.53	0.679	17.073	16.698	34.7	18.0	30.0	13.3	2.26	0.28	26.4	8.3	21.7
10	227.4	0.318	65.3	4.7	6.54	0.760	17.639	17.214	35.2	18.0	30.5	13.3	2.29	0.27	26.6	8.6	21.9
11	230.1	0.323	65.3	4.7	6.54	0.841	18.045	17.572	35.6	18.0	30.9	13.3	2.32	0.27	26.8	8.8	22.1
12	232.4	0.327	65.2	4.7	6.55	0.922	18.399	17.876	35.9	18.0	31.2	13.4	2.34	0.26	27.0	8.9	22.3
13	234.1	0.332	65.2	4.6	6.55	1.003	18.664	18.093	36.1	18.0	31.5	13.4	2.35	0.25	27.1	9.0	22.5
14	235.6	0.336	65.1	4.5	6.56	1.084	18.894	18.274	36.3	18.0	31.8	13.5	2.35	0.25	27.2	9.1	22.7
15	235.7	0.338	65.1	4.5	6.56	1.114	18.911	18.274	36.3	18.0	31.8	13.5	2.35	0.25	27.2	9.1	22.7

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)

Specimen C Shear Data

CU Triaxial Test

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File Location
T-5781.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5781
Sample Location: Guilford County (Sta. 404+50)
Sample Description: Same as Specimen A
Remarks: Same as Specimen A

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.724
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.984	2.968	
Height (in)	5.294	5.288	
Weight (grams)	1287.00		1328.00
Moisture (%)	19.16		22.95
Dry Density (pcf)	111.09	112.46	
Saturation (%)	98.34	100.00	
Void Ratio	0.527	0.512	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 96.800
Effective Confining Stress (psi): 36.0
Corrected Peak Deviator Stress (psi): 37.827 at reading number: 212

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	155.2	0.349	60.8	0.0	6.92	0.000	0.000	0.000	36.0	36.0	36.0	36.0	1.00	0.00	36.0	0.0	36.0
1	216.0	0.355	64.1	3.3	6.93	0.108	8.781	8.731	44.8	36.0	41.4	32.7	1.27	0.38	40.4	4.4	37.1
2	247.7	0.359	66.2	5.5	6.93	0.194	13.370	13.272	49.3	36.0	43.8	30.6	1.43	0.41	42.7	6.6	37.2
3	270.8	0.363	67.8	7.0	6.94	0.259	16.700	16.561	52.6	36.0	45.6	29.0	1.57	0.42	44.3	8.3	37.3
4	289.0	0.367	69.0	8.2	6.94	0.335	19.334	19.146	55.2	36.0	47.0	27.8	1.69	0.43	45.6	9.6	37.4
5	303.1	0.371	69.8	9.1	6.95	0.410	21.372	21.132	57.2	36.0	48.1	27.0	1.78	0.43	46.6	10.6	37.5
6	313.9	0.375	70.5	9.7	6.95	0.497	22.930	22.632	58.7	36.0	49.0	26.3	1.86	0.43	47.3	11.3	37.7
7	322.2	0.380	70.9	10.1	6.96	0.583	24.139	23.782	59.8	36.0	49.7	25.9	1.92	0.43	47.9	11.9	37.8
8	328.7	0.384	71.2	10.4	6.96	0.659	25.067	24.658	60.7	36.0	50.2	25.6	1.96	0.42	48.4	12.3	37.9
9	332.9	0.389	71.4	10.6	6.97	0.756	25.680	25.206	61.2	36.0	50.6	25.4	1.99	0.42	48.6	12.6	38.0
10	336.3	0.393	71.5	10.7	6.98	0.831	26.177	25.651	61.7	36.0	50.9	25.3	2.01	0.42	48.8	12.8	38.1
11	337.9	0.398	71.6	10.8	6.98	0.928	26.409	25.819	61.8	36.0	51.0	25.2	2.02	0.42	48.9	12.9	38.1
12	338.9	0.403	71.6	10.9	6.99	1.015	26.541	25.896	61.9	36.0	51.1	25.2	2.03	0.42	49.0	12.9	38.1
13	339.8	0.407	71.6	10.9	7.00	1.101	26.674	25.972	62.0	36.0	51.1	25.2	2.03	0.42	49.0	13.0	38.1
14	340.3	0.412	71.6	10.9	7.00	1.198	26.757	25.992	62.0	36.0	51.2	25.2	2.03	0.42	49.0	13.0	38.2
15	340.3	0.417	71.6	10.8	7.01	1.285	26.757	25.937	62.0	36.0	51.1	25.2	2.03	0.42	49.0	13.0	38.2
16	339.4	0.421	71.5	10.7	7.01	1.360	26.624	25.758	61.8	36.0	51.0	25.3	2.02	0.42	48.9	12.9	38.2
17	337.9	0.426	71.5	10.7	7.02	1.457	26.409	25.484	61.5	36.0	50.8	25.3	2.01	0.42	48.8	12.7	38.1
18	336.8	0.430	71.4	10.7	7.03	1.544	26.243	25.266	61.3	36.0	50.6	25.4	2.00	0.42	48.7	12.6	38.0

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	335.4	0.435	71.4	10.6	7.03	1.630	26.044	25.016	61.0	36.0	50.4	25.4	1.98	0.42	48.5	12.5	37.9
20	333.8	0.440	71.3	10.6	7.04	1.717	25.812	24.733	60.8	36.0	50.2	25.5	1.97	0.43	48.4	12.4	37.8
21	333.0	0.444	71.3	10.5	7.05	1.803	25.696	24.565	60.6	36.0	50.1	25.5	1.96	0.43	48.3	12.3	37.8
22	332.2	0.449	71.2	10.4	7.05	1.889	25.580	24.397	60.4	36.0	50.0	25.6	1.95	0.43	48.2	12.2	37.8
23	332.4	0.453	71.2	10.4	7.06	1.976	25.614	24.375	60.4	36.0	50.0	25.6	1.95	0.43	48.2	12.2	37.8
24	331.6	0.458	71.1	10.3	7.07	2.073	25.498	24.228	60.3	36.0	49.9	25.7	1.94	0.43	48.1	12.1	37.8
25	330.5	0.463	71.1	10.3	7.07	2.159	25.332	24.044	60.1	36.0	49.8	25.7	1.93	0.43	48.0	12.0	37.7
26	329.6	0.468	71.0	10.3	7.08	2.246	25.199	23.892	59.9	36.0	49.6	25.8	1.93	0.43	48.0	11.9	37.7
27	329.0	0.472	71.0	10.2	7.08	2.332	25.117	23.790	59.8	36.0	49.6	25.8	1.92	0.43	47.9	11.9	37.7
28	328.8	0.477	71.0	10.2	7.09	2.418	25.083	23.736	59.8	36.0	49.6	25.8	1.92	0.43	47.9	11.9	37.7
29	328.1	0.482	70.9	10.1	7.10	2.516	24.984	23.614	59.6	36.0	49.5	25.9	1.91	0.43	47.8	11.8	37.7
30	327.6	0.486	70.8	10.1	7.10	2.602	24.918	23.528	59.6	36.0	49.5	26.0	1.91	0.43	47.8	11.8	37.7
31	327.7	0.491	70.8	10.0	7.11	2.688	24.934	23.523	59.5	36.0	49.5	26.0	1.91	0.43	47.8	11.8	37.7
32	327.4	0.496	70.8	10.0	7.12	2.775	24.885	23.453	59.5	36.0	49.5	26.0	1.90	0.43	47.7	11.7	37.7
33	326.8	0.500	70.7	9.9	7.12	2.861	24.802	23.351	59.4	36.0	49.4	26.1	1.90	0.43	47.7	11.7	37.7
34	327.6	0.505	70.7	9.9	7.13	2.958	24.918	23.439	59.5	36.0	49.5	26.1	1.90	0.42	47.7	11.7	37.8
35	327.4	0.510	70.6	9.9	7.14	3.045	24.885	23.386	59.4	36.0	49.5	26.2	1.89	0.42	47.7	11.7	37.9
36	328.0	0.514	70.6	9.8	7.14	3.131	24.967	23.444	59.5	36.0	49.6	26.2	1.90	0.42	47.7	11.7	37.9
37	328.7	0.519	70.6	9.8	7.15	3.217	25.067	23.519	59.5	36.0	49.8	26.2	1.90	0.42	47.8	11.8	38.0
38	329.1	0.524	70.5	9.7	7.16	3.304	25.133	23.562	59.6	36.0	49.8	26.3	1.90	0.41	47.8	11.8	38.1
39	329.2	0.528	70.5	9.7	7.16	3.390	25.150	23.556	59.6	36.0	49.9	26.3	1.90	0.41	47.8	11.8	38.1
40	329.3	0.533	70.5	9.7	7.17	3.476	25.166	23.550	59.6	36.0	49.9	26.3	1.89	0.41	47.8	11.8	38.1
41	330.3	0.538	70.4	9.7	7.18	3.574	25.299	23.653	59.7	36.0	50.0	26.4	1.90	0.41	47.8	11.8	38.2
42	330.7	0.542	70.4	9.6	7.18	3.660	25.365	23.695	59.7	36.0	50.1	26.4	1.90	0.40	47.9	11.8	38.3
43	330.7	0.547	70.3	9.5	7.19	3.746	25.365	23.674	59.7	36.0	50.2	26.5	1.89	0.40	47.9	11.8	38.3
44	331.1	0.552	70.3	9.5	7.19	3.833	25.415	23.699	59.7	36.0	50.2	26.5	1.89	0.40	47.9	11.8	38.4
45	331.4	0.556	70.3	9.5	7.20	3.919	25.464	23.725	59.7	36.0	50.3	26.5	1.89	0.40	47.9	11.9	38.4
46	331.7	0.561	70.2	9.4	7.21	4.005	25.514	23.751	59.8	36.0	50.3	26.6	1.89	0.40	47.9	11.9	38.4
47	332.2	0.565	70.2	9.4	7.21	4.092	25.580	23.792	59.8	36.0	50.4	26.6	1.89	0.39	47.9	11.9	38.5
48	333.0	0.570	70.1	9.4	7.22	4.178	25.696	23.882	59.9	36.0	50.5	26.7	1.90	0.39	48.0	11.9	38.6
49	333.7	0.575	70.1	9.3	7.23	4.275	25.796	23.952	60.0	36.0	50.7	26.7	1.90	0.39	48.0	12.0	38.7
50	334.6	0.579	70.0	9.2	7.23	4.351	25.928	24.059	60.1	36.0	50.9	26.8	1.90	0.38	48.1	12.0	38.8
51	335.5	0.583	70.0	9.2	7.24	4.437	26.061	24.163	60.2	36.0	51.0	26.8	1.90	0.38	48.1	12.1	38.9
52	336.0	0.588	69.9	9.2	7.25	4.524	26.127	24.204	60.2	36.0	51.1	26.9	1.90	0.38	48.1	12.1	39.0
53	337.4	0.593	69.9	9.1	7.25	4.610	26.326	24.371	60.4	36.0	51.3	26.9	1.91	0.37	48.2	12.2	39.1
54	338.4	0.597	69.8	9.1	7.26	4.696	26.475	24.490	60.5	36.0	51.4	27.0	1.91	0.37	48.3	12.2	39.2
55	338.7	0.602	69.8	9.0	7.27	4.794	26.525	24.512	60.5	36.0	51.5	27.0	1.91	0.37	48.3	12.3	39.2
56	340.6	0.607	69.8	9.0	7.27	4.880	26.790	24.741	60.8	36.0	51.8	27.0	1.91	0.36	48.4	12.4	39.4
57	342.4	0.611	69.7	8.9	7.28	4.955	27.055	24.973	61.0	36.0	52.1	27.1	1.92	0.36	48.5	12.5	39.6
58	341.7	0.615	69.6	8.9	7.29	5.042	26.956	24.855	60.9	36.0	52.0	27.2	1.92	0.36	48.4	12.4	39.6
59	342.9	0.621	69.6	8.9	7.29	5.139	27.121	24.986	61.0	36.0	52.1	27.2	1.92	0.35	48.5	12.5	39.7

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	343.8	0.625	69.6	8.8	7.30	5.225	27.254	25.088	61.1	36.0	52.3	27.2	1.92	0.35	48.6	12.5	39.8
61	344.5	0.630	69.6	8.8	7.31	5.312	27.353	25.159	61.2	36.0	52.4	27.2	1.92	0.35	48.6	12.6	39.8
62	345.2	0.634	69.5	8.7	7.31	5.398	27.453	25.229	61.3	36.0	52.5	27.3	1.92	0.35	48.6	12.6	39.9
63	345.2	0.639	69.4	8.6	7.32	5.485	27.453	25.206	61.2	36.0	52.6	27.4	1.92	0.34	48.6	12.6	40.0
64	345.4	0.643	69.3	8.6	7.33	5.571	27.486	25.213	61.2	36.0	52.7	27.5	1.92	0.34	48.6	12.6	40.1
65	346.5	0.649	69.3	8.5	7.33	5.668	27.651	25.343	61.4	36.0	52.8	27.5	1.92	0.34	48.7	12.7	40.2
66	347.1	0.653	69.3	8.5	7.34	5.754	27.734	25.397	61.4	36.0	52.9	27.5	1.92	0.34	48.7	12.7	40.2
67	348.5	0.658	69.3	8.5	7.35	5.841	27.933	25.560	61.6	36.0	53.1	27.5	1.93	0.33	48.8	12.8	40.3
68	348.8	0.662	69.2	8.4	7.36	5.927	27.983	25.583	61.6	36.0	53.2	27.6	1.93	0.33	48.8	12.8	40.4
69	349.7	0.667	69.2	8.4	7.36	6.014	28.115	25.683	61.7	36.0	53.3	27.6	1.93	0.33	48.9	12.8	40.5
70	350.8	0.672	69.1	8.3	7.37	6.111	28.264	25.796	61.8	36.0	53.5	27.7	1.93	0.32	48.9	12.9	40.6
71	350.7	0.677	69.0	8.2	7.38	6.197	28.248	25.756	61.8	36.0	53.5	27.8	1.93	0.32	48.9	12.9	40.7
72	351.9	0.681	69.0	8.2	7.38	6.273	28.430	25.906	61.9	36.0	53.7	27.8	1.93	0.32	49.0	13.0	40.8
73	354.1	0.686	69.0	8.2	7.39	6.370	28.745	26.173	62.2	36.0	54.0	27.8	1.94	0.31	49.1	13.1	40.9
74	355.5	0.690	68.9	8.2	7.40	6.456	28.944	26.334	62.4	36.0	54.2	27.9	1.95	0.31	49.2	13.2	41.0
75	356.5	0.695	68.9	8.1	7.40	6.553	29.093	26.445	62.5	36.0	54.3	27.9	1.95	0.31	49.2	13.2	41.1
76	357.4	0.699	68.8	8.1	7.41	6.629	29.225	26.547	62.6	36.0	54.5	28.0	1.95	0.30	49.3	13.3	41.2
77	358.7	0.704	68.8	8.0	7.42	6.715	29.408	26.692	62.7	36.0	54.7	28.0	1.95	0.30	49.4	13.3	41.4
78	359.7	0.709	68.7	8.0	7.42	6.802	29.557	26.805	62.8	36.0	54.9	28.1	1.95	0.30	49.4	13.4	41.5
79	359.7	0.713	68.7	7.9	7.43	6.888	29.557	26.780	62.8	36.0	54.9	28.1	1.95	0.30	49.4	13.4	41.5
80	360.6	0.718	68.7	7.9	7.44	6.974	29.689	26.877	62.9	36.0	55.0	28.1	1.96	0.29	49.5	13.4	41.6
81	361.7	0.723	68.6	7.8	7.45	7.072	29.838	26.987	63.0	36.0	55.2	28.2	1.96	0.29	49.5	13.5	41.7
82	361.9	0.727	68.6	7.8	7.45	7.147	29.871	26.995	63.0	36.0	55.2	28.2	1.96	0.29	49.5	13.5	41.7
83	362.5	0.731	68.5	7.7	7.46	7.234	29.954	27.046	63.1	36.0	55.4	28.3	1.96	0.29	49.5	13.5	41.8
84	363.7	0.736	68.4	7.7	7.47	7.320	30.136	27.189	63.2	36.0	55.6	28.4	1.96	0.28	49.6	13.6	42.0
85	365.3	0.741	68.4	7.6	7.47	7.417	30.368	27.375	63.4	36.0	55.8	28.4	1.96	0.28	49.7	13.7	42.1
86	365.3	0.746	68.3	7.6	7.48	7.503	30.368	27.349	63.4	36.0	55.8	28.5	1.96	0.28	49.7	13.7	42.1
87	366.0	0.750	68.3	7.5	7.49	7.590	30.468	27.414	63.4	36.0	55.9	28.5	1.96	0.28	49.7	13.7	42.2
88	367.1	0.755	68.3	7.5	7.49	7.676	30.617	27.526	63.5	36.0	56.1	28.5	1.96	0.27	49.8	13.8	42.3
89	367.6	0.759	68.2	7.4	7.50	7.763	30.700	27.576	63.6	36.0	56.2	28.6	1.96	0.27	49.8	13.8	42.4
90	368.7	0.764	68.1	7.4	7.51	7.849	30.849	27.686	63.7	36.0	56.3	28.7	1.97	0.27	49.9	13.8	42.5
91	370.0	0.768	68.1	7.3	7.52	7.935	31.048	27.843	63.9	36.0	56.6	28.7	1.97	0.26	49.9	13.9	42.6
92	371.0	0.773	68.1	7.3	7.52	8.022	31.180	27.938	64.0	36.0	56.7	28.7	1.97	0.26	50.0	14.0	42.7
93	371.3	0.778	68.0	7.2	7.53	8.119	31.230	27.953	64.0	36.0	56.8	28.8	1.97	0.26	50.0	14.0	42.8
94	373.1	0.783	68.0	7.2	7.54	8.205	31.495	28.170	64.2	36.0	57.0	28.8	1.98	0.26	50.1	14.1	42.9
95	374.5	0.787	67.9	7.2	7.54	8.292	31.694	28.325	64.3	36.0	57.2	28.9	1.98	0.25	50.2	14.2	43.0
96	376.5	0.792	67.9	7.1	7.55	8.378	31.976	28.555	64.6	36.0	57.5	28.9	1.99	0.25	50.3	14.3	43.2
97	377.0	0.796	67.8	7.0	7.56	8.464	32.058	28.604	64.6	36.0	57.6	29.0	1.99	0.25	50.3	14.3	43.3
98	378.5	0.801	67.7	7.0	7.57	8.551	32.274	28.773	64.8	36.0	57.8	29.1	1.99	0.24	50.4	14.4	43.5
99	378.4	0.806	67.7	6.9	7.57	8.637	32.257	28.730	64.8	36.0	57.9	29.1	1.99	0.24	50.4	14.4	43.5
100	379.4	0.810	67.6	6.9	7.58	8.723	32.406	28.838	64.9	36.0	58.0	29.2	1.99	0.24	50.4	14.4	43.6

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	381.4	0.815	67.6	6.8	7.59	8.821	32.688	29.063	65.1	36.0	58.3	29.2	1.99	0.23	50.6	14.5	43.7
102	383.6	0.820	67.6	6.8	7.60	8.907	33.003	29.322	65.3	36.0	58.6	29.2	2.00	0.23	50.7	14.7	43.9
103	384.1	0.824	67.5	6.7	7.60	8.993	33.086	29.369	65.4	36.0	58.7	29.3	2.00	0.23	50.7	14.7	44.0
104	385.1	0.829	67.4	6.6	7.61	9.080	33.218	29.461	65.5	36.0	58.9	29.4	2.00	0.22	50.8	14.7	44.1
105	386.1	0.834	67.4	6.6	7.62	9.166	33.367	29.568	65.6	36.0	59.0	29.4	2.00	0.22	50.8	14.8	44.2
106	387.1	0.838	67.3	6.5	7.62	9.252	33.516	29.674	65.7	36.0	59.2	29.5	2.01	0.22	50.9	14.8	44.3
107	388.8	0.843	67.3	6.5	7.63	9.339	33.765	29.870	65.9	36.0	59.4	29.5	2.01	0.22	51.0	14.9	44.5
108	390.3	0.847	67.2	6.4	7.64	9.425	33.980	30.036	66.1	36.0	59.6	29.6	2.01	0.21	51.0	15.0	44.6
109	391.2	0.852	67.1	6.4	7.65	9.512	34.113	30.127	66.1	36.0	59.8	29.7	2.02	0.21	51.1	15.1	44.7
110	391.9	0.856	67.1	6.3	7.65	9.598	34.212	30.187	66.2	36.0	59.9	29.7	2.01	0.21	51.1	15.1	44.8
111	393.2	0.861	67.0	6.2	7.66	9.684	34.394	30.322	66.3	36.0	60.1	29.8	2.02	0.21	51.2	15.2	45.0
112	394.1	0.866	66.9	6.2	7.67	9.771	34.527	30.412	66.4	36.0	60.3	29.9	2.02	0.20	51.2	15.2	45.1
113	395.1	0.870	66.9	6.1	7.68	9.857	34.676	30.517	66.5	36.0	60.4	29.9	2.02	0.20	51.3	15.3	45.1
114	396.3	0.874	66.9	6.1	7.68	9.933	34.842	30.640	66.7	36.0	60.6	29.9	2.02	0.20	51.3	15.3	45.3
115	397.0	0.879	66.8	6.0	7.69	10.030	34.941	30.695	66.7	36.0	60.7	30.0	2.02	0.20	51.4	15.3	45.4
116	397.3	0.884	66.7	6.0	7.70	10.116	34.991	30.710	66.7	36.0	60.8	30.1	2.02	0.19	51.4	15.4	45.4
117	398.3	0.888	66.6	5.9	7.71	10.202	35.140	30.814	66.8	36.0	61.0	30.2	2.02	0.19	51.4	15.4	45.6
118	398.8	0.893	66.6	5.8	7.71	10.289	35.206	30.843	66.9	36.0	61.1	30.2	2.02	0.19	51.4	15.4	45.6
119	400.0	0.898	66.5	5.8	7.72	10.375	35.372	30.961	67.0	36.0	61.2	30.3	2.02	0.19	51.5	15.5	45.8
120	401.0	0.902	66.5	5.7	7.73	10.462	35.521	31.064	67.1	36.0	61.4	30.3	2.03	0.18	51.6	15.5	45.8
121	401.9	0.907	66.5	5.7	7.73	10.548	35.654	31.152	67.2	36.0	61.5	30.3	2.03	0.18	51.6	15.6	45.9
122	402.6	0.911	66.4	5.6	7.74	10.634	35.753	31.210	67.2	36.0	61.6	30.4	2.03	0.18	51.6	15.6	46.0
123	403.3	0.916	66.3	5.5	7.75	10.721	35.852	31.267	67.3	36.0	61.7	30.5	2.03	0.18	51.7	15.6	46.1
124	404.3	0.921	66.3	5.5	7.76	10.818	36.001	31.366	67.4	36.0	61.9	30.5	2.03	0.17	51.7	15.7	46.2
125	405.5	0.925	66.2	5.5	7.77	10.904	36.167	31.482	67.5	36.0	62.0	30.6	2.03	0.17	51.8	15.7	46.3
126	406.1	0.930	66.2	5.4	7.77	10.991	36.267	31.539	67.6	36.0	62.2	30.6	2.03	0.17	51.8	15.8	46.4
127	407.5	0.935	66.1	5.4	7.78	11.077	36.465	31.685	67.7	36.0	62.3	30.7	2.03	0.17	51.9	15.8	46.5
128	406.8	0.939	66.1	5.3	7.79	11.163	36.366	31.565	67.6	36.0	62.3	30.7	2.03	0.17	51.8	15.8	46.5
129	408.0	0.944	66.0	5.3	7.80	11.261	36.532	31.677	67.7	36.0	62.4	30.8	2.03	0.17	51.9	15.8	46.6
130	409.9	0.949	66.0	5.2	7.80	11.347	36.813	31.895	67.9	36.0	62.7	30.8	2.03	0.16	52.0	15.9	46.8
131	409.7	0.953	65.9	5.1	7.81	11.433	36.780	31.834	67.9	36.0	62.7	30.9	2.03	0.16	51.9	15.9	46.8
132	410.4	0.958	65.9	5.1	7.82	11.520	36.880	31.890	67.9	36.0	62.8	30.9	2.03	0.16	52.0	15.9	46.9
133	411.1	0.963	65.8	5.0	7.83	11.606	36.979	31.946	68.0	36.0	62.9	31.0	2.03	0.16	52.0	16.0	47.0
134	411.1	0.967	65.7	5.0	7.84	11.692	36.979	31.914	67.9	36.0	63.0	31.1	2.03	0.16	52.0	16.0	47.0
135	411.5	0.972	65.7	4.9	7.84	11.790	37.045	31.937	68.0	36.0	63.0	31.1	2.03	0.15	52.0	16.0	47.1
136	412.3	0.977	65.6	4.9	7.85	11.876	37.161	32.007	68.0	36.0	63.2	31.2	2.03	0.15	52.0	16.0	47.2
137	413.5	0.981	65.6	4.8	7.86	11.951	37.327	32.125	68.1	36.0	63.3	31.2	2.03	0.15	52.1	16.1	47.3
138	413.8	0.985	65.5	4.8	7.87	12.038	37.377	32.136	68.2	36.0	63.4	31.3	2.03	0.15	52.1	16.1	47.3
139	415.1	0.991	65.5	4.7	7.87	12.135	37.559	32.260	68.3	36.0	63.6	31.3	2.03	0.15	52.2	16.1	47.4
140	415.1	0.995	65.5	4.7	7.88	12.221	37.559	32.227	68.2	36.0	63.6	31.3	2.03	0.15	52.1	16.1	47.4
141	416.2	1.000	65.4	4.7	7.89	12.308	37.724	32.340	68.4	36.0	63.7	31.4	2.03	0.14	52.2	16.2	47.5

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	417.0	1.004	65.4	4.6	7.90	12.394	37.840	32.409	68.4	36.0	63.8	31.4	2.03	0.14	52.2	16.2	47.6
143	417.1	1.008	65.3	4.5	7.90	12.470	37.857	32.395	68.4	36.0	63.9	31.5	2.03	0.14	52.2	16.2	47.7
144	418.3	1.013	65.2	4.5	7.91	12.556	38.023	32.507	68.5	36.0	64.1	31.6	2.03	0.14	52.3	16.3	47.8
145	418.4	1.018	65.2	4.4	7.92	12.653	38.039	32.485	68.5	36.0	64.1	31.6	2.03	0.14	52.3	16.2	47.8
146	419.3	1.022	65.2	4.4	7.93	12.729	38.172	32.572	68.6	36.0	64.2	31.6	2.03	0.14	52.3	16.3	47.9
147	419.9	1.027	65.2	4.4	7.94	12.815	38.255	32.611	68.6	36.0	64.3	31.6	2.03	0.13	52.3	16.3	48.0
148	420.9	1.032	65.1	4.3	7.94	12.912	38.404	32.704	68.7	36.0	64.4	31.7	2.03	0.13	52.4	16.4	48.0
149	422.0	1.036	65.1	4.3	7.95	12.988	38.553	32.804	68.8	36.0	64.5	31.7	2.03	0.13	52.4	16.4	48.1
150	422.8	1.040	65.0	4.2	7.96	13.074	38.669	32.872	68.9	36.0	64.7	31.8	2.03	0.13	52.5	16.4	48.3
151	423.7	1.045	64.9	4.1	7.97	13.171	38.801	32.949	69.0	36.0	64.8	31.9	2.03	0.13	52.5	16.5	48.4
152	424.6	1.050	64.9	4.1	7.98	13.258	38.934	33.031	69.1	36.0	64.9	31.9	2.04	0.12	52.5	16.5	48.4
153	425.2	1.055	64.9	4.1	7.98	13.344	39.017	33.069	69.1	36.0	65.0	31.9	2.04	0.12	52.6	16.5	48.5
154	426.1	1.059	64.8	4.0	7.99	13.420	39.149	33.154	69.2	36.0	65.2	32.0	2.04	0.12	52.6	16.6	48.6
155	427.9	1.064	64.8	4.0	8.00	13.517	39.414	33.346	69.4	36.0	65.4	32.0	2.04	0.12	52.7	16.7	48.7
156	429.3	1.068	64.7	3.9	8.01	13.603	39.613	33.483	69.5	36.0	65.6	32.1	2.04	0.12	52.8	16.7	48.8
157	431.1	1.073	64.7	3.9	8.02	13.690	39.878	33.678	69.7	36.0	65.8	32.1	2.05	0.12	52.9	16.8	49.0
158	432.2	1.077	64.6	3.8	8.02	13.776	40.027	33.772	69.8	36.0	66.0	32.2	2.05	0.11	52.9	16.9	49.1
159	432.4	1.082	64.5	3.8	8.03	13.862	40.061	33.766	69.8	36.0	66.0	32.3	2.05	0.11	52.9	16.9	49.1
160	432.7	1.086	64.5	3.7	8.04	13.949	40.110	33.774	69.8	36.0	66.1	32.3	2.04	0.11	52.9	16.9	49.2
161	434.3	1.091	64.4	3.7	8.05	14.035	40.342	33.939	70.0	36.0	66.3	32.4	2.05	0.11	53.0	17.0	49.3
162	436.1	1.096	64.4	3.6	8.06	14.132	40.591	34.113	70.1	36.0	66.5	32.4	2.05	0.11	53.1	17.1	49.4
163	436.3	1.101	64.3	3.6	8.07	14.219	40.624	34.106	70.1	36.0	66.6	32.5	2.05	0.10	53.1	17.1	49.5
164	438.0	1.105	64.3	3.5	8.07	14.305	40.872	34.284	70.3	36.0	66.8	32.5	2.05	0.10	53.2	17.1	49.7
165	438.9	1.109	64.2	3.4	8.08	14.381	41.005	34.367	70.4	36.0	67.0	32.6	2.05	0.10	53.2	17.2	49.8
166	440.3	1.114	64.2	3.4	8.09	14.478	41.204	34.497	70.5	36.0	67.1	32.6	2.06	0.10	53.3	17.2	49.9
167	441.2	1.119	64.1	3.3	8.10	14.564	41.336	34.575	70.6	36.0	67.3	32.7	2.06	0.10	53.3	17.3	50.0
168	442.4	1.124	64.0	3.2	8.11	14.651	41.502	34.680	70.7	36.0	67.5	32.8	2.06	0.09	53.4	17.3	50.1
169	442.9	1.128	63.9	3.2	8.11	14.737	41.585	34.715	70.7	36.0	67.6	32.9	2.06	0.09	53.4	17.4	50.2
170	444.4	1.133	63.9	3.1	8.12	14.823	41.800	34.863	70.9	36.0	67.8	32.9	2.06	0.09	53.5	17.4	50.4
171	445.3	1.137	63.8	3.0	8.13	14.910	41.933	34.939	71.0	36.0	68.0	33.0	2.06	0.09	53.5	17.5	50.5
172	446.2	1.142	63.7	3.0	8.14	14.996	42.049	35.002	71.0	36.0	68.1	33.1	2.06	0.08	53.5	17.5	50.6
173	447.1	1.146	63.7	2.9	8.15	15.082	42.181	35.078	71.1	36.0	68.2	33.1	2.06	0.08	53.6	17.5	50.7
174	447.9	1.151	63.6	2.8	8.16	15.169	42.297	35.140	71.2	36.0	68.3	33.2	2.06	0.08	53.6	17.6	50.7
175	448.3	1.156	63.6	2.8	8.16	15.255	42.363	35.160	71.2	36.0	68.4	33.2	2.06	0.08	53.6	17.6	50.8
176	449.7	1.160	63.5	2.7	8.17	15.342	42.562	35.291	71.3	36.0	68.6	33.3	2.06	0.08	53.7	17.6	51.0
177	450.7	1.165	63.4	2.6	8.18	15.428	42.711	35.381	71.4	36.0	68.8	33.4	2.06	0.07	53.7	17.7	51.1
178	452.5	1.169	63.3	2.6	8.19	15.514	42.960	35.554	71.6	36.0	69.0	33.5	2.06	0.07	53.8	17.8	51.2
179	452.8	1.174	63.2	2.5	8.20	15.601	43.010	35.559	71.6	36.0	69.1	33.6	2.06	0.07	53.8	17.8	51.3
180	453.9	1.178	63.2	2.4	8.21	15.687	43.175	35.661	71.7	36.0	69.2	33.6	2.06	0.07	53.9	17.8	51.4
181	454.7	1.184	63.2	2.4	8.22	15.784	43.291	35.717	71.7	36.0	69.4	33.6	2.06	0.07	53.9	17.9	51.5
182	455.6	1.188	63.1	2.3	8.22	15.871	43.407	35.777	71.8	36.0	69.5	33.7	2.06	0.06	53.9	17.9	51.6

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	457.0	1.193	63.0	2.2	8.23	15.957	43.623	35.921	71.9	36.0	69.7	33.8	2.06	0.06	54.0	18.0	51.8
184	458.5	1.197	62.9	2.1	8.24	16.043	43.838	36.064	72.1	36.0	70.0	33.9	2.06	0.06	54.1	18.0	51.9
185	459.6	1.202	62.8	2.1	8.25	16.130	43.987	36.151	72.2	36.0	70.1	34.0	2.06	0.06	54.1	18.1	52.0
186	460.4	1.206	62.7	2.0	8.26	16.216	44.103	36.210	72.2	36.0	70.3	34.1	2.06	0.05	54.1	18.1	52.2
187	460.8	1.211	62.7	1.9	8.27	16.302	44.169	36.227	72.2	36.0	70.3	34.1	2.06	0.05	54.1	18.1	52.2
188	461.7	1.216	62.6	1.8	8.28	16.389	44.302	36.300	72.3	36.0	70.5	34.2	2.06	0.05	54.2	18.2	52.3
189	462.5	1.220	62.5	1.8	8.28	16.475	44.418	36.359	72.4	36.0	70.6	34.3	2.06	0.05	54.2	18.2	52.4
190	463.0	1.225	62.4	1.6	8.29	16.561	44.484	36.376	72.4	36.0	70.8	34.4	2.06	0.05	54.2	18.2	52.6
191	464.6	1.230	62.3	1.6	8.30	16.659	44.716	36.526	72.5	36.0	71.0	34.5	2.06	0.04	54.3	18.3	52.7
192	465.4	1.234	62.3	1.5	8.31	16.734	44.832	36.588	72.6	36.0	71.1	34.5	2.06	0.04	54.3	18.3	52.8
193	465.6	1.239	62.2	1.4	8.32	16.831	44.865	36.572	72.6	36.0	71.2	34.6	2.06	0.04	54.3	18.3	52.9
194	466.8	1.244	62.1	1.3	8.33	16.918	45.031	36.671	72.7	36.0	71.3	34.7	2.06	0.04	54.4	18.3	53.0
195	467.2	1.248	62.0	1.3	8.34	17.004	45.097	36.687	72.7	36.0	71.4	34.8	2.06	0.03	54.4	18.3	53.1
196	469.1	1.253	62.0	1.2	8.35	17.090	45.362	36.868	72.9	36.0	71.7	34.8	2.06	0.03	54.5	18.4	53.3
197	469.9	1.257	61.9	1.1	8.35	17.177	45.478	36.925	72.9	36.0	71.8	34.9	2.06	0.03	54.5	18.5	53.4
198	471.1	1.262	61.8	1.0	8.36	17.263	45.660	37.037	73.1	36.0	72.1	35.0	2.06	0.03	54.5	18.5	53.5
199	471.9	1.267	61.7	0.9	8.37	17.360	45.776	37.088	73.1	36.0	72.2	35.1	2.06	0.03	54.6	18.5	53.6
200	472.3	1.271	61.6	0.9	8.38	17.436	45.826	37.095	73.1	36.0	72.3	35.2	2.05	0.02	54.6	18.5	53.7
201	472.5	1.275	61.6	0.8	8.39	17.522	45.859	37.082	73.1	36.0	72.3	35.2	2.05	0.02	54.6	18.5	53.8
202	473.1	1.280	61.5	0.7	8.40	17.609	45.942	37.111	73.1	36.0	72.4	35.3	2.05	0.02	54.6	18.6	53.9
203	473.7	1.285	61.4	0.6	8.41	17.695	46.025	37.139	73.2	36.0	72.5	35.4	2.05	0.02	54.6	18.6	54.0
204	474.9	1.289	61.3	0.5	8.42	17.781	46.207	37.250	73.3	36.0	72.8	35.5	2.05	0.01	54.6	18.6	54.1
205	475.6	1.294	61.2	0.4	8.42	17.868	46.306	37.291	73.3	36.0	72.9	35.6	2.05	0.01	54.7	18.6	54.3
206	476.8	1.298	61.1	0.4	8.43	17.954	46.472	37.387	73.4	36.0	73.1	35.7	2.05	0.01	54.7	18.7	54.4
207	476.6	1.303	61.0	0.3	8.44	18.041	46.456	37.334	73.4	36.0	73.1	35.8	2.04	0.01	54.7	18.7	54.4
208	477.4	1.307	61.0	0.2	8.45	18.127	46.572	37.388	73.4	36.0	73.2	35.8	2.04	0.01	54.7	18.7	54.5
209	478.6	1.312	60.9	0.1	8.46	18.213	46.737	37.484	73.5	36.0	73.4	35.9	2.04	0.00	54.8	18.7	54.6
210	480.2	1.317	60.8	0.0	8.47	18.300	46.969	37.633	73.7	36.0	73.6	36.0	2.05	0.00	54.8	18.8	54.8
211	481.1	1.321	60.7	-0.1	8.48	18.375	47.102	37.705	73.7	36.0	73.8	36.1	2.05	0.00	54.9	18.9	54.9
212	482.5	1.325	60.7	-0.1	8.49	18.462	47.301	37.827	73.8	36.0	74.0	36.1	2.05	0.00	54.9	18.9	55.1
213	482.4	1.330	60.6	-0.2	8.49	18.548	47.284	37.773	73.8	36.0	74.0	36.2	2.04	0.00	54.9	18.9	55.1
214	482.5	1.334	60.5	-0.2	8.50	18.634	47.301	37.745	73.8	36.0	74.0	36.3	2.04	-0.01	54.9	18.9	55.1
215	483.3	1.339	60.5	-0.3	8.51	18.721	47.417	37.799	73.8	36.0	74.1	36.3	2.04	-0.01	54.9	18.9	55.2
216	483.8	1.343	60.4	-0.4	8.52	18.807	47.483	37.811	73.8	36.0	74.2	36.4	2.04	-0.01	54.9	18.9	55.3
217	484.2	1.348	60.3	-0.5	8.53	18.893	47.549	37.824	73.8	36.0	74.3	36.5	2.04	-0.01	54.9	18.9	55.4
218	483.6	1.353	60.3	-0.4	8.54	18.980	47.466	37.716	73.7	36.0	74.2	36.5	2.03	-0.01	54.9	18.9	55.3
219	483.1	1.357	60.3	-0.5	8.55	19.066	47.383	37.608	73.6	36.0	74.1	36.5	2.03	-0.01	54.8	18.8	55.3
220	483.3	1.362	60.3	-0.5	8.56	19.153	47.417	37.594	73.6	36.0	74.1	36.5	2.03	-0.01	54.8	18.8	55.3
221	483.3	1.366	60.3	-0.5	8.57	19.239	47.417	37.553	73.6	36.0	74.0	36.5	2.03	-0.01	54.8	18.8	55.3
222	484.3	1.371	60.3	-0.5	8.58	19.325	47.566	37.632	73.7	36.0	74.2	36.5	2.03	-0.01	54.8	18.8	55.3
223	484.4	1.375	60.2	-0.6	8.59	19.412	47.582	37.604	73.6	36.0	74.2	36.6	2.03	-0.02	54.8	18.8	55.4

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	485.6	1.381	60.1	-0.7	8.60	19.509	47.748	37.692	73.7	36.0	74.4	36.7	2.03	-0.02	54.9	18.8	55.6
225	486.8	1.385	60.0	-0.8	8.61	19.595	47.930	37.797	73.8	36.0	74.6	36.8	2.03	-0.02	54.9	18.9	55.7
226	487.0	1.390	60.0	-0.8	8.61	19.682	47.947	37.769	73.8	36.0	74.6	36.8	2.03	-0.02	54.9	18.9	55.7
227	486.8	1.394	60.0	-0.8	8.62	19.768	47.930	37.714	73.7	36.0	74.5	36.8	2.02	-0.02	54.9	18.9	55.7
228	486.8	1.399	60.0	-0.8	8.63	19.865	47.930	37.668	73.7	36.0	74.5	36.8	2.02	-0.02	54.9	18.8	55.7
229	486.6	1.404	59.9	-0.9	8.64	19.952	47.897	37.600	73.6	36.0	74.5	36.9	2.02	-0.02	54.8	18.8	55.7
230	487.6	1.407	59.8	-0.9	8.65	20.005	48.046	37.693	73.7	36.0	74.7	37.0	2.02	-0.02	54.9	18.8	55.8

Sample Failure Photographs

T-5781

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. U-2412 B

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project 39406.1.1 **County** GUILFORD **Owner**

Date: Sampled 3/1/13 **Received** 11/8/13 **Reported** 11/12/13

Sampled from RDWY **By** N. ROBERSON

Submitted by M. HURT 1995 **Standard Specifications**

788289 TO 788289
11/14/13

TEST RESULTS

Proj. Sample No.		ST-17 # 1					
Lab. Sample No.		788289					
Retained #4 Sieve	%	1					
Passing #10 Sieve	%	82					
Passing #40 Sieve	%	56					
Passing #200 Sieve	%	31					

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	43.5					
Fine Sand Ret - #270	%	22.9					
Silt 0.05 - 0.005 mm	%	19.5					
Clay < 0.005 mm	%	14.1					
T-#		T-5782					
Specific Gravity		2.657					

L. L.		28					
P. I.		NP					
AASHTO Classification		A-2-4(0)					
Station		403+45					
Offset		3 FT RT					
Alignment		L					
Location							
Depth (Ft)		5.5 FT					
	to	6.9 FT					
Final Moisture Content	%	16.1					

cc: N. ROBERSON
SURIYATI BS

Soils Engineer

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	14.14	16.54	**Plastic Limits:**	0	
Dry Density (pcf):	109.26	116.77	**Plasticity Index (%):**	0	
Saturation (%):	72.88	105.17			
Void Ratio:	0.5126	0.4153	**Specific Gravity:**	2.650	Measured

Soil Description: Tannish colored silty sand

Project Number: 39406.1.1 **Depth:** 5.5 - 6.9 ft

Sample Number: ST-17 **Boring Number:**

Project: U-2412B

Client: T-5782

Location: Guilford County (Sta. 403+45)

Remarks:
Solid Height is 0.66206 inch; Blows/Ft = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	14.14	16.54	**Plastic Limits:**	0	
Dry Density (pcf):	109.26	116.77	**Plasticity Index (%):**	0	
Saturation (%):	72.88	105.17			
Void Ratio:	0.5126	0.4153	**Specific Gravity:**	2.650	Measured

Soil Description: Tannish colored silty sand

Project Number: 39406.1.1 **Depth:** 5.5 - 6.9 ft

Sample Number: ST-17 **Boring Number:**

Project: U-2412B

Client: T-5782

Location: Guilford County (Sta. 403+45)

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Solid Height is 0.66206 inch; Blows/Ft = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	14.14	16.54	**Plastic Limits:**	0	
Dry Density (pcf):	109.26	116.77	**Plasticity Index (%):**	0	
Saturation (%):	72.88	105.17			
Void Ratio:	0.5126	0.4153	**Specific Gravity:**	2.650	Measured

Soil Description: Tannish colored silty sand

Project Number: 39406.1.1 **Depth:** 5.5 - 6.9 ft

Sample Number: ST-17 **Boring Number:**

Project: U-2412B

Client: T-5782

Location: Guilford County (Sta. 403+45)

Remarks:
Solid Height is 0.66206 inch; Blows/Ft = NA

Consolidation Test Results
Summary

Project: U-2412B
Location: Guilford County (Sta. 403+45)
Job Number: T-5782

Project Number: 39406.1.1

Sample Number: ST-17
Boring Number:
Depth: 5.5 - 6.9 ft
Sample Type: Undisturbed

Soil Description:
Tannish colored silty sand
Remarks:
Solid Height is 0.66206 inch; Blows/Ft = NA

Test Number:
Test Date:

Index	Load Sequence (tsf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	0.9998	0.3388	0.00	0.5126	0.000		0.000	
1	0.031	0.0004	0.9994	0.3384	0.04	0.5120	0.063		12365.947	
2	0.063	0.0011	0.9987	0.3377	0.11	0.5109	0.120		6410.211	
3	0.125	0.0033	0.9965	0.3355	0.33	0.5076	0.391		1967.212	
4	0.250	0.0074	0.9924	0.3314	0.74	0.5014	0.365		2087.326	
5	0.500	0.0137	0.9861	0.3251	1.37	0.4918	0.563		1336.479	
6	1.000	0.0232	0.9766	0.3156	2.32	0.4775	0.360		2050.027	
7	2.000	0.0372	0.9626	0.3016	3.72	0.4563	0.627		1143.544	
8	4.000	0.0549	0.9449	0.2839	5.49	0.4295	0.336		2053.735	
9	2.000	0.0530	0.9468	0.2858	5.30	0.4324	0.000		0.000	
10	1.000	0.0507	0.9491	0.2881	5.07	0.4359	0.000		0.000	
11	0.500	0.0475	0.9523	0.2913	4.75	0.4407	0.000		0.000	
12	1.000	0.0493	0.9505	0.2895	4.93	0.4380	0.000		0.000	
13	2.000	0.0522	0.9476	0.2866	5.22	0.4336	0.000		0.000	
14	4.000	0.0582	0.9416	0.2806	5.82	0.4245	0.000		0.000	
15	8.000	0.0778	0.9220	0.2610	7.78	0.3949	0.147		4483.947	
16	16.000	0.1028	0.8970	0.2360	10.28	0.3570	0.340		1830.119	
17	4.000	0.0977	0.9021	0.2411	9.77	0.3648	0.000		0.000	
18	0.016	0.0643	0.9355	0.2745	6.43	0.4153	0.000		0.000	

Tested By:

Checked By:

Consolidation Test
Consolidation Specimen Information

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County (Sta. 403+45)
Job Number: T-5782 **Test Date:**

Sample Number: ST-17 **Soil Description:**
Boring Number: Tannish colored silty sand
Depth: 5.5 - 6.9 ft **Remarks:**
Sample Type: Undisturbed Solid Height is 0.66206 inch; Blows/Ft = NA

Test Number:
Liquid Limit: 0.0000 **Initial Void Ratio:** 0.5126 **Initial Height (in):** 0.9998
Plastic Limit: 0.0000 **Plasticity Index (%):** 0.0000 **Initial Diameter (in):** 2.4999
Specific Gravity: 2.6500 Measured **Weight of Ring (g):** 111.1800

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	160.64	164.02
Dry Soil + Container (g)	140.74	140.74
Weight of Container (g)	0.00	0.00
Moisture Content (%)	14.14	16.54
Void Ratio	0.5126	0.4153
Saturation (%)	72.88	105.17
Dry Density (pcf)	109.26	116.77

Tested By: **Checked By:**

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Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date

Tested By:

Effective Stress at Maximum Deviator Stress Criterion

Deviator Stress Vs. Axial Strain

Initial	Specimen A	B	C	D
Water Content (%)	13.6	13.6	13.6	
Dry Density (pcf)	115.4	118.5	119.6	
Saturation (%)	82.40	90.21	93.33	
Void Ratio	0.434	0.396	0.383	
Diameter (in)	2.858	2.873	2.937	
Height (in)	5.909	5.693	5.396	
Specific Gravity	2.66	2.66	2.66	
Liquid Limit	0	0	0	
Plastic Limit	0	0	0	
After Consolidation	**A**	**B**	**C**	**D**
B-Value	0.00	0.00	0.00	
Water Content (%)	13.6	13.9	14.1	
Dry Density (pcf)	118.02	119.17	120.84	
Saturation (%)	100.00	100.00	100.00	
Void Ratio	0.405	0.392	0.373	
Effective Stress (psi)	3.0	6.0	12.0	
Back Press. (psi)	80.5	80.5	80.5	
Rate of Strain	0.009	0.009	0.009	

Maximium Deviator Stress Criterion	
C (psi)	0.0
C' (psi)	0.0
Ø (deg)	0.0
Ø' (deg)	0.0

After Shear	A	B	C	D
σ'1 at Failure (psi)	6.92	12.76	119.39	
σ'3 at Failure (psi)	2.14	3.54	32.58	

Project:	U-2412B	N/A	N/A	N/A	N/A
Location:	Guilford County (Sta. 403+45)				
Project Number:	39406.1.1				
Boring Number:					
Sample Number:	ST-17				
Depth:	5.5 - 6.9 ft				
Sample Type:	Undisturbed	Failure Photographs			
Description:					
Test Type	Consolidated Undrained				
Remarks	Multi-Stage.				

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Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date:

Tested By:

Deviator Stress vs. Axial Strain

Principal Stress Ratio vs. Axial Strain

Change in Pore Pressure vs. Axial Strain
8.0
3.0
-2.0
-7.0
-12.0
-17.0
-22.0
Change in Pore Pressure (psi)
0.000
5.000
10.000
15.000
20.000
25.000
Axial Strain (%)
Specimen A
Specimen B
Specimen C
Specimen D

Mohr Stress Circles at Maximum Deviator Stress Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at Maximum Principal Stress Ratio Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at 15% Axial Strain Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)
80.0
60.0
40.0
20.0
0.0
Q (psi)
0.0
20.0
40.0
60.0
80.0
P' (psi)
Specimen A
Specimen B
Specimen C
Specimen D
Tangent Line

Stress Paths (Total)
(C' = 0.0 Ø' = 0.0)
60.0
45.0
30.0
15.0
0.0
Q (psi)
0.0
15.0
30.0
45.0
60.0
P (psi)

Specimen A Shear Data

CU Triaxial Test

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File Location
T-5782.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5782
Sample Location: Guilford County (Sta. 403+45)
Sample Description: Tannish-orange colored silty sand
Remarks: 30° shear plane

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.6570001
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.858	2.839	
Height (in)	5.909	5.855	
Weight (grams)	1304.00		1333.00
Moisture (%)	13.58		16.10
Dry Density (pcf)	115.36	118.02	
Saturation (%)	82.40	100.00	
Void Ratio	0.434	0.405	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 83.500
Effective Confining Stress (psi): 3.0
Corrected Peak Deviator Stress (psi): 4.779 at reading number: 13

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	33.6	0.102	80.5	0.0	6.33	0.000	0.000	0.000	3.0	3.0	3.0	3.0	1.00	0.00	3.0	0.0	3.0
1	49.2	0.106	81.1	0.6	6.33	0.068	2.463	2.435	5.5	3.0	4.8	2.4	2.02	0.26	4.2	1.2	3.6
2	52.5	0.111	81.4	0.9	6.34	0.166	2.988	2.919	5.9	3.0	5.0	2.1	2.39	0.32	4.5	1.5	3.6
3	54.5	0.116	81.6	1.1	6.34	0.244	3.296	3.194	6.2	3.0	5.1	1.9	2.65	0.34	4.6	1.6	3.5
4	56.2	0.121	81.6	1.1	6.35	0.332	3.568	3.428	6.4	3.0	5.4	1.9	2.77	0.32	4.7	1.7	3.7
5	57.5	0.126	81.2	0.7	6.36	0.410	3.785	3.611	6.6	3.0	6.0	2.3	2.54	0.19	4.8	1.8	4.1
6	58.9	0.130	81.3	0.8	6.36	0.488	4.003	3.794	6.8	3.0	6.0	2.2	2.71	0.21	4.9	1.9	4.1
7	60.4	0.135	81.4	0.9	6.37	0.575	4.238	3.991	7.0	3.0	6.1	2.1	2.86	0.22	5.0	2.0	4.1
8	61.7	0.140	81.4	1.0	6.37	0.653	4.437	4.155	7.2	3.0	6.2	2.1	3.02	0.23	5.1	2.1	4.1
9	62.8	0.144	81.6	1.1	6.38	0.731	4.618	4.301	7.3	3.0	6.2	1.9	3.26	0.26	5.2	2.2	4.1
10	64.0	0.150	81.8	1.4	6.38	0.819	4.799	4.443	7.5	3.0	6.1	1.7	3.68	0.31	5.2	2.2	3.9
11	65.5	0.154	81.8	1.4	6.39	0.897	5.035	4.642	7.7	3.0	6.3	1.7	3.80	0.29	5.3	2.3	4.0
12	66.3	0.159	81.4	0.9	6.39	0.985	5.162	4.729	7.7	3.0	6.8	2.1	3.25	0.19	5.4	2.4	4.5
13	66.6	0.160	81.4	0.9	6.39	0.995	5.216	4.779	7.8	3.0	6.9	2.1	3.23	0.18	5.4	2.4	4.5

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)

Specimen B Shear Data

CU Triaxial Test

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File Location
T-5782.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5782
Sample Location: Guilford County (Sta. 403+45)
Sample Description: Same as Specimen A
Remarks: Same as Specimen A

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.6570001
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.873	2.871	
Height (in)	5.693	5.670	
Weight (grams)	1304.00		1333.00
Moisture (%)	13.58		16.10
Dry Density (pcf)	118.48	119.17	
Saturation (%)	90.21	100.00	
Void Ratio	0.396	0.392	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 86.500
Effective Confining Stress (psi): 6.0
Corrected Peak Deviator Stress (psi): 9.219 at reading number: 19

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	49.6	0.185	80.5	0.0	6.47	0.000	0.000	0.000	6.0	6.0	6.0	6.0	1.00	0.00	6.0	0.0	6.0
1	76.8	0.190	81.4	1.0	6.48	0.081	4.197	4.163	10.2	6.0	9.2	5.1	1.82	0.23	8.1	2.1	7.1
2	85.1	0.195	82.0	1.5	6.48	0.171	5.472	5.397	11.4	6.0	9.9	4.5	2.19	0.27	8.7	2.7	7.2
3	89.3	0.199	82.2	1.8	6.49	0.252	6.128	6.016	12.0	6.0	10.3	4.3	2.41	0.29	9.0	3.0	7.3
4	91.8	0.204	82.4	1.9	6.50	0.342	6.517	6.364	12.4	6.0	10.5	4.1	2.55	0.30	9.2	3.2	7.3
5	94.2	0.209	82.6	2.1	6.50	0.423	6.889	6.698	12.7	6.0	10.6	3.9	2.70	0.31	9.4	3.3	7.3
6	95.9	0.214	82.6	2.2	6.51	0.503	7.155	6.926	12.9	6.0	10.8	3.9	2.79	0.31	9.5	3.5	7.3
7	97.7	0.219	82.8	2.3	6.51	0.594	7.420	7.149	13.2	6.0	10.9	3.7	2.91	0.32	9.6	3.6	7.3
8	99.3	0.223	82.8	2.3	6.52	0.675	7.668	7.358	13.4	6.0	11.1	3.7	2.99	0.32	9.7	3.7	7.4
9	100.8	0.228	82.8	2.4	6.52	0.755	7.898	7.549	13.6	6.0	11.2	3.7	3.06	0.31	9.8	3.8	7.4
10	102.5	0.232	83.0	2.5	6.53	0.836	8.164	7.776	13.8	6.0	11.3	3.5	3.20	0.32	9.9	3.9	7.4
11	103.6	0.238	83.0	2.5	6.53	0.926	8.341	7.909	13.9	6.0	11.4	3.5	3.23	0.31	10.0	4.0	7.5
12	105.2	0.242	83.0	2.5	6.54	1.007	8.589	8.117	14.1	6.0	11.6	3.5	3.32	0.31	10.1	4.1	7.6
13	106.3	0.247	83.0	2.5	6.54	1.087	8.749	8.237	14.3	6.0	11.7	3.5	3.35	0.31	10.1	4.1	7.6
14	108.1	0.251	83.0	2.5	6.55	1.168	9.032	8.479	14.5	6.0	12.0	3.5	3.42	0.30	10.3	4.2	7.7
15	109.6	0.256	83.0	2.5	6.56	1.259	9.262	8.663	14.7	6.0	12.2	3.5	3.48	0.29	10.4	4.3	7.8
16	111.0	0.261	83.0	2.5	6.56	1.339	9.475	8.835	14.9	6.0	12.3	3.5	3.52	0.29	10.4	4.4	7.9
17	112.3	0.265	83.0	2.5	6.57	1.420	9.687	9.006	15.0	6.0	12.5	3.5	3.54	0.28	10.5	4.5	8.0
18	113.6	0.270	83.0	2.5	6.57	1.500	9.882	9.159	15.2	6.0	12.7	3.5	3.62	0.28	10.6	4.6	8.1

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	114.1	0.271	83.0	2.5	6.57	1.520	9.953	9.219	15.2	6.0	12.8	3.5	3.60	0.27	10.6	4.6	8.1

Specimen C Shear Data

CU Triaxial Test

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File Location
T-5782.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5782
Sample Location: Guilford County (Sta. 403+45)
Sample Description: Same as Specimen A
Remarks: Same as Specimen A

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.6570001
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.937	2.851	
Height (in)	5.396	5.670	
Weight (grams)	1304.00		1333.00
Moisture (%)	13.58		16.10
Dry Density (pcf)	119.62	120.84	
Saturation (%)	93.33	100.00	
Void Ratio	0.383	0.373	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 92.500
Effective Confining Stress (psi): 12.0
Corrected Peak Deviator Stress (psi): 86.810 at reading number: 249

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	98.6	0.287	80.5	0.0	6.38	0.000	0.000	0.000	12.0	12.0	12.0	12.0	1.00	0.00	12.0	0.0	12.0
1	128.5	0.291	82.1	1.6	6.39	0.070	4.687	4.656	16.7	12.0	15.0	10.4	1.45	0.35	14.3	2.3	12.7
2	139.2	0.295	83.0	2.5	6.39	0.151	6.357	6.289	18.3	12.0	15.8	9.5	1.66	0.40	15.2	3.1	12.6
3	146.2	0.300	83.6	3.1	6.40	0.242	7.452	7.341	19.4	12.0	16.3	8.9	1.82	0.42	15.7	3.7	12.6
4	151.3	0.305	83.9	3.4	6.40	0.322	8.261	8.110	20.1	12.0	16.7	8.6	1.95	0.42	16.1	4.1	12.6
5	155.6	0.309	84.2	3.7	6.41	0.403	8.925	8.734	20.8	12.0	17.0	8.3	2.05	0.43	16.4	4.4	12.7
6	158.8	0.314	84.5	4.0	6.41	0.483	9.428	9.196	21.2	12.0	17.2	8.0	2.15	0.43	16.6	4.6	12.6
7	161.7	0.319	84.6	4.2	6.42	0.574	9.895	9.616	21.6	12.0	17.5	7.9	2.22	0.43	16.8	4.8	12.7
8	164.4	0.324	84.8	4.3	6.43	0.654	10.308	9.988	22.0	12.0	17.7	7.7	2.30	0.43	17.0	5.0	12.7
9	166.9	0.328	84.9	4.4	6.43	0.735	10.703	10.340	22.4	12.0	18.0	7.6	2.36	0.43	17.2	5.2	12.8
10	169.2	0.333	85.0	4.5	6.44	0.816	11.062	10.657	22.7	12.0	18.2	7.5	2.41	0.42	17.3	5.3	12.9
11	171.0	0.337	85.0	4.5	6.44	0.896	11.349	10.902	22.9	12.0	18.4	7.5	2.45	0.41	17.5	5.5	13.0
12	173.2	0.342	85.0	4.6	6.45	0.977	11.690	11.199	23.2	12.0	18.7	7.5	2.50	0.41	17.6	5.6	13.1
13	175.3	0.347	85.1	4.6	6.45	1.057	12.014	11.479	23.5	12.0	18.9	7.4	2.55	0.40	17.8	5.7	13.2
14	177.2	0.352	85.1	4.6	6.46	1.148	12.319	11.735	23.8	12.0	19.2	7.4	2.58	0.39	17.9	5.9	13.3
15	179.2	0.356	85.1	4.6	6.46	1.228	12.624	11.995	24.0	12.0	19.4	7.4	2.63	0.39	18.0	6.0	13.4
16	181.0	0.361	85.2	4.7	6.47	1.309	12.912	12.237	24.3	12.0	19.6	7.3	2.67	0.38	18.1	6.1	13.5
17	182.7	0.365	85.2	4.7	6.47	1.390	13.181	12.462	24.5	12.0	19.8	7.3	2.71	0.38	18.3	6.2	13.5
18	184.4	0.370	85.2	4.7	6.48	1.470	13.450	12.685	24.7	12.0	20.0	7.3	2.73	0.37	18.4	6.3	13.7

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	185.9	0.375	85.2	4.7	6.48	1.551	13.684	12.873	24.9	12.0	20.2	7.3	2.75	0.36	18.5	6.4	13.8
20	187.8	0.379	85.1	4.6	6.49	1.631	13.971	13.114	25.1	12.0	20.5	7.4	2.78	0.35	18.6	6.6	13.9
21	189.5	0.384	85.1	4.6	6.50	1.722	14.240	13.331	25.4	12.0	20.7	7.4	2.81	0.35	18.7	6.7	14.0
22	191.3	0.389	85.1	4.6	6.50	1.802	14.528	13.570	25.6	12.0	21.0	7.4	2.83	0.34	18.8	6.8	14.2
23	192.7	0.393	85.1	4.6	6.51	1.883	14.743	13.739	25.8	12.0	21.2	7.4	2.85	0.33	18.9	6.9	14.3
24	194.5	0.398	85.0	4.6	6.51	1.963	15.031	13.978	26.0	12.0	21.4	7.5	2.87	0.33	19.0	7.0	14.4
25	196.4	0.403	85.1	4.6	6.52	2.044	15.318	14.233	26.3	12.0	21.7	7.4	2.92	0.32	19.1	7.1	14.5
26	198.3	0.407	85.0	4.6	6.52	2.125	15.623	14.520	26.5	12.0	22.0	7.5	2.95	0.31	19.3	7.3	14.7
27	200.1	0.412	85.0	4.5	6.53	2.205	15.910	14.788	26.8	12.0	22.3	7.5	2.97	0.31	19.4	7.4	14.9
28	202.1	0.416	85.0	4.5	6.53	2.286	16.216	15.073	27.1	12.0	22.6	7.5	3.00	0.30	19.6	7.5	15.1
29	203.7	0.421	84.9	4.4	6.54	2.366	16.467	15.306	27.3	12.0	22.9	7.6	3.02	0.29	19.7	7.7	15.2
30	205.7	0.425	84.9	4.4	6.54	2.447	16.772	15.590	27.6	12.0	23.2	7.6	3.06	0.28	19.8	7.8	15.4
31	207.4	0.430	84.8	4.4	6.55	2.527	17.042	15.839	27.9	12.0	23.5	7.7	3.07	0.28	19.9	7.9	15.6
32	209.2	0.435	84.8	4.3	6.56	2.618	17.329	16.104	28.1	12.0	23.8	7.7	3.09	0.27	20.1	8.1	15.8
33	210.9	0.440	84.8	4.3	6.56	2.699	17.598	16.352	28.4	12.0	24.1	7.7	3.11	0.26	20.2	8.2	15.9
34	212.9	0.444	84.7	4.2	6.57	2.769	17.904	16.636	28.7	12.0	24.4	7.8	3.14	0.25	20.3	8.3	16.1
35	214.4	0.449	84.7	4.2	6.57	2.860	18.137	16.847	28.9	12.0	24.6	7.8	3.17	0.25	20.4	8.4	16.2
36	216.3	0.453	84.7	4.2	6.58	2.940	18.442	17.129	29.1	12.0	24.9	7.8	3.20	0.25	20.6	8.6	16.3
37	218.1	0.458	84.6	4.2	6.58	3.021	18.730	17.392	29.4	12.0	25.3	7.9	3.21	0.24	20.7	8.7	16.6
38	220.1	0.462	84.6	4.1	6.59	3.101	19.035	17.673	29.7	12.0	25.6	7.9	3.24	0.23	20.9	8.8	16.7
39	221.9	0.467	84.5	4.0	6.59	3.182	19.322	17.936	30.0	12.0	25.9	8.0	3.25	0.23	21.0	9.0	16.9
40	223.5	0.472	84.5	4.0	6.60	3.272	19.574	18.162	30.2	12.0	26.2	8.0	3.26	0.22	21.1	9.1	17.1
41	225.5	0.477	84.4	4.0	6.60	3.353	19.879	18.441	30.5	12.0	26.5	8.1	3.29	0.21	21.2	9.2	17.3
42	227.3	0.481	84.4	3.9	6.61	3.424	20.166	18.704	30.7	12.0	26.8	8.1	3.30	0.21	21.4	9.4	17.5
43	229.2	0.486	84.4	3.9	6.62	3.514	20.454	18.963	31.0	12.0	27.1	8.1	3.33	0.20	21.5	9.5	17.6
44	231.6	0.490	84.3	3.8	6.62	3.595	20.831	19.310	31.3	12.0	27.5	8.2	3.35	0.20	21.7	9.7	17.9
45	233.5	0.495	84.3	3.8	6.63	3.675	21.136	19.588	31.6	12.0	27.8	8.2	3.38	0.19	21.8	9.8	18.0
46	235.7	0.500	84.2	3.8	6.63	3.756	21.477	19.899	31.9	12.0	28.2	8.3	3.41	0.19	22.0	9.9	18.2
47	237.5	0.504	84.2	3.7	6.64	3.836	21.765	20.158	32.2	12.0	28.5	8.3	3.42	0.18	22.1	10.1	18.4
48	239.4	0.509	84.1	3.6	6.64	3.917	22.052	20.417	32.4	12.0	28.8	8.4	3.42	0.18	22.2	10.2	18.6
49	241.3	0.513	84.0	3.6	6.65	3.997	22.357	20.692	32.7	12.0	29.2	8.5	3.45	0.17	22.4	10.3	18.8
50	243.3	0.518	84.0	3.5	6.65	4.078	22.663	20.967	33.0	12.0	29.5	8.5	3.46	0.17	22.5	10.5	19.0
51	245.5	0.522	83.9	3.4	6.66	4.159	23.022	21.293	33.3	12.0	29.9	8.6	3.48	0.16	22.7	10.6	19.2
52	247.5	0.527	83.8	3.4	6.67	4.239	23.327	21.566	33.6	12.0	30.2	8.7	3.49	0.16	22.8	10.8	19.4
53	249.6	0.532	83.8	3.3	6.67	4.320	23.650	21.857	33.9	12.0	30.6	8.7	3.50	0.15	22.9	10.9	19.7
54	251.6	0.536	83.8	3.3	6.68	4.400	23.973	22.147	34.2	12.0	30.9	8.7	3.53	0.15	23.1	11.1	19.8
55	253.7	0.541	83.7	3.2	6.68	4.481	24.297	22.436	34.5	12.0	31.2	8.8	3.56	0.14	23.2	11.2	20.0
56	255.7	0.545	83.6	3.2	6.69	4.561	24.620	22.725	34.7	12.0	31.6	8.9	3.56	0.14	23.4	11.4	20.2
57	258.0	0.550	83.6	3.1	6.69	4.642	24.979	23.048	35.1	12.0	31.9	8.9	3.59	0.14	23.5	11.5	20.4
58	260.2	0.554	83.5	3.0	6.70	4.712	25.320	23.355	35.4	12.0	32.3	9.0	3.60	0.13	23.7	11.7	20.7
59	262.2	0.559	83.4	3.0	6.71	4.803	25.626	23.623	35.6	12.0	32.7	9.1	3.61	0.13	23.8	11.8	20.9

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	264.3	0.563	83.4	2.9	6.71	4.873	25.967	23.930	35.9	12.0	33.0	9.1	3.63	0.12	24.0	12.0	21.1
61	266.5	0.568	83.3	2.8	6.72	4.954	26.308	24.233	36.3	12.0	33.4	9.2	3.64	0.12	24.1	12.1	21.3
62	268.9	0.572	83.3	2.8	6.72	5.035	26.685	24.570	36.6	12.0	33.8	9.2	3.66	0.11	24.3	12.3	21.5
63	271.6	0.577	83.2	2.7	6.73	5.115	27.098	24.940	37.0	12.0	34.2	9.3	3.68	0.11	24.5	12.5	21.8
64	273.7	0.581	83.2	2.7	6.73	5.196	27.439	25.242	37.3	12.0	34.6	9.3	3.70	0.11	24.6	12.6	22.0
65	276.0	0.586	83.1	2.6	6.74	5.276	27.798	25.560	37.6	12.0	34.9	9.4	3.72	0.10	24.8	12.8	22.2
66	278.7	0.590	83.0	2.6	6.74	5.357	28.211	25.929	37.9	12.0	35.4	9.5	3.74	0.10	25.0	13.0	22.4
67	281.1	0.594	83.0	2.5	6.75	5.427	28.589	26.265	38.3	12.0	35.8	9.5	3.75	0.09	25.2	13.1	22.7
68	283.4	0.599	82.9	2.4	6.76	5.508	28.948	26.582	38.6	12.0	36.2	9.6	3.76	0.09	25.3	13.3	22.9
69	285.6	0.603	82.8	2.3	6.76	5.588	29.289	26.880	38.9	12.0	36.6	9.7	3.77	0.09	25.5	13.4	23.1
70	287.8	0.608	82.8	2.3	6.77	5.669	29.648	27.196	39.2	12.0	36.9	9.7	3.79	0.08	25.6	13.6	23.3
71	290.1	0.613	82.7	2.2	6.77	5.749	30.007	27.510	39.5	12.0	37.3	9.8	3.80	0.08	25.8	13.8	23.6
72	292.8	0.617	82.6	2.1	6.78	5.830	30.420	27.875	39.9	12.0	37.8	9.9	3.82	0.08	26.0	13.9	23.8
73	294.7	0.622	82.6	2.1	6.78	5.911	30.726	28.138	40.2	12.0	38.1	9.9	3.83	0.07	26.1	14.1	24.0
74	297.4	0.626	82.5	2.0	6.79	5.991	31.139	28.501	40.5	12.0	38.5	10.0	3.84	0.07	26.3	14.3	24.3
75	299.8	0.631	82.4	2.0	6.80	6.072	31.516	28.830	40.9	12.0	38.9	10.1	3.87	0.07	26.4	14.4	24.5
76	301.9	0.635	82.4	1.9	6.80	6.152	31.857	29.125	41.1	12.0	39.3	10.1	3.87	0.06	26.6	14.6	24.7
77	304.1	0.641	82.3	1.8	6.81	6.243	32.198	29.416	41.4	12.0	39.6	10.2	3.88	0.06	26.7	14.7	24.9
78	303.9	0.645	82.6	2.1	6.81	6.323	32.162	29.357	41.4	12.0	39.3	9.9	3.95	0.07	26.7	14.7	24.6
79	307.8	0.650	82.2	1.8	6.82	6.404	32.773	29.902	41.9	12.0	40.2	10.3	3.91	0.06	27.0	15.0	25.2
80	310.4	0.654	82.1	1.6	6.83	6.485	33.186	30.262	42.3	12.0	40.6	10.4	3.92	0.05	27.2	15.1	25.5
81	313.4	0.659	82.0	1.6	6.83	6.565	33.653	30.672	42.7	12.0	41.1	10.5	3.93	0.05	27.4	15.3	25.8
82	316.3	0.663	82.0	1.5	6.84	6.646	34.102	31.064	43.1	12.0	41.6	10.5	3.95	0.05	27.6	15.5	26.1
83	319.3	0.667	81.9	1.4	6.84	6.716	34.568	31.475	43.5	12.0	42.1	10.6	3.96	0.04	27.8	15.7	26.4
84	322.0	0.672	81.8	1.4	6.85	6.797	34.999	31.849	43.9	12.0	42.5	10.7	3.99	0.04	27.9	15.9	26.6
85	324.8	0.677	81.8	1.3	6.85	6.877	35.430	32.222	44.2	12.0	43.0	10.7	4.00	0.04	28.1	16.1	26.9
86	327.2	0.681	81.6	1.2	6.86	6.958	35.808	32.544	44.6	12.0	43.4	10.9	4.00	0.04	28.3	16.3	27.1
87	330.0	0.686	81.6	1.1	6.87	7.038	36.256	32.933	45.0	12.0	43.9	10.9	4.01	0.03	28.5	16.5	27.4
88	332.9	0.690	81.5	1.0	6.87	7.119	36.705	33.321	45.3	12.0	44.3	11.0	4.02	0.03	28.7	16.7	27.7
89	335.6	0.695	81.4	0.9	6.88	7.199	37.136	33.691	45.7	12.0	44.8	11.1	4.04	0.03	28.9	16.8	27.9
90	338.4	0.699	81.3	0.8	6.88	7.270	37.567	34.065	46.1	12.0	45.3	11.2	4.04	0.02	29.1	17.0	28.3
91	341.3	0.703	81.2	0.7	6.89	7.350	38.016	34.450	46.5	12.0	45.8	11.3	4.05	0.02	29.2	17.2	28.5
92	344.5	0.708	81.1	0.6	6.90	7.431	38.519	34.885	46.9	12.0	46.3	11.4	4.07	0.02	29.5	17.4	28.8
93	347.3	0.713	81.1	0.6	6.90	7.512	38.968	35.269	47.3	12.0	46.7	11.4	4.09	0.02	29.7	17.6	29.1
94	350.2	0.717	81.0	0.5	6.91	7.592	39.417	35.653	47.7	12.0	47.2	11.5	4.10	0.01	29.8	17.8	29.3
95	352.8	0.721	80.9	0.4	6.91	7.663	39.830	36.006	48.0	12.0	47.6	11.6	4.10	0.01	30.0	18.0	29.6
96	355.2	0.726	80.8	0.3	6.92	7.743	40.207	36.322	48.3	12.0	48.0	11.7	4.10	0.01	30.2	18.2	29.9
97	357.9	0.730	80.7	0.2	6.93	7.824	40.620	36.670	48.7	12.0	48.5	11.8	4.11	0.01	30.4	18.3	30.1
98	360.9	0.735	80.6	0.1	6.93	7.904	41.087	37.068	49.1	12.0	49.0	11.9	4.11	0.00	30.6	18.5	30.4
99	363.7	0.739	80.5	0.0	6.94	7.985	41.536	37.448	49.5	12.0	49.5	12.0	4.12	0.00	30.7	18.7	30.7
100	366.8	0.744	80.4	-0.1	6.94	8.065	42.021	37.860	49.9	12.0	50.0	12.1	4.13	0.00	31.0	18.9	31.0

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	369.3	0.749	80.3	-0.2	6.95	8.146	42.416	38.189	50.2	12.0	50.4	12.2	4.13	-0.01	31.1	19.1	31.3
102	372.4	0.753	80.2	-0.2	6.96	8.226	42.901	38.600	50.6	12.0	50.9	12.3	4.15	-0.01	31.3	19.3	31.6
103	375.7	0.758	80.2	-0.3	6.96	8.317	43.404	39.022	51.0	12.0	51.4	12.3	4.16	-0.01	31.5	19.5	31.9
104	378.9	0.763	80.1	-0.4	6.97	8.398	43.906	39.448	51.5	12.0	51.9	12.4	4.18	-0.01	31.7	19.7	32.1
105	381.7	0.767	80.0	-0.5	6.97	8.478	44.355	39.823	51.8	12.0	52.4	12.5	4.18	-0.01	31.9	19.9	32.5
106	384.7	0.772	79.8	-0.6	6.98	8.559	44.822	40.214	52.2	12.0	52.9	12.7	4.18	-0.02	32.1	20.1	32.8
107	387.8	0.776	79.7	-0.8	6.99	8.639	45.307	40.621	52.6	12.0	53.4	12.8	4.18	-0.02	32.3	20.3	33.1
108	391.0	0.781	79.6	-0.8	6.99	8.720	45.810	41.044	53.1	12.0	53.9	12.9	4.19	-0.02	32.5	20.5	33.4
109	394.0	0.786	79.5	-1.0	7.00	8.800	46.277	41.433	53.5	12.0	54.4	13.0	4.19	-0.02	32.7	20.7	33.7
110	396.9	0.790	79.4	-1.1	7.01	8.881	46.726	41.804	53.8	12.0	54.9	13.1	4.19	-0.03	32.9	20.9	34.0
111	400.1	0.795	79.3	-1.2	7.01	8.972	47.229	42.220	54.2	12.0	55.4	13.2	4.20	-0.03	33.1	21.1	34.3
112	402.9	0.800	79.2	-1.2	7.02	9.052	47.678	42.590	54.6	12.0	55.9	13.3	4.21	-0.03	33.3	21.3	34.6
113	406.4	0.804	79.2	-1.3	7.02	9.123	48.216	43.046	55.1	12.0	56.4	13.3	4.23	-0.03	33.5	21.5	34.9
114	409.6	0.809	79.0	-1.4	7.03	9.213	48.719	43.459	55.5	12.0	56.9	13.5	4.23	-0.03	33.7	21.7	35.2
115	412.4	0.814	78.9	-1.6	7.04	9.294	49.168	43.827	55.8	12.0	57.4	13.6	4.23	-0.04	33.9	21.9	35.5
116	415.4	0.818	78.8	-1.7	7.04	9.374	49.635	44.210	56.2	12.0	57.9	13.7	4.23	-0.04	34.1	22.1	35.8
117	418.6	0.823	78.7	-1.8	7.05	9.455	50.138	44.626	56.6	12.0	58.4	13.8	4.23	-0.04	34.3	22.3	36.1
118	421.4	0.827	78.6	-1.9	7.06	9.535	50.569	44.975	57.0	12.0	58.9	13.9	4.23	-0.04	34.5	22.5	36.4
119	424.7	0.831	78.4	-2.0	7.06	9.606	51.089	45.410	57.4	12.0	59.5	14.1	4.23	-0.04	34.7	22.7	36.8
120	427.9	0.836	78.3	-2.2	7.07	9.697	51.592	45.818	57.8	12.0	60.0	14.2	4.23	-0.05	34.9	22.9	37.1
121	431.1	0.840	78.2	-2.2	7.07	9.767	52.095	46.235	58.3	12.0	60.5	14.3	4.24	-0.05	35.1	23.1	37.4
122	434.2	0.845	78.2	-2.3	7.08	9.848	52.580	46.630	58.7	12.0	61.0	14.3	4.25	-0.05	35.3	23.3	37.7
123	437.2	0.850	78.0	-2.4	7.09	9.938	53.047	47.003	59.0	12.0	61.5	14.5	4.25	-0.05	35.5	23.5	38.0
124	440.4	0.854	77.9	-2.6	7.09	10.009	53.550	47.418	59.4	12.0	62.0	14.6	4.25	-0.05	35.7	23.7	38.3
125	443.3	0.859	77.8	-2.7	7.10	10.089	53.999	47.779	59.8	12.0	62.5	14.7	4.24	-0.06	35.9	23.9	38.6
126	446.5	0.863	77.7	-2.8	7.11	10.170	54.501	48.187	60.2	12.0	63.0	14.8	4.25	-0.06	36.1	24.1	38.9
127	449.6	0.868	77.6	-2.9	7.11	10.250	54.986	48.578	60.6	12.0	63.5	14.9	4.25	-0.06	36.3	24.3	39.2
128	452.9	0.872	77.4	-3.0	7.12	10.331	55.507	49.001	61.0	12.0	64.1	15.1	4.25	-0.06	36.5	24.5	39.6
129	456.6	0.877	77.3	-3.2	7.13	10.411	56.082	49.471	61.5	12.0	64.7	15.2	4.25	-0.06	36.8	24.7	40.0
130	458.1	0.882	77.6	-2.8	7.13	10.492	56.315	49.635	61.7	12.0	64.5	14.9	4.34	-0.06	36.8	24.8	39.7
131	461.6	0.886	77.2	-3.2	7.14	10.573	56.872	50.087	62.1	12.0	65.3	15.3	4.28	-0.06	37.1	25.0	40.3
132	465.1	0.891	77.1	-3.4	7.14	10.653	57.411	50.523	62.5	12.0	65.9	15.4	4.28	-0.07	37.3	25.3	40.7
133	468.4	0.895	76.9	-3.6	7.15	10.734	57.931	50.942	63.0	12.0	66.5	15.6	4.27	-0.07	37.5	25.5	41.1
134	471.3	0.900	76.8	-3.7	7.16	10.824	58.380	51.289	63.3	12.0	67.0	15.7	4.26	-0.07	37.7	25.6	41.4
135	474.0	0.905	76.6	-3.9	7.16	10.905	58.811	51.626	63.6	12.0	67.5	15.9	4.25	-0.08	37.8	25.8	41.7
136	477.4	0.909	76.4	-4.0	7.17	10.975	59.350	52.064	64.1	12.0	68.1	16.1	4.24	-0.08	38.1	26.0	42.1
137	481.8	0.914	76.3	-4.2	7.18	11.066	60.032	52.618	64.6	12.0	68.8	16.2	4.25	-0.08	38.3	26.3	42.5
138	485.4	0.918	76.2	-4.3	7.18	11.136	60.589	53.070	65.1	12.0	69.4	16.3	4.25	-0.08	38.6	26.5	42.9
139	488.5	0.923	76.0	-4.4	7.19	11.217	61.074	53.452	65.5	12.0	69.9	16.5	4.25	-0.08	38.7	26.7	43.2
140	491.7	0.927	75.9	-4.6	7.20	11.298	61.577	53.848	65.9	12.0	70.4	16.6	4.25	-0.08	38.9	26.9	43.5
141	495.6	0.932	75.8	-4.7	7.20	11.388	62.187	54.334	66.4	12.0	71.0	16.7	4.25	-0.09	39.2	27.2	43.9

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	498.9	0.937	75.7	-4.8	7.21	11.469	62.708	54.745	66.8	12.0	71.6	16.8	4.25	-0.09	39.4	27.4	44.2
143	502.2	0.941	75.5	-5.0	7.22	11.549	63.229	55.155	67.2	12.0	72.1	17.0	4.25	-0.09	39.6	27.6	44.6
144	505.3	0.946	75.4	-5.1	7.22	11.630	63.714	55.532	67.6	12.0	72.6	17.1	4.25	-0.09	39.8	27.8	44.9
145	509.0	0.950	75.2	-5.2	7.23	11.700	64.288	55.995	68.0	12.0	73.3	17.3	4.24	-0.09	40.0	28.0	45.3
146	512.4	0.955	75.1	-5.4	7.24	11.791	64.827	56.412	68.4	12.0	73.8	17.4	4.24	-0.10	40.2	28.2	45.6
147	516.0	0.959	74.9	-5.6	7.24	11.861	65.384	56.857	68.9	12.0	74.4	17.6	4.23	-0.10	40.4	28.4	46.0
148	519.2	0.964	74.8	-5.7	7.25	11.942	65.887	57.247	69.3	12.0	74.9	17.7	4.23	-0.10	40.6	28.6	46.3
149	522.7	0.968	74.6	-5.8	7.26	12.023	66.443	57.683	69.7	12.0	75.5	17.9	4.23	-0.10	40.9	28.8	46.7
150	526.3	0.973	74.5	-6.0	7.26	12.103	67.000	58.119	70.1	12.0	76.1	18.0	4.23	-0.10	41.1	29.1	47.0
151	529.5	0.977	74.4	-6.1	7.27	12.184	67.503	58.507	70.5	12.0	76.6	18.1	4.23	-0.10	41.3	29.3	47.4
152	532.2	0.982	74.2	-6.2	7.28	12.264	67.934	58.831	70.9	12.0	77.1	18.3	4.22	-0.11	41.4	29.4	47.7
153	535.7	0.987	74.1	-6.4	7.28	12.345	68.472	59.248	71.3	12.0	77.7	18.4	4.22	-0.11	41.6	29.6	48.0
154	539.2	0.991	73.9	-6.6	7.29	12.425	69.029	59.680	71.7	12.0	78.3	18.6	4.21	-0.11	41.9	29.8	48.4
155	542.9	0.996	73.8	-6.7	7.30	12.506	69.604	60.128	72.1	12.0	78.9	18.7	4.21	-0.11	42.1	30.1	48.8
156	546.3	1.000	73.6	-6.9	7.30	12.586	70.143	60.542	72.6	12.0	79.4	18.9	4.20	-0.11	42.3	30.3	49.2
157	549.8	1.005	73.4	-7.0	7.31	12.667	70.681	60.956	73.0	12.0	80.0	19.1	4.20	-0.12	42.5	30.5	49.5
158	553.0	1.009	73.3	-7.2	7.32	12.748	71.184	61.338	73.4	12.0	80.6	19.2	4.19	-0.12	42.7	30.7	49.9
159	556.3	1.014	73.2	-7.3	7.32	12.828	71.705	61.735	73.8	12.0	81.1	19.3	4.19	-0.12	42.9	30.9	50.2
160	559.9	1.019	73.0	-7.4	7.33	12.909	72.262	62.162	74.2	12.0	81.6	19.5	4.19	-0.12	43.1	31.1	50.5
161	563.2	1.023	72.9	-7.6	7.34	12.989	72.782	62.557	74.6	12.0	82.1	19.6	4.19	-0.12	43.3	31.3	50.9
162	566.5	1.028	72.8	-7.7	7.34	13.070	73.303	62.951	75.0	12.0	82.7	19.7	4.19	-0.12	43.5	31.5	51.2
163	570.1	1.032	72.6	-7.9	7.35	13.150	73.860	63.375	75.4	12.0	83.3	19.9	4.18	-0.12	43.7	31.7	51.6
164	573.4	1.037	72.4	-8.0	7.36	13.231	74.381	63.768	75.8	12.0	83.8	20.1	4.18	-0.13	43.9	31.9	51.9
165	576.7	1.041	72.3	-8.2	7.36	13.311	74.901	64.159	76.2	12.0	84.4	20.2	4.17	-0.13	44.1	32.1	52.3
166	580.2	1.046	72.1	-8.4	7.37	13.392	75.440	64.565	76.6	12.0	84.9	20.4	4.17	-0.13	44.3	32.3	52.7
167	583.6	1.051	72.0	-8.5	7.38	13.472	75.979	64.971	77.0	12.0	85.5	20.5	4.16	-0.13	44.5	32.5	53.0
168	586.3	1.055	71.8	-8.7	7.38	13.553	76.410	65.282	77.3	12.0	86.0	20.7	4.15	-0.13	44.7	32.6	53.4
169	589.9	1.060	71.6	-8.8	7.39	13.634	76.966	65.701	77.7	12.0	86.6	20.9	4.15	-0.13	44.9	32.9	53.7
170	592.9	1.065	71.5	-9.0	7.40	13.724	77.433	66.035	78.1	12.0	87.0	21.0	4.15	-0.14	45.0	33.0	54.0
171	596.3	1.069	71.4	-9.1	7.41	13.805	77.972	66.437	78.5	12.0	87.5	21.1	4.15	-0.14	45.2	33.2	54.3
172	600.0	1.074	71.2	-9.2	7.41	13.885	78.547	66.869	78.9	12.0	88.1	21.3	4.15	-0.14	45.5	33.4	54.7
173	603.3	1.079	71.1	-9.4	7.42	13.966	79.067	67.253	79.3	12.0	88.7	21.4	4.14	-0.14	45.6	33.6	55.0
174	605.6	1.083	70.8	-9.6	7.43	14.046	79.427	67.498	79.5	12.0	89.2	21.7	4.12	-0.14	45.8	33.7	55.4
175	608.9	1.088	70.7	-9.8	7.43	14.127	79.947	67.882	79.9	12.0	89.7	21.8	4.12	-0.14	46.0	33.9	55.7
176	612.0	1.092	70.6	-9.9	7.44	14.208	80.432	68.233	80.3	12.0	90.1	21.9	4.12	-0.14	46.1	34.1	56.0
177	615.2	1.097	70.4	-10.1	7.45	14.288	80.935	68.599	80.6	12.0	90.7	22.1	4.10	-0.15	46.3	34.3	56.4
178	618.2	1.102	70.2	-10.3	7.46	14.379	81.402	68.926	80.9	12.0	91.2	22.3	4.09	-0.15	46.5	34.5	56.8
179	621.3	1.106	70.1	-10.4	7.46	14.459	81.887	69.275	81.3	12.0	91.7	22.4	4.09	-0.15	46.7	34.6	57.1
180	624.4	1.111	70.0	-10.5	7.47	14.540	82.372	69.623	81.6	12.0	92.2	22.5	4.09	-0.15	46.8	34.8	57.4
181	627.8	1.116	69.8	-10.7	7.48	14.620	82.910	70.017	82.0	12.0	92.7	22.7	4.08	-0.15	47.0	35.0	57.7
182	630.7	1.120	70.0	-10.5	7.48	14.701	83.359	70.333	82.4	12.0	92.8	22.5	4.13	-0.15	47.2	35.2	57.7

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	633.5	1.125	69.6	-10.9	7.49	14.781	83.790	70.633	82.7	12.0	93.5	22.9	4.08	-0.15	47.3	35.3	58.2
184	636.8	1.129	69.4	-11.1	7.50	14.852	84.311	71.018	83.0	12.0	94.2	23.1	4.07	-0.16	47.5	35.5	58.6
185	640.1	1.134	69.2	-11.3	7.50	14.943	84.832	71.384	83.4	12.0	94.7	23.3	4.06	-0.16	47.7	35.7	59.0
186	643.4	1.138	69.0	-11.5	7.51	15.013	85.353	71.767	83.8	12.0	95.3	23.5	4.05	-0.16	47.9	35.9	59.4
187	646.5	1.142	68.8	-11.7	7.52	15.094	85.838	72.110	84.1	12.0	95.8	23.7	4.04	-0.16	48.1	36.1	59.8
188	648.8	1.147	68.6	-11.8	7.53	15.174	86.197	72.345	84.4	12.0	96.2	23.9	4.03	-0.16	48.2	36.2	60.0
189	651.3	1.152	68.5	-12.0	7.53	15.255	86.592	72.611	84.6	12.0	96.6	24.0	4.03	-0.16	48.3	36.3	60.3
190	654.8	1.156	68.4	-12.1	7.54	15.335	87.130	72.997	85.0	12.0	97.1	24.1	4.02	-0.17	48.5	36.5	60.6
191	657.3	1.161	68.2	-12.3	7.55	15.416	87.526	73.261	85.3	12.0	97.6	24.3	4.01	-0.17	48.7	36.6	61.0
192	660.2	1.165	68.0	-12.5	7.55	15.496	87.974	73.570	85.6	12.0	98.1	24.5	4.00	-0.17	48.8	36.8	61.3
193	662.8	1.170	67.8	-12.6	7.56	15.577	88.387	73.848	85.9	12.0	98.5	24.7	3.99	-0.17	48.9	36.9	61.6
194	666.0	1.174	67.6	-12.8	7.57	15.647	88.890	74.210	86.2	12.0	99.1	24.9	3.99	-0.17	49.1	37.1	62.0
195	668.9	1.178	67.5	-13.0	7.57	15.728	89.339	74.516	86.5	12.0	99.5	25.0	3.98	-0.17	49.3	37.3	62.3
196	671.4	1.183	67.3	-13.2	7.58	15.809	89.734	74.777	86.8	12.0	100.0	25.2	3.97	-0.18	49.4	37.4	62.6
197	674.7	1.188	67.2	-13.3	7.59	15.889	90.255	75.143	87.2	12.0	100.5	25.3	3.97	-0.18	49.6	37.6	62.9
198	677.1	1.192	67.0	-13.4	7.60	15.970	90.632	75.387	87.4	12.0	100.8	25.5	3.96	-0.18	49.7	37.7	63.2
199	680.1	1.197	66.9	-13.6	7.60	16.050	91.099	75.706	87.7	12.0	101.3	25.6	3.96	-0.18	49.9	37.9	63.4
200	683.4	1.201	66.8	-13.7	7.61	16.131	91.620	76.069	88.1	12.0	101.8	25.7	3.96	-0.18	50.1	38.0	63.8
201	685.8	1.206	66.5	-14.0	7.62	16.211	91.997	76.311	88.3	12.0	102.3	26.0	3.94	-0.18	50.2	38.2	64.1
202	688.8	1.210	66.4	-14.1	7.63	16.292	92.464	76.628	88.6	12.0	102.7	26.1	3.94	-0.18	50.3	38.3	64.4
203	691.2	1.215	66.2	-14.2	7.63	16.372	92.841	76.869	88.9	12.0	103.1	26.3	3.93	-0.19	50.5	38.4	64.7
204	693.6	1.220	66.1	-14.4	7.64	16.463	93.218	77.100	89.1	12.0	103.5	26.4	3.92	-0.19	50.6	38.5	65.0
205	696.3	1.225	65.9	-14.6	7.65	16.544	93.631	77.370	89.4	12.0	104.0	26.6	3.91	-0.19	50.7	38.7	65.3
206	699.5	1.229	65.7	-14.8	7.66	16.624	94.134	77.713	89.7	12.0	104.5	26.8	3.90	-0.19	50.9	38.9	65.6
207	701.9	1.234	65.6	-14.9	7.66	16.705	94.511	77.952	90.0	12.0	104.9	26.9	3.90	-0.19	51.0	39.0	65.9
208	705.2	1.238	65.5	-15.0	7.67	16.785	95.032	78.309	90.3	12.0	105.3	27.0	3.90	-0.19	51.2	39.2	66.2
209	707.2	1.243	65.4	-15.1	7.68	16.866	95.337	78.486	90.5	12.0	105.6	27.1	3.89	-0.19	51.3	39.2	66.4
210	709.9	1.248	65.2	-15.3	7.69	16.956	95.768	78.758	90.8	12.0	106.1	27.3	3.88	-0.19	51.4	39.4	66.7
211	711.9	1.252	65.0	-15.5	7.69	17.027	96.073	78.943	91.0	12.0	106.4	27.5	3.87	-0.20	51.5	39.5	67.0
212	713.9	1.257	64.8	-15.6	7.70	17.118	96.397	79.124	91.1	12.0	106.8	27.7	3.86	-0.20	51.6	39.6	67.2
213	716.8	1.262	64.7	-15.8	7.71	17.198	96.846	79.418	91.4	12.0	107.2	27.8	3.85	-0.20	51.7	39.7	67.5
214	719.4	1.266	64.5	-16.0	7.72	17.269	97.259	79.692	91.7	12.0	107.7	28.0	3.85	-0.20	51.9	39.8	67.8
215	721.5	1.270	64.4	-16.1	7.72	17.349	97.582	79.881	91.9	12.0	108.0	28.1	3.84	-0.20	52.0	39.9	68.0
216	724.5	1.275	64.2	-16.2	7.73	17.430	98.049	80.187	92.2	12.0	108.4	28.3	3.84	-0.20	52.1	40.1	68.4
217	726.9	1.279	64.1	-16.4	7.74	17.510	98.426	80.420	92.4	12.0	108.8	28.4	3.83	-0.20	52.2	40.2	68.6
218	729.0	1.284	63.9	-16.6	7.75	17.591	98.749	80.607	92.6	12.0	109.2	28.6	3.82	-0.21	52.3	40.3	68.9
219	731.4	1.289	63.8	-16.7	7.75	17.671	99.126	80.838	92.9	12.0	109.5	28.7	3.82	-0.21	52.4	40.4	69.1
220	734.1	1.293	63.6	-16.8	7.76	17.752	99.557	81.112	93.1	12.0	110.0	28.9	3.81	-0.21	52.6	40.6	69.4
221	736.3	1.298	63.5	-17.0	7.77	17.832	99.898	81.312	93.3	12.0	110.3	29.0	3.80	-0.21	52.7	40.7	69.7
222	738.7	1.302	63.4	-17.1	7.78	17.913	100.275	81.541	93.6	12.0	110.7	29.1	3.80	-0.21	52.8	40.8	69.9
223	741.4	1.307	63.3	-17.2	7.78	17.994	100.706	81.814	93.8	12.0	111.0	29.2	3.80	-0.21	52.9	40.9	70.1

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	743.6	1.311	63.1	-17.4	7.79	18.074	101.048	82.013	94.0	12.0	111.4	29.4	3.79	-0.21	53.0	41.0	70.4
225	745.9	1.316	63.0	-17.5	7.80	18.155	101.407	82.225	94.2	12.0	111.8	29.5	3.78	-0.21	53.1	41.1	70.7
226	747.8	1.321	62.8	-17.7	7.81	18.235	101.694	82.378	94.4	12.0	112.1	29.7	3.77	-0.21	53.2	41.2	70.9
227	750.2	1.325	62.7	-17.8	7.81	18.316	102.071	82.604	94.6	12.0	112.4	29.8	3.77	-0.22	53.3	41.3	71.1
228	752.3	1.330	62.5	-18.0	7.82	18.396	102.412	82.801	94.8	12.0	112.8	30.0	3.76	-0.22	53.4	41.4	71.4
229	754.3	1.334	62.4	-18.1	7.83	18.477	102.718	82.967	95.0	12.0	113.1	30.1	3.76	-0.22	53.5	41.5	71.6
230	756.5	1.339	62.2	-18.2	7.84	18.557	103.059	83.162	95.2	12.0	113.4	30.3	3.75	-0.22	53.6	41.6	71.8
231	758.5	1.343	62.1	-18.4	7.85	18.638	103.382	83.342	95.4	12.0	113.7	30.4	3.74	-0.22	53.7	41.7	72.1
232	761.2	1.348	62.0	-18.5	7.85	18.718	103.795	83.595	95.6	12.0	114.1	30.5	3.74	-0.22	53.8	41.8	72.3
233	763.9	1.353	61.9	-18.6	7.86	18.799	104.226	83.861	95.9	12.0	114.5	30.6	3.74	-0.22	54.0	41.9	72.6
234	766.7	1.357	61.8	-18.7	7.87	18.880	104.657	84.127	96.1	12.0	114.9	30.7	3.74	-0.22	54.1	42.1	72.8
235	769.2	1.362	61.6	-18.8	7.88	18.960	105.052	84.362	96.4	12.0	115.2	30.9	3.73	-0.22	54.2	42.2	73.0
236	771.7	1.366	61.5	-19.0	7.88	19.041	105.447	84.598	96.6	12.0	115.6	31.0	3.73	-0.22	54.3	42.3	73.3
237	773.8	1.371	61.4	-19.1	7.89	19.121	105.771	84.774	96.8	12.0	115.9	31.1	3.72	-0.23	54.4	42.4	73.5
238	775.5	1.376	61.2	-19.3	7.90	19.212	106.040	84.896	96.9	12.0	116.2	31.3	3.71	-0.23	54.5	42.4	73.7
239	777.2	1.381	61.0	-19.4	7.91	19.292	106.309	85.028	97.0	12.0	116.5	31.5	3.70	-0.23	54.5	42.5	74.0
240	779.4	1.385	60.9	-19.6	7.92	19.373	106.650	85.217	97.2	12.0	116.8	31.6	3.70	-0.23	54.6	42.6	74.2
241	781.3	1.390	60.8	-19.6	7.93	19.454	106.956	85.377	97.4	12.0	117.0	31.7	3.70	-0.23	54.7	42.7	74.3
242	782.8	1.394	60.7	-19.8	7.93	19.534	107.189	85.479	97.5	12.0	117.3	31.8	3.69	-0.23	54.8	42.7	74.5
243	786.3	1.399	60.6	-19.9	7.94	19.615	107.728	85.826	97.8	12.0	117.7	31.9	3.69	-0.23	54.9	42.9	74.8
244	788.7	1.403	60.4	-20.0	7.95	19.695	108.105	86.042	98.1	12.0	118.1	32.1	3.68	-0.23	55.0	43.0	75.1
245	791.1	1.408	60.3	-20.2	7.96	19.776	108.482	86.257	98.3	12.0	118.4	32.2	3.68	-0.23	55.1	43.1	75.3
246	793.0	1.413	60.2	-20.3	7.97	19.856	108.787	86.415	98.4	12.0	118.7	32.3	3.68	-0.23	55.2	43.2	75.5
247	795.0	1.417	60.0	-20.4	7.97	19.927	109.093	86.582	98.6	12.0	119.0	32.5	3.67	-0.24	55.3	43.3	75.8
248	797.3	1.421	59.9	-20.6	7.98	20.007	109.452	86.782	98.8	12.0	119.4	32.6	3.66	-0.24	55.4	43.4	76.0
249	797.5	1.421	59.9	-20.6	7.98	20.007	109.488	86.810	98.8	12.0	119.4	32.6	3.66	-0.24	55.4	43.4	76.0

Sample Failure Photographs

T-5782

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. U-2412B

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project 39406.1.1 **County** GUILFORD **Owner**

Date: Sampled 3/1/13 **Received** 11/22/13 **Reported** 11/26/13

Sampled from RDWY **By** N. ROBERSON

Submitted by M HURT 1995 **Standard Specifications**

788452 TO 788453
12/5/13

TEST RESULTS

Proj. Sample No.		ST-18 #1	ST-18 #2				
Lab. Sample No.		788452	788453				
Retained #4 Sieve	%	-	-				
Passing #10 Sieve	%	98	98				
Passing #40 Sieve	%	78	81				
Passing #200 Sieve	%	43	46				

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	35.1	32.1				
Fine Sand Ret - #270	%	26.4	26.4				
Silt 0.05 - 0.005 mm	%	30.4	33.5				
Clay < 0.005 mm	%	8.1	8.1				
T-#		T-5783	T-5783				
Specific Gravity		2.657	2.686				

L. L.		32	31				
P. I.		4	6				
AASHTO Classification		A-4(0)	A-4(0)				
Station		403+45	403+45				
Offset		3 FT RT	3 FT RT				
Alignment		L	L				
Location							
Depth (Ft)		9.6 FT	9.6 FT				
	to	11.2 FT	11.2 FT				
Final Moisture Content	%	20.83	19.18				

cc: N. ROBERSON
SURIYATI BS
GREG BODENHEIMER

Soils Engineer

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	12.46	16.63	**Plastic Limits:**	0	
Dry Density (pcf):	107.72	116.45	**Plasticity Index (%):**	0	
Saturation (%):	60.86	103.11			
Void Ratio:	0.5459	0.4299	**Specific Gravity:**	2.668	Measured

Soil Description: Tannish orange colored silt

Project Number: 39406.1.1 **Depth:** 9.6 - 11.2 ft

Sample Number: ST-18 **Boring Number:**

Project: U-2412B

Client: T-5783

Location: Guilford County (Sta. 403+45)

Remarks: Solid Height is 0.64896 inches; Blows/ft = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	12.46	16.63	**Plastic Limits:**	0	
Dry Density (pcf):	107.72	116.45	**Plasticity Index (%):**	0	
Saturation (%):	60.86	103.11			
Void Ratio:	0.5459	0.4299	**Specific Gravity:**	2.668	Measured

Soil Description: Tannish orange colored silt

Project Number: 39406.1.1 **Depth:** 9.6 - 11.2 ft

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Client: T-5783

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Consolidation Test
Test Results

	Before	After			
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Moisture (%):	12.46	16.63	**Plastic Limits:**	0	
Dry Density (pcf):	107.72	116.45	**Plasticity Index (%):**	0	
Saturation (%):	60.86	103.11			
Void Ratio:	0.5459	0.4299	**Specific Gravity:**	2.668	Measured

Soil Description: Tannish orange colored silt

Project Number: 39406.1.1 **Depth:** 9.6 - 11.2 ft

Sample Number: ST-18 **Boring Number:**

Project: U-2412B

Client: T-5783

Location: Guilford County (Sta. 403+45)

Remarks: Solid Height is 0.64896 inches; Blows/ft = NA

Consolidation Test Results
Summary

Project: U-2412B
Location: Guilford County (Sta. 403+45)
Job Number: T-5783

Project Number: 39406.1.1

Sample Number: ST-18
Boring Number:
Depth: 9.6 - 11.2 ft
Sample Type: Undisturbed

Soil Description:
Tannish orange colored silt
Remarks:
Solid Height is 0.64896 inches; Blows/ft = NA

Test Number:
Test Date:

Index	Load Sequence (tsf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	1.0008	0.3534	0.00	0.5459	0.000		0.000	
1	0.031	0.0004	1.0004	0.3530	0.04	0.5453	0.563		1375.523	
2	0.063	0.0012	0.9996	0.3522	0.12	0.5441	13.890		55.665	
3	0.125	0.0034	0.9974	0.3500	0.34	0.5407	0.250		3079.126	
4	0.250	0.0076	0.9932	0.3458	0.76	0.5342	0.076		10096.723	
5	0.500	0.0151	0.9857	0.3383	1.51	0.5226	0.098		7695.268	
6	1.000	0.0266	0.9742	0.3268	2.66	0.5049	0.090		8159.856	
7	2.000	0.0419	0.9589	0.3115	4.19	0.4812	0.099		7216.034	
8	4.000	0.0619	0.9389	0.2915	6.19	0.4503	0.098		6981.889	
9	2.000	0.0602	0.9406	0.2932	6.02	0.4529	0.000		0.000	
10	1.000	0.0569	0.9439	0.2965	5.69	0.4580	0.000		0.000	
11	0.500	0.0526	0.9482	0.3008	5.26	0.4647	0.000		0.000	
12	1.000	0.0549	0.9459	0.2985	5.49	0.4611	0.000		0.000	
13	2.000	0.0582	0.9426	0.2952	5.82	0.4560	0.000		0.000	
14	4.000	0.0644	0.9364	0.2890	6.43	0.4465	0.000		0.000	
15	8.000	0.0866	0.9142	0.2668	8.65	0.4122	0.098		6619.370	
16	16.000	0.1156	0.8852	0.2378	11.55	0.3674	0.195		3107.809	
17	4.000	0.1116	0.8892	0.2418	11.15	0.3736	0.000		0.000	
18	0.016	0.0751	0.9257	0.2783	7.50	0.4299	0.000		0.000	

Tested By:

Checked By:

Consolidation Test
Consolidation Specimen Information

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County (Sta. 403+45)
Job Number: T-5783 **Test Date:**

Sample Number: ST-18 **Soil Description:**
Boring Number: Tannish orange colored silt
Depth: 9.6 - 11.2 ft **Remarks:**
Sample Type: Undisturbed Solid Height is 0.64896 inches; Blows/ft = NA

Test Number:
Liquid Limit: 0.0000 **Initial Void Ratio:** 0.5459 **Initial Height (in):** 1.0008
Plastic Limit: 0.0000 **Plasticity Index (%):** 0.0000 **Initial Diameter (in):** 2.4998
Specific Gravity: 2.6680 Measured **Weight of Ring (g):** 109.4200

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	156.19	161.97
Dry Soil + Container (g)	138.88	138.88
Weight of Container (g)	0.00	0.00
Moisture Content (%)	12.46	16.63
Void Ratio	0.5459	0.4299
Saturation (%)	60.86	103.11
Dry Density (pcf)	107.72	116.45

Tested By: **Checked By:**

ncdot

Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date :

Tested By:

Effective Stress at Maximum Deviator Stress Criterion

Deviator Stress Vs. Axial Strain

Initial	Specimen A	B	C	D
Water Content (%)	15.6	14.3		
Dry Density (pcf)	105.9	107.8		
Saturation (%)	73.33	69.06		
Void Ratio	0.563	0.551		
Diameter (in)	2.866	2.863		
Height (in)	6.024	6.038		
Specific Gravity	2.66	2.69		
Liquid Limit	0	0		
Plastic Limit	0	0		
After Consolidation	**A**	**B**	**C**	**D**
B-Value	0.00	0.00		
Water Content (%)	16.0	15.4		
Dry Density (pcf)	107.67	115.94		
Saturation (%)	100.00	100.00		
Void Ratio	0.540	0.446		
Effective Stress (psi)	6.0	12.0		
Back Press. (psi)	59.8	60.0		
Rate of Strain	0.009	0.009		

Maximium Deviator Stress Criterion		After Shear	A	B	C	D
C (psi)	0.0	σ'1 at Failure (psi)	48.82	55.19		
C' (psi)	0.0	σ'3 at Failure (psi)	14.25	16.73		
Ø (deg)	0.0					
Ø' (deg)	0.0					

Project:	U-2412B	N/A	N/A	N/A	N/A
Location:	Guilford County (Sta. 403+45)				
Project Number:	39406.1.1				
Boring Number:					
Sample Number:	ST-18				
Depth:	9.6 - 11.2 ft				
Sample Type:	Undisturbed	Failure Photographs			
Description:					
Test Type	Consolidated Undrained				
Remarks					

ncdot

Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date:

Tested By:

Deviator Stress vs. Axial Strain

Principal Stress Ratio vs. Axial Strain

Change in Pore Pressure vs. Axial Strain

Mohr Stress Circles at Maximum Deviator Stress Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at Maximum Principal Stress Ratio Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at 15% Axial Strain Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)
Q (psi)
P' (psi)
0.0
10.0
20.0
30.0
40.0
Specimen A
Specimen B
Specimen C
Specimen D
Tangent Line

Stress Paths (Total)
(C' = 0.0 Ø' = 0.0)
Q (psi)
P (psi)
0.0
10.0
20.0
30.0
40.0

Specimen A Shear Data

CU Triaxial Test

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File Location
T-5783.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5783
Sample Location: Guilford County (Sta. 403+45)
Sample Description: Brownish colored silt
Remarks: 20° shear plane

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.6570001
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.866	2.850	
Height (in)	6.024	5.990	
Weight (grams)	1249.00		1305.00
Moisture (%)	15.65		20.83
Dry Density (pcf)	105.85	107.67	
Saturation (%)	73.33	100.00	
Void Ratio	0.563	0.540	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 65.800
Effective Confining Stress (psi): 6.0
Corrected Peak Deviator Stress (psi): 34.570 at reading number: 272

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	38.0	0.069	59.8	0.0	6.38	0.000	0.000	0.000	6.0	6.0	6.0	6.0	1.00	0.00	6.0	0.0	6.0
1	51.0	0.074	60.6	0.8	6.38	0.077	2.033	2.002	8.0	6.0	7.2	5.2	1.39	0.39	7.0	1.0	6.2
2	55.8	0.078	61.0	1.2	6.39	0.146	2.796	2.735	8.7	6.0	7.5	4.8	1.57	0.43	7.3	1.4	6.2
3	59.1	0.081	61.3	1.4	6.39	0.207	3.304	3.217	9.2	6.0	7.7	4.5	1.71	0.44	7.6	1.6	6.1
4	62.2	0.086	61.4	1.6	6.40	0.284	3.794	3.674	9.6	6.0	8.0	4.4	1.84	0.44	7.8	1.8	6.2
5	64.4	0.091	61.6	1.8	6.40	0.361	4.139	3.985	9.9	6.0	8.2	4.2	1.95	0.44	8.0	2.0	6.2
6	66.9	0.095	61.7	1.9	6.41	0.438	4.538	4.349	10.3	6.0	8.4	4.1	2.07	0.44	8.1	2.2	6.2
7	69.2	0.100	61.8	2.0	6.41	0.515	4.901	4.677	10.6	6.0	8.7	4.0	2.18	0.42	8.3	2.3	6.3
8	70.2	0.104	61.9	2.1	6.42	0.592	5.047	4.788	10.7	6.0	8.7	3.9	2.23	0.43	8.4	2.4	6.3
9	72.0	0.109	62.0	2.2	6.42	0.668	5.337	5.043	11.0	6.0	8.8	3.8	2.33	0.43	8.5	2.5	6.3
10	74.9	0.113	62.0	2.2	6.43	0.738	5.791	5.463	11.4	6.0	9.2	3.8	2.45	0.40	8.7	2.7	6.5
11	76.3	0.118	62.1	2.2	6.43	0.814	6.009	5.645	11.6	6.0	9.4	3.7	2.52	0.40	8.8	2.8	6.5
12	78.4	0.122	62.1	2.3	6.44	0.891	6.335	5.935	11.9	6.0	9.6	3.7	2.61	0.38	8.9	3.0	6.7
13	80.5	0.127	62.1	2.3	6.44	0.968	6.662	6.224	12.2	6.0	9.9	3.7	2.70	0.37	9.1	3.1	6.8
14	81.6	0.132	62.2	2.3	6.45	1.045	6.844	6.369	12.3	6.0	10.0	3.6	2.76	0.37	9.1	3.2	6.8
15	84.1	0.136	62.2	2.3	6.45	1.114	7.225	6.715	12.7	6.0	10.3	3.6	2.85	0.35	9.3	3.4	7.0
16	85.9	0.140	62.2	2.3	6.46	1.191	7.515	6.966	12.9	6.0	10.6	3.6	2.92	0.34	9.4	3.5	7.1
17	88.1	0.145	62.2	2.3	6.46	1.260	7.860	7.275	13.2	6.0	10.9	3.6	3.01	0.32	9.6	3.6	7.3
18	89.3	0.149	62.2	2.3	6.47	1.329	8.042	7.422	13.4	6.0	11.0	3.6	3.05	0.31	9.7	3.7	7.3

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	90.9	0.153	62.2	2.3	6.47	1.406	8.296	7.637	13.6	6.0	11.3	3.6	3.11	0.31	9.8	3.8	7.4
20	91.9	0.157	62.1	2.3	6.47	1.475	8.459	7.765	13.7	6.0	11.4	3.7	3.12	0.30	9.8	3.9	7.5
21	94.1	0.162	62.1	2.3	6.48	1.552	8.804	8.069	14.0	6.0	11.7	3.7	3.21	0.29	10.0	4.0	7.7
22	95.8	0.166	62.1	2.3	6.48	1.621	9.058	8.286	14.2	6.0	12.0	3.7	3.25	0.27	10.1	4.1	7.8
23	96.8	0.170	62.1	2.2	6.49	1.690	9.222	8.414	14.4	6.0	12.1	3.7	3.27	0.27	10.2	4.2	7.9
24	98.0	0.175	62.1	2.2	6.49	1.767	9.403	8.555	14.5	6.0	12.3	3.7	3.29	0.26	10.2	4.3	8.0
25	100.5	0.179	62.1	2.2	6.50	1.836	9.803	8.914	14.9	6.0	12.7	3.7	3.38	0.25	10.4	4.5	8.2
26	101.3	0.183	62.0	2.2	6.50	1.905	9.930	9.005	15.0	6.0	12.8	3.8	3.37	0.24	10.5	4.5	8.3
27	102.8	0.188	62.0	2.1	6.51	1.982	10.166	9.199	15.2	6.0	13.0	3.8	3.40	0.23	10.6	4.6	8.4
28	105.5	0.192	61.9	2.1	6.51	2.051	10.583	9.594	15.6	6.0	13.5	3.9	3.49	0.22	10.8	4.8	8.7
29	106.0	0.196	61.9	2.0	6.52	2.120	10.656	9.658	15.6	6.0	13.6	3.9	3.47	0.21	10.8	4.8	8.7
30	107.6	0.201	61.9	2.0	6.52	2.197	10.910	9.898	15.9	6.0	13.8	3.9	3.51	0.20	10.9	4.9	8.9
31	109.1	0.205	61.8	2.0	6.53	2.266	11.146	10.121	16.1	6.0	14.1	4.0	3.55	0.20	11.0	5.1	9.0
32	110.6	0.209	61.8	1.9	6.53	2.343	11.382	10.343	16.3	6.0	14.4	4.0	3.56	0.19	11.1	5.2	9.2
33	111.7	0.214	61.7	1.9	6.54	2.412	11.564	10.513	16.5	6.0	14.6	4.1	3.59	0.18	11.2	5.3	9.3
34	113.0	0.218	61.7	1.9	6.54	2.489	11.763	10.698	16.7	6.0	14.8	4.1	3.61	0.17	11.3	5.3	9.4
35	114.9	0.222	61.6	1.8	6.55	2.558	12.054	10.973	16.9	6.0	15.1	4.2	3.64	0.16	11.4	5.5	9.6
36	116.0	0.227	61.6	1.8	6.55	2.635	12.235	11.141	17.1	6.0	15.3	4.2	3.67	0.16	11.5	5.6	9.8
37	117.2	0.231	61.6	1.7	6.56	2.712	12.417	11.308	17.3	6.0	15.5	4.2	3.67	0.15	11.6	5.7	9.9
38	119.7	0.236	61.5	1.7	6.56	2.789	12.816	11.687	17.6	6.0	16.0	4.3	3.72	0.14	11.8	5.8	10.1
39	119.9	0.240	61.5	1.6	6.57	2.858	12.834	11.696	17.7	6.0	16.0	4.3	3.70	0.14	11.8	5.8	10.2
40	121.2	0.245	61.4	1.6	6.57	2.935	13.052	11.897	17.9	6.0	16.3	4.4	3.71	0.13	11.9	5.9	10.3
41	122.4	0.249	61.4	1.5	6.58	3.004	13.234	12.064	18.0	6.0	16.5	4.4	3.73	0.13	12.0	6.0	10.4
42	123.8	0.254	61.3	1.5	6.58	3.081	13.451	12.265	18.2	6.0	16.7	4.5	3.74	0.12	12.1	6.1	10.6
43	125.2	0.258	61.3	1.4	6.59	3.150	13.669	12.467	18.4	6.0	17.0	4.5	3.75	0.11	12.2	6.2	10.8
44	126.2	0.262	61.2	1.4	6.59	3.227	13.833	12.614	18.6	6.0	17.2	4.6	3.75	0.11	12.3	6.3	10.9
45	127.7	0.267	61.2	1.3	6.60	3.303	14.069	12.832	18.8	6.0	17.4	4.6	3.78	0.10	12.4	6.4	11.0
46	129.1	0.271	61.1	1.3	6.60	3.373	14.287	13.033	19.0	6.0	17.7	4.7	3.79	0.10	12.5	6.5	11.2
47	130.7	0.276	61.1	1.3	6.61	3.449	14.541	13.267	19.2	6.0	18.0	4.7	3.82	0.09	12.6	6.6	11.3
48	132.2	0.280	61.0	1.2	6.61	3.526	14.777	13.484	19.4	6.0	18.2	4.8	3.83	0.09	12.7	6.7	11.5
49	133.4	0.285	61.0	1.1	6.62	3.603	14.958	13.647	19.6	6.0	18.5	4.8	3.83	0.08	12.8	6.8	11.6
50	135.5	0.289	60.9	1.1	6.62	3.672	15.285	13.952	19.9	6.0	18.8	4.9	3.86	0.08	12.9	7.0	11.9
51	136.6	0.294	60.9	1.1	6.63	3.757	15.466	14.113	20.1	6.0	19.0	4.9	3.87	0.07	13.0	7.1	12.0
52	137.2	0.298	60.8	1.0	6.63	3.826	15.557	14.190	20.2	6.0	19.2	5.0	3.86	0.07	13.1	7.1	12.1
53	139.3	0.303	60.8	1.0	6.64	3.903	15.884	14.492	20.5	6.0	19.5	5.0	3.90	0.07	13.2	7.2	12.2
54	140.8	0.307	60.7	0.9	6.64	3.980	16.120	14.707	20.7	6.0	19.8	5.1	3.89	0.06	13.3	7.4	12.4
55	141.7	0.312	60.7	0.8	6.65	4.056	16.265	14.833	20.8	6.0	19.9	5.1	3.90	0.06	13.4	7.4	12.5
56	142.4	0.317	60.6	0.8	6.65	4.133	16.374	14.925	20.9	6.0	20.1	5.2	3.89	0.05	13.4	7.5	12.6
57	143.9	0.321	60.6	0.8	6.66	4.210	16.610	15.139	21.1	6.0	20.3	5.2	3.91	0.05	13.5	7.6	12.8
58	144.3	0.325	60.5	0.7	6.66	4.279	16.665	15.180	21.1	6.0	20.4	5.3	3.89	0.05	13.6	7.6	12.8
59	146.0	0.330	60.5	0.6	6.67	4.356	16.937	15.427	21.4	6.0	20.7	5.3	3.90	0.04	13.7	7.7	13.0

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	148.0	0.334	60.4	0.6	6.67	4.425	17.245	15.710	21.7	6.0	21.1	5.4	3.92	0.04	13.8	7.9	13.2
61	149.2	0.338	60.4	0.6	6.68	4.494	17.427	15.872	21.8	6.0	21.3	5.4	3.94	0.03	13.9	7.9	13.3
62	150.8	0.343	60.3	0.5	6.68	4.571	17.681	16.101	22.1	6.0	21.6	5.5	3.95	0.03	14.0	8.1	13.5
63	151.9	0.347	60.3	0.4	6.69	4.640	17.863	16.262	22.2	6.0	21.8	5.5	3.94	0.03	14.1	8.1	13.7
64	153.2	0.351	60.2	0.4	6.69	4.709	18.062	16.440	22.4	6.0	22.0	5.6	3.96	0.02	14.2	8.2	13.8
65	153.9	0.356	60.2	0.4	6.70	4.786	18.171	16.530	22.5	6.0	22.1	5.6	3.95	0.02	14.2	8.3	13.9
66	155.5	0.360	60.1	0.3	6.70	4.855	18.425	16.759	22.7	6.0	22.4	5.7	3.96	0.02	14.3	8.4	14.0
67	157.0	0.364	60.1	0.2	6.71	4.924	18.661	16.970	22.9	6.0	22.7	5.7	3.96	0.01	14.4	8.5	14.2
68	158.1	0.368	60.0	0.2	6.71	4.994	18.825	17.113	23.1	6.0	22.9	5.8	3.97	0.01	14.5	8.6	14.3
69	159.0	0.373	60.0	0.1	6.72	5.070	18.970	17.236	23.2	6.0	23.1	5.8	3.96	0.01	14.6	8.6	14.4
70	160.6	0.377	59.9	0.1	6.72	5.140	19.224	17.464	23.4	6.0	23.3	5.9	3.97	0.01	14.7	8.7	14.6
71	161.2	0.381	59.9	0.0	6.73	5.209	19.315	17.537	23.5	6.0	23.5	5.9	3.96	0.00	14.7	8.8	14.7
72	163.0	0.386	59.8	0.0	6.74	5.286	19.605	17.797	23.8	6.0	23.8	6.0	3.99	0.00	14.9	8.9	14.9
73	164.6	0.390	59.8	-0.1	6.74	5.355	19.841	18.007	24.0	6.0	24.0	6.0	3.99	0.00	15.0	9.0	15.0
74	165.7	0.394	59.7	-0.1	6.74	5.424	20.023	18.165	24.1	6.0	24.2	6.1	3.99	-0.01	15.0	9.1	15.2
75	167.0	0.399	59.7	-0.1	6.75	5.501	20.223	18.338	24.3	6.0	24.4	6.1	4.00	-0.01	15.1	9.2	15.3
76	167.4	0.403	59.6	-0.2	6.76	5.570	20.295	18.393	24.4	6.0	24.6	6.2	3.98	-0.01	15.2	9.2	15.4
77	168.6	0.407	59.6	-0.3	6.76	5.647	20.477	18.549	24.5	6.0	24.8	6.2	3.98	-0.01	15.2	9.3	15.5
78	170.1	0.412	59.5	-0.3	6.77	5.723	20.713	18.755	24.7	6.0	25.0	6.3	4.00	-0.02	15.3	9.4	15.6
79	171.2	0.416	59.5	-0.4	6.77	5.793	20.876	18.895	24.9	6.0	25.2	6.3	3.99	-0.02	15.4	9.4	15.8
80	172.3	0.421	59.4	-0.4	6.78	5.869	21.058	19.050	25.0	6.0	25.4	6.4	3.99	-0.02	15.5	9.5	15.9
81	173.5	0.426	59.4	-0.4	6.78	5.954	21.239	19.203	25.2	6.0	25.6	6.4	4.00	-0.02	15.6	9.6	16.0
82	175.2	0.430	59.3	-0.5	6.79	6.023	21.511	19.444	25.4	6.0	25.9	6.5	4.00	-0.03	15.7	9.7	16.2
83	176.5	0.434	59.3	-0.6	6.79	6.100	21.711	19.615	25.6	6.0	26.1	6.5	4.01	-0.03	15.8	9.8	16.3
84	177.8	0.439	59.2	-0.6	6.80	6.177	21.911	19.786	25.7	6.0	26.4	6.6	4.01	-0.03	15.9	9.9	16.5
85	179.7	0.443	59.2	-0.6	6.80	6.246	22.219	20.060	26.0	6.0	26.7	6.6	4.04	-0.03	16.0	10.0	16.6
86	180.0	0.448	59.1	-0.7	6.81	6.323	22.256	20.077	26.0	6.0	26.7	6.7	4.01	-0.03	16.0	10.0	16.7
87	182.3	0.452	59.1	-0.8	6.82	6.399	22.619	20.399	26.4	6.0	27.1	6.7	4.04	-0.04	16.2	10.2	16.9
88	183.2	0.457	59.0	-0.8	6.82	6.469	22.764	20.520	26.5	6.0	27.3	6.8	4.03	-0.04	16.2	10.3	17.0
89	185.2	0.461	59.0	-0.9	6.83	6.545	23.073	20.790	26.8	6.0	27.6	6.8	4.04	-0.04	16.4	10.4	17.2
90	185.7	0.465	58.9	-0.9	6.83	6.615	23.163	20.859	26.8	6.0	27.7	6.9	4.04	-0.04	16.4	10.4	17.3
91	186.8	0.470	58.9	-1.0	6.84	6.691	23.327	20.994	27.0	6.0	27.9	6.9	4.03	-0.05	16.5	10.5	17.4
92	188.3	0.474	58.8	-1.0	6.84	6.768	23.563	21.196	27.2	6.0	28.2	7.0	4.04	-0.05	16.6	10.6	17.6
93	189.0	0.479	58.8	-1.1	6.85	6.845	23.672	21.279	27.2	6.0	28.3	7.0	4.02	-0.05	16.6	10.6	17.7
94	191.1	0.484	58.7	-1.1	6.85	6.922	23.998	21.565	27.5	6.0	28.7	7.1	4.04	-0.05	16.7	10.8	17.9
95	192.0	0.488	58.7	-1.2	6.86	6.999	24.144	21.682	27.6	6.0	28.8	7.1	4.04	-0.05	16.8	10.8	18.0
96	193.5	0.493	58.6	-1.2	6.86	7.076	24.380	21.883	27.8	6.0	29.1	7.2	4.04	-0.06	16.9	10.9	18.1
97	194.2	0.497	58.6	-1.3	6.87	7.152	24.489	21.965	27.9	6.0	29.2	7.2	4.04	-0.06	16.9	11.0	18.2
98	195.8	0.502	58.5	-1.3	6.88	7.229	24.743	22.182	28.1	6.0	29.5	7.3	4.04	-0.06	17.1	11.1	18.4
99	196.7	0.506	58.5	-1.4	6.88	7.298	24.888	22.300	28.3	6.0	29.6	7.3	4.04	-0.06	17.1	11.1	18.5
100	198.3	0.511	58.4	-1.4	6.89	7.375	25.124	22.499	28.5	6.0	29.9	7.4	4.04	-0.06	17.2	11.2	18.6

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	198.9	0.515	58.4	-1.5	6.89	7.452	25.233	22.581	28.5	6.0	30.0	7.4	4.03	-0.07	17.3	11.3	18.7
102	200.6	0.520	58.3	-1.5	6.90	7.529	25.487	22.796	28.8	6.0	30.3	7.5	4.05	-0.07	17.4	11.4	18.9
103	201.4	0.524	58.3	-1.6	6.90	7.598	25.614	22.896	28.9	6.0	30.4	7.5	4.04	-0.07	17.4	11.4	19.0
104	203.0	0.529	58.2	-1.6	6.91	7.675	25.868	23.111	29.1	6.0	30.7	7.6	4.04	-0.07	17.5	11.6	19.2
105	203.9	0.533	58.1	-1.7	6.92	7.752	26.013	23.225	29.2	6.0	30.9	7.7	4.03	-0.07	17.6	11.6	19.3
106	205.3	0.538	58.1	-1.7	6.92	7.821	26.231	23.408	29.4	6.0	31.1	7.7	4.05	-0.07	17.7	11.7	19.4
107	206.4	0.542	58.1	-1.8	6.93	7.898	26.395	23.538	29.5	6.0	31.3	7.7	4.04	-0.08	17.7	11.8	19.5
108	207.6	0.546	58.0	-1.8	6.93	7.967	26.594	23.704	29.7	6.0	31.5	7.8	4.04	-0.08	17.8	11.9	19.7
109	209.0	0.551	57.9	-1.9	6.94	8.044	26.812	23.884	29.8	6.0	31.7	7.9	4.04	-0.08	17.9	11.9	19.8
110	209.8	0.555	57.9	-1.9	6.94	8.120	26.939	23.980	29.9	6.0	31.9	7.9	4.04	-0.08	18.0	12.0	19.9
111	210.9	0.560	57.9	-2.0	6.95	8.189	27.103	24.111	30.1	6.0	32.1	7.9	4.03	-0.08	18.0	12.1	20.0
112	211.8	0.564	57.8	-2.0	6.95	8.266	27.248	24.223	30.2	6.0	32.2	8.0	4.04	-0.08	18.1	12.1	20.1
113	212.7	0.568	57.8	-2.1	6.96	8.335	27.393	24.338	30.3	6.0	32.4	8.0	4.03	-0.09	18.1	12.2	20.2
114	213.5	0.572	57.7	-2.1	6.96	8.405	27.520	24.435	30.4	6.0	32.5	8.1	4.02	-0.09	18.2	12.2	20.3
115	215.3	0.577	57.7	-2.2	6.97	8.481	27.792	24.663	30.6	6.0	32.8	8.1	4.03	-0.09	18.3	12.3	20.5
116	215.5	0.581	57.6	-2.2	6.98	8.551	27.829	24.677	30.6	6.0	32.9	8.2	4.01	-0.09	18.3	12.3	20.5
117	216.3	0.585	57.6	-2.3	6.98	8.620	27.956	24.774	30.7	6.0	33.0	8.2	4.01	-0.09	18.3	12.4	20.6
118	217.7	0.590	57.5	-2.3	6.99	8.689	28.174	24.954	30.9	6.0	33.2	8.3	4.01	-0.09	18.4	12.5	20.8
119	219.2	0.594	57.5	-2.4	6.99	8.758	28.410	25.150	31.1	6.0	33.5	8.3	4.02	-0.09	18.5	12.6	20.9
120	220.1	0.598	57.4	-2.4	7.00	8.835	28.555	25.260	31.2	6.0	33.6	8.4	4.01	-0.10	18.6	12.6	21.0
121	222.5	0.603	57.4	-2.5	7.00	8.912	28.918	25.569	31.5	6.0	34.0	8.4	4.03	-0.10	18.7	12.8	21.2
122	221.8	0.607	57.3	-2.5	7.01	8.981	28.809	25.450	31.4	6.0	33.9	8.5	3.99	-0.10	18.7	12.7	21.2
123	223.3	0.611	57.2	-2.6	7.01	9.050	29.045	25.644	31.6	6.0	34.2	8.6	4.00	-0.10	18.8	12.8	21.4
124	224.8	0.616	57.2	-2.6	7.02	9.127	29.281	25.837	31.8	6.0	34.4	8.6	4.01	-0.10	18.9	12.9	21.5
125	226.2	0.620	57.2	-2.7	7.03	9.204	29.499	26.012	32.0	6.0	34.7	8.6	4.01	-0.10	19.0	13.0	21.7
126	225.9	0.624	57.1	-2.7	7.03	9.273	29.463	25.959	31.9	6.0	34.7	8.7	3.98	-0.11	18.9	13.0	21.7
127	227.0	0.629	57.0	-2.8	7.04	9.350	29.626	26.084	32.0	6.0	34.8	8.8	3.98	-0.11	19.0	13.0	21.8
128	228.4	0.633	57.0	-2.8	7.04	9.419	29.844	26.261	32.2	6.0	35.1	8.8	3.99	-0.11	19.1	13.1	21.9
129	229.1	0.638	56.9	-2.9	7.05	9.495	29.953	26.337	32.3	6.0	35.2	8.9	3.98	-0.11	19.1	13.2	22.0
130	231.3	0.642	56.9	-2.9	7.05	9.572	30.298	26.625	32.6	6.0	35.5	8.9	4.00	-0.11	19.3	13.3	22.2
131	232.2	0.647	56.9	-3.0	7.06	9.641	30.443	26.736	32.7	6.0	35.7	8.9	3.99	-0.11	19.3	13.4	22.3
132	233.1	0.651	56.8	-3.0	7.07	9.718	30.588	26.843	32.8	6.0	35.8	9.0	3.98	-0.11	19.4	13.4	22.4
133	233.6	0.656	56.7	-3.1	7.07	9.795	30.661	26.885	32.8	6.0	35.9	9.1	3.97	-0.12	19.4	13.4	22.5
134	235.0	0.660	56.7	-3.2	7.08	9.872	30.878	27.058	33.0	6.0	36.2	9.1	3.97	-0.12	19.5	13.5	22.6
135	236.8	0.665	56.7	-3.2	7.08	9.941	31.169	27.298	33.3	6.0	36.4	9.1	3.99	-0.12	19.6	13.6	22.8
136	237.0	0.670	56.6	-3.2	7.09	10.026	31.205	27.305	33.3	6.0	36.5	9.2	3.97	-0.12	19.6	13.7	22.9
137	238.7	0.674	56.5	-3.3	7.10	10.095	31.459	27.512	33.5	6.0	36.8	9.3	3.97	-0.12	19.7	13.8	23.0
138	239.7	0.678	56.5	-3.3	7.10	10.172	31.623	27.634	33.6	6.0	36.9	9.3	3.98	-0.12	19.8	13.8	23.1
139	240.3	0.683	56.5	-3.4	7.11	10.248	31.713	27.691	33.7	6.0	37.0	9.3	3.96	-0.12	19.8	13.8	23.2
140	241.1	0.688	56.4	-3.4	7.11	10.325	31.841	27.781	33.7	6.0	37.2	9.4	3.95	-0.12	19.9	13.9	23.3
141	241.8	0.692	56.4	-3.5	7.12	10.402	31.949	27.854	33.8	6.0	37.3	9.4	3.95	-0.12	19.9	13.9	23.4

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	243.1	0.697	56.3	-3.5	7.13	10.479	32.149	28.008	34.0	6.0	37.5	9.5	3.95	-0.13	20.0	14.0	23.5
143	244.0	0.701	56.2	-3.6	7.13	10.548	32.294	28.116	34.1	6.0	37.7	9.6	3.94	-0.13	20.0	14.1	23.6
144	244.8	0.705	56.2	-3.6	7.14	10.625	32.421	28.205	34.2	6.0	37.8	9.6	3.94	-0.13	20.1	14.1	23.7
145	246.8	0.710	56.2	-3.7	7.14	10.702	32.730	28.455	34.4	6.0	38.1	9.6	3.95	-0.13	20.2	14.2	23.9
146	246.3	0.714	56.1	-3.7	7.15	10.771	32.657	28.368	34.3	6.0	38.1	9.7	3.93	-0.13	20.1	14.2	23.9
147	247.9	0.719	56.1	-3.8	7.16	10.848	32.912	28.570	34.5	6.0	38.3	9.7	3.94	-0.13	20.2	14.3	24.0
148	248.5	0.723	56.0	-3.8	7.16	10.917	33.002	28.628	34.6	6.0	38.4	9.8	3.93	-0.13	20.3	14.3	24.1
149	249.3	0.728	56.0	-3.9	7.17	10.994	33.129	28.715	34.7	6.0	38.6	9.8	3.92	-0.14	20.3	14.4	24.2
150	250.5	0.732	55.9	-3.9	7.17	11.063	33.311	28.854	34.8	6.0	38.7	9.9	3.92	-0.14	20.4	14.4	24.3
151	251.8	0.736	55.9	-4.0	7.18	11.132	33.511	29.008	35.0	6.0	38.9	9.9	3.92	-0.14	20.5	14.5	24.4
152	252.4	0.740	55.8	-4.0	7.18	11.209	33.620	29.079	35.0	6.0	39.0	10.0	3.92	-0.14	20.5	14.5	24.5
153	252.3	0.745	55.8	-4.1	7.19	11.278	33.601	29.040	35.0	6.0	39.1	10.0	3.90	-0.14	20.5	14.5	24.5
154	253.3	0.749	55.7	-4.1	7.20	11.355	33.747	29.143	35.1	6.0	39.2	10.1	3.89	-0.14	20.5	14.6	24.6
155	253.3	0.753	55.7	-4.2	7.20	11.424	33.747	29.120	35.1	6.0	39.3	10.1	3.87	-0.14	20.5	14.6	24.7
156	254.3	0.757	55.6	-4.2	7.21	11.493	33.910	29.241	35.2	6.0	39.4	10.2	3.88	-0.14	20.6	14.6	24.8
157	254.8	0.762	55.6	-4.2	7.21	11.570	33.983	29.279	35.2	6.0	39.5	10.2	3.87	-0.14	20.6	14.6	24.8
158	255.1	0.766	55.5	-4.3	7.22	11.639	34.037	29.304	35.3	6.0	39.6	10.3	3.86	-0.15	20.6	14.7	24.9
159	256.4	0.771	55.5	-4.3	7.23	11.716	34.237	29.454	35.4	6.0	39.8	10.3	3.86	-0.15	20.7	14.7	25.0
160	256.4	0.775	55.5	-4.4	7.23	11.785	34.237	29.430	35.4	6.0	39.8	10.3	3.85	-0.15	20.7	14.7	25.1
161	256.8	0.780	55.4	-4.4	7.24	11.862	34.309	29.468	35.4	6.0	39.9	10.4	3.83	-0.15	20.7	14.7	25.1
162	258.1	0.784	55.4	-4.5	7.24	11.931	34.509	29.620	35.6	6.0	40.0	10.4	3.84	-0.15	20.8	14.8	25.2
163	258.7	0.788	55.3	-4.5	7.25	12.008	34.600	29.673	35.6	6.0	40.2	10.5	3.83	-0.15	20.8	14.8	25.3
164	259.0	0.793	55.3	-4.6	7.26	12.084	34.654	29.695	35.7	6.0	40.2	10.5	3.82	-0.15	20.8	14.8	25.4
165	260.0	0.797	55.2	-4.6	7.26	12.154	34.800	29.798	35.8	6.0	40.4	10.6	3.82	-0.15	20.9	14.9	25.5
166	260.9	0.802	55.2	-4.7	7.27	12.230	34.945	29.899	35.9	6.0	40.5	10.6	3.81	-0.16	20.9	14.9	25.6
167	261.4	0.806	55.1	-4.7	7.27	12.307	35.017	29.936	35.9	6.0	40.6	10.7	3.81	-0.16	20.9	15.0	25.6
168	262.2	0.811	55.1	-4.8	7.28	12.384	35.144	30.020	36.0	6.0	40.7	10.7	3.80	-0.16	21.0	15.0	25.7
169	262.3	0.815	55.1	-4.8	7.29	12.461	35.163	30.009	36.0	6.0	40.8	10.7	3.79	-0.16	21.0	15.0	25.8
170	262.6	0.820	55.0	-4.8	7.29	12.530	35.217	30.032	36.0	6.0	40.8	10.8	3.78	-0.16	21.0	15.0	25.8
171	263.3	0.824	55.0	-4.9	7.30	12.607	35.326	30.101	36.1	6.0	40.9	10.8	3.78	-0.16	21.0	15.1	25.9
172	264.1	0.829	54.9	-4.9	7.31	12.684	35.453	30.184	36.1	6.0	41.1	10.9	3.77	-0.16	21.1	15.1	26.0
173	265.5	0.833	54.9	-5.0	7.31	12.761	35.671	30.347	36.3	6.0	41.3	10.9	3.78	-0.16	21.1	15.2	26.1
174	265.1	0.838	54.8	-5.0	7.32	12.830	35.598	30.259	36.2	6.0	41.2	11.0	3.76	-0.16	21.1	15.1	26.1
175	266.1	0.842	54.8	-5.0	7.32	12.906	35.762	30.374	36.3	6.0	41.4	11.0	3.76	-0.17	21.1	15.2	26.2
176	266.9	0.846	54.7	-5.1	7.33	12.976	35.889	30.460	36.4	6.0	41.5	11.1	3.75	-0.17	21.2	15.2	26.3
177	267.2	0.851	54.7	-5.1	7.34	13.052	35.925	30.464	36.4	6.0	41.6	11.1	3.75	-0.17	21.2	15.2	26.3
178	267.6	0.855	54.7	-5.2	7.34	13.129	35.998	30.499	36.5	6.0	41.6	11.1	3.74	-0.17	21.2	15.2	26.4
179	268.7	0.860	54.6	-5.2	7.35	13.206	36.161	30.614	36.6	6.0	41.8	11.2	3.74	-0.17	21.3	15.3	26.5
180	269.7	0.865	54.6	-5.3	7.36	13.283	36.324	30.728	36.7	6.0	41.9	11.2	3.74	-0.17	21.3	15.4	26.6
181	270.4	0.869	54.5	-5.3	7.36	13.352	36.433	30.797	36.8	6.0	42.1	11.3	3.73	-0.17	21.4	15.4	26.7
182	271.2	0.873	54.5	-5.3	7.37	13.429	36.560	30.879	36.8	6.0	42.2	11.3	3.73	-0.17	21.4	15.4	26.7

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	271.3	0.878	54.5	-5.4	7.38	13.506	36.579	30.866	36.8	6.0	42.2	11.3	3.72	-0.17	21.4	15.4	26.8
184	271.6	0.883	54.4	-5.4	7.38	13.583	36.615	30.870	36.8	6.0	42.2	11.4	3.72	-0.17	21.4	15.4	26.8
185	272.7	0.887	54.4	-5.4	7.39	13.652	36.796	31.001	37.0	6.0	42.4	11.4	3.72	-0.18	21.5	15.5	26.9
186	272.4	0.891	54.4	-5.5	7.39	13.729	36.742	30.926	36.9	6.0	42.4	11.4	3.70	-0.18	21.4	15.5	26.9
187	272.6	0.896	54.3	-5.5	7.40	13.798	36.778	30.932	36.9	6.0	42.4	11.5	3.69	-0.18	21.4	15.5	26.9
188	273.8	0.900	54.3	-5.5	7.41	13.874	36.960	31.060	37.0	6.0	42.6	11.5	3.70	-0.18	21.5	15.5	27.0
189	274.8	0.905	54.3	-5.6	7.41	13.951	37.123	31.172	37.1	6.0	42.7	11.5	3.70	-0.18	21.5	15.6	27.1
190	274.9	0.909	54.2	-5.6	7.42	14.028	37.141	31.159	37.1	6.0	42.8	11.6	3.69	-0.18	21.5	15.6	27.2
191	275.5	0.914	54.2	-5.7	7.43	14.105	37.232	31.209	37.2	6.0	42.8	11.6	3.68	-0.18	21.6	15.6	27.2
192	275.7	0.919	54.1	-5.7	7.43	14.182	37.268	31.211	37.2	6.0	42.9	11.7	3.67	-0.18	21.6	15.6	27.3
193	276.4	0.923	54.1	-5.8	7.44	14.251	37.377	31.279	37.2	6.0	43.0	11.7	3.67	-0.18	21.6	15.6	27.4
194	276.6	0.927	54.1	-5.8	7.45	14.328	37.414	31.281	37.2	6.0	43.0	11.7	3.66	-0.18	21.6	15.6	27.4
195	278.4	0.931	54.0	-5.8	7.45	14.397	37.686	31.488	37.4	6.0	43.3	11.8	3.68	-0.18	21.7	15.7	27.5
196	278.8	0.936	54.0	-5.9	7.46	14.474	37.758	31.521	37.5	6.0	43.3	11.8	3.67	-0.19	21.7	15.8	27.6
197	279.1	0.940	53.9	-5.9	7.46	14.543	37.795	31.526	37.5	6.0	43.4	11.9	3.66	-0.19	21.7	15.8	27.6
198	280.0	0.945	53.9	-6.0	7.47	14.620	37.940	31.621	37.6	6.0	43.5	11.9	3.65	-0.19	21.8	15.8	27.7
199	280.2	0.949	53.9	-6.0	7.48	14.689	37.976	31.626	37.6	6.0	43.6	11.9	3.65	-0.19	21.8	15.8	27.8
200	280.0	0.953	53.8	-6.0	7.48	14.758	37.940	31.569	37.5	6.0	43.5	12.0	3.64	-0.19	21.7	15.8	27.8
201	281.4	0.958	53.8	-6.0	7.49	14.835	38.158	31.725	37.7	6.0	43.7	12.0	3.64	-0.19	21.8	15.9	27.9
202	282.4	0.962	53.8	-6.1	7.50	14.904	38.321	31.838	37.8	6.0	43.9	12.0	3.65	-0.19	21.9	15.9	28.0
203	282.3	0.966	53.7	-6.1	7.50	14.981	38.303	31.793	37.8	6.0	43.9	12.1	3.63	-0.19	21.9	15.9	28.0
204	283.0	0.971	53.7	-6.2	7.51	15.050	38.412	31.859	37.8	6.0	44.0	12.1	3.63	-0.19	21.9	15.9	28.0
205	283.5	0.975	53.7	-6.2	7.52	15.119	38.485	31.894	37.9	6.0	44.0	12.1	3.63	-0.19	21.9	15.9	28.1
206	284.2	0.979	53.7	-6.2	7.52	15.196	38.594	31.957	37.9	6.0	44.1	12.1	3.63	-0.19	21.9	16.0	28.1
207	284.6	0.983	53.6	-6.2	7.53	15.265	38.666	31.992	38.0	6.0	44.2	12.2	3.62	-0.20	22.0	16.0	28.2
208	285.6	0.988	53.6	-6.3	7.53	15.334	38.811	32.088	38.0	6.0	44.3	12.2	3.62	-0.20	22.0	16.0	28.3
209	285.7	0.992	53.5	-6.3	7.54	15.403	38.830	32.077	38.0	6.0	44.3	12.3	3.62	-0.20	22.0	16.0	28.3
210	286.7	0.996	53.5	-6.4	7.55	15.480	38.993	32.185	38.1	6.0	44.5	12.3	3.61	-0.20	22.1	16.1	28.4
211	286.4	1.001	53.5	-6.4	7.55	15.557	38.938	32.109	38.1	6.0	44.4	12.3	3.61	-0.20	22.0	16.1	28.4
212	287.4	1.005	53.4	-6.4	7.56	15.626	39.102	32.220	38.2	6.0	44.6	12.4	3.61	-0.20	22.1	16.1	28.5
213	288.2	1.010	53.4	-6.5	7.57	15.703	39.229	32.297	38.3	6.0	44.7	12.4	3.60	-0.20	22.1	16.1	28.6
214	288.2	1.015	53.4	-6.5	7.58	15.787	39.229	32.264	38.2	6.0	44.7	12.4	3.59	-0.20	22.1	16.1	28.6
215	289.3	1.019	53.3	-6.5	7.58	15.857	39.392	32.374	38.3	6.0	44.9	12.5	3.59	-0.20	22.1	16.2	28.7
216	289.7	1.023	53.3	-6.6	7.59	15.933	39.465	32.405	38.4	6.0	44.9	12.5	3.59	-0.20	22.2	16.2	28.7
217	291.0	1.028	53.2	-6.6	7.60	16.010	39.665	32.542	38.5	6.0	45.1	12.6	3.59	-0.20	22.2	16.3	28.8
218	290.4	1.033	53.2	-6.6	7.60	16.087	39.574	32.436	38.4	6.0	45.0	12.6	3.58	-0.20	22.2	16.2	28.8
219	291.6	1.037	53.2	-6.7	7.61	16.164	39.755	32.557	38.5	6.0	45.2	12.6	3.58	-0.20	22.2	16.3	28.9
220	292.3	1.042	53.2	-6.7	7.62	16.241	39.864	32.618	38.6	6.0	45.3	12.6	3.58	-0.20	22.3	16.3	29.0
221	292.3	1.046	53.1	-6.7	7.62	16.310	39.864	32.591	38.6	6.0	45.3	12.7	3.57	-0.21	22.3	16.3	29.0
222	293.0	1.051	53.1	-6.7	7.63	16.387	39.973	32.651	38.6	6.0	45.4	12.7	3.57	-0.21	22.3	16.3	29.0
223	294.0	1.055	53.1	-6.8	7.64	16.463	40.137	32.757	38.7	6.0	45.5	12.7	3.57	-0.21	22.3	16.4	29.1

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	293.8	1.059	53.0	-6.8	7.64	16.533	40.100	32.699	38.7	6.0	45.5	12.8	3.56	-0.21	22.3	16.3	29.1
225	294.9	1.064	53.0	-6.9	7.65	16.609	40.282	32.819	38.8	6.0	45.6	12.8	3.56	-0.21	22.4	16.4	29.2
226	295.1	1.069	53.0	-6.9	7.66	16.686	40.300	32.803	38.8	6.0	45.7	12.8	3.55	-0.21	22.4	16.4	29.3
227	296.6	1.073	52.9	-6.9	7.66	16.755	40.536	32.972	38.9	6.0	45.9	12.9	3.56	-0.21	22.4	16.5	29.4
228	296.9	1.077	52.9	-6.9	7.67	16.832	40.590	32.986	38.9	6.0	45.9	12.9	3.56	-0.21	22.5	16.5	29.4
229	297.3	1.082	52.9	-7.0	7.68	16.909	40.645	33.000	39.0	6.0	45.9	12.9	3.55	-0.21	22.5	16.5	29.4
230	298.1	1.086	52.8	-7.0	7.68	16.978	40.772	33.078	39.0	6.0	46.1	13.0	3.55	-0.21	22.5	16.5	29.5
231	298.5	1.091	52.8	-7.1	7.69	17.055	40.845	33.107	39.1	6.0	46.1	13.0	3.54	-0.21	22.5	16.6	29.6
232	299.8	1.095	52.7	-7.1	7.70	17.132	41.044	33.241	39.2	6.0	46.3	13.1	3.55	-0.21	22.6	16.6	29.7
233	299.6	1.099	52.7	-7.1	7.70	17.201	41.008	33.182	39.1	6.0	46.3	13.1	3.54	-0.21	22.6	16.6	29.7
234	300.2	1.104	52.7	-7.2	7.71	17.270	41.099	33.229	39.2	6.0	46.3	13.1	3.53	-0.22	22.6	16.6	29.7
235	300.0	1.108	52.7	-7.2	7.72	17.347	41.081	33.182	39.1	6.0	46.3	13.1	3.53	-0.22	22.6	16.6	29.7
236	301.2	1.113	52.6	-7.2	7.73	17.424	41.262	33.301	39.3	6.0	46.5	13.2	3.52	-0.22	22.6	16.7	29.9
237	301.5	1.117	52.6	-7.2	7.73	17.501	41.316	33.314	39.3	6.0	46.5	13.2	3.52	-0.22	22.6	16.7	29.9
238	301.5	1.121	52.6	-7.3	7.74	17.570	41.316	33.285	39.2	6.0	46.5	13.2	3.52	-0.22	22.6	16.6	29.9
239	302.8	1.126	52.5	-7.3	7.75	17.639	41.516	33.421	39.4	6.0	46.7	13.3	3.52	-0.22	22.7	16.7	30.0
240	303.4	1.130	52.5	-7.3	7.75	17.716	41.607	33.464	39.4	6.0	46.8	13.3	3.52	-0.22	22.7	16.7	30.0
241	304.0	1.134	52.5	-7.4	7.76	17.785	41.698	33.510	39.5	6.0	46.9	13.3	3.51	-0.22	22.7	16.8	30.1
242	304.8	1.139	52.4	-7.4	7.77	17.862	41.825	33.582	39.5	6.0	47.0	13.4	3.51	-0.22	22.8	16.8	30.2
243	304.4	1.144	52.4	-7.4	7.77	17.938	41.770	33.505	39.5	6.0	46.9	13.4	3.50	-0.22	22.7	16.8	30.2
244	304.7	1.148	52.4	-7.5	7.78	18.008	41.807	33.506	39.5	6.0	46.9	13.4	3.49	-0.22	22.7	16.8	30.2
245	305.5	1.152	52.3	-7.5	7.79	18.084	41.934	33.578	39.5	6.0	47.0	13.5	3.49	-0.22	22.7	16.8	30.3
246	305.7	1.156	52.3	-7.5	7.79	18.154	41.970	33.579	39.5	6.0	47.1	13.5	3.49	-0.22	22.8	16.8	30.3
247	306.4	1.161	52.3	-7.6	7.80	18.230	42.079	33.636	39.6	6.0	47.2	13.5	3.49	-0.22	22.8	16.8	30.3
248	306.3	1.166	52.3	-7.6	7.81	18.307	42.061	33.589	39.5	6.0	47.1	13.5	3.48	-0.23	22.8	16.8	30.3
249	307.1	1.170	52.2	-7.6	7.82	18.376	42.188	33.663	39.6	6.0	47.2	13.6	3.48	-0.23	22.8	16.8	30.4
250	307.3	1.174	52.2	-7.6	7.82	18.446	42.224	33.664	39.6	6.0	47.3	13.6	3.47	-0.23	22.8	16.8	30.4
251	307.5	1.179	52.2	-7.7	7.83	18.522	42.242	33.646	39.6	6.0	47.3	13.6	3.47	-0.23	22.8	16.8	30.5
252	309.4	1.183	52.1	-7.7	7.84	18.591	42.551	33.868	39.8	6.0	47.6	13.7	3.47	-0.23	22.9	16.9	30.6
253	309.9	1.187	52.1	-7.8	7.84	18.668	42.624	33.894	39.9	6.0	47.6	13.7	3.47	-0.23	22.9	16.9	30.7
254	310.1	1.191	52.1	-7.8	7.85	18.737	42.660	33.895	39.9	6.0	47.6	13.7	3.47	-0.23	22.9	16.9	30.7
255	310.2	1.196	52.0	-7.8	7.86	18.814	42.678	33.876	39.8	6.0	47.7	13.8	3.46	-0.23	22.9	16.9	30.7
256	310.7	1.200	52.0	-7.8	7.86	18.883	42.751	33.906	39.9	6.0	47.7	13.8	3.46	-0.23	22.9	17.0	30.7
257	311.5	1.205	52.0	-7.9	7.87	18.960	42.878	33.976	39.9	6.0	47.8	13.8	3.45	-0.23	22.9	17.0	30.8
258	312.0	1.209	51.9	-7.9	7.88	19.037	42.950	34.002	40.0	6.0	47.9	13.9	3.45	-0.23	23.0	17.0	30.9
259	312.8	1.214	51.9	-7.9	7.89	19.106	43.077	34.075	40.0	6.0	48.0	13.9	3.45	-0.23	23.0	17.0	30.9
260	313.5	1.218	51.9	-8.0	7.89	19.183	43.186	34.130	40.1	6.0	48.1	13.9	3.45	-0.23	23.0	17.1	31.0
261	314.1	1.223	51.8	-8.0	7.90	19.260	43.277	34.170	40.1	6.0	48.1	14.0	3.45	-0.23	23.0	17.1	31.0
262	315.1	1.227	51.8	-8.0	7.91	19.329	43.440	34.272	40.2	6.0	48.3	14.0	3.45	-0.23	23.1	17.1	31.1
263	314.7	1.231	51.8	-8.1	7.92	19.406	43.386	34.195	40.2	6.0	48.2	14.0	3.44	-0.24	23.1	17.1	31.1
264	315.6	1.236	51.8	-8.1	7.92	19.483	43.513	34.264	40.2	6.0	48.3	14.0	3.44	-0.24	23.1	17.1	31.2

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
265	315.9	1.241	51.7	-8.1	7.93	19.559	43.567	34.274	40.2	6.0	48.4	14.1	3.43	-0.24	23.1	17.1	31.2
266	316.6	1.245	51.7	-8.1	7.94	19.629	43.676	34.331	40.3	6.0	48.4	14.1	3.43	-0.24	23.1	17.2	31.3
267	317.5	1.249	51.7	-8.2	7.94	19.705	43.822	34.414	40.4	6.0	48.5	14.1	3.43	-0.24	23.2	17.2	31.3
268	318.0	1.254	51.6	-8.2	7.95	19.782	43.894	34.439	40.4	6.0	48.6	14.2	3.43	-0.24	23.2	17.2	31.4
269	319.0	1.259	51.6	-8.3	7.96	19.859	44.058	34.536	40.5	6.0	48.8	14.2	3.43	-0.24	23.2	17.3	31.5
270	319.0	1.263	51.6	-8.3	7.97	19.936	44.058	34.502	40.5	6.0	48.7	14.2	3.43	-0.24	23.2	17.3	31.5
271	318.8	1.268	51.5	-8.3	7.98	20.013	44.021	34.439	40.4	6.0	48.7	14.3	3.42	-0.24	23.2	17.2	31.5
272	319.8	1.268	51.5	-8.3	7.98	20.013	44.185	34.570	40.5	6.0	48.8	14.3	3.43	-0.24	23.2	17.3	31.5

Specimen B Shear Data

CU Triaxial Test

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File Location
T-5783.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5783
Sample Location: Guilford County (Sta. 403+45)
Sample Description: Brownish-orange colored silt
Remarks: 30° shear plane

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.6860001
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.863	2.795	
Height (in)	6.037	5.891	
Weight (grams)	1257.00		1311.00
Moisture (%)	14.27		19.18
Dry Density (pcf)	107.83	115.94	
Saturation (%)	69.06	100.00	
Void Ratio	0.551	0.446	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 72.000
Effective Confining Stress (psi): 12.0
Corrected Peak Deviator Stress (psi): 38.458 at reading number: 271

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	26.5	0.196	60.0	0.0	6.14	0.000	0.000	0.000	12.0	12.0	12.0	12.0	1.00	0.00	12.0	0.0	12.0
1	51.2	0.200	61.4	1.4	6.14	0.068	4.033	4.004	16.0	12.0	14.6	10.6	1.38	0.34	14.0	2.0	12.6
2	58.2	0.204	62.3	2.3	6.14	0.146	5.178	5.113	17.1	12.0	14.8	9.7	1.53	0.45	14.5	2.6	12.2
3	62.7	0.209	63.0	2.9	6.15	0.224	5.909	5.808	17.8	12.0	14.8	9.0	1.64	0.50	14.9	2.9	11.9
4	66.3	0.213	63.5	3.4	6.15	0.302	6.491	6.352	18.3	12.0	14.9	8.5	1.75	0.54	15.1	3.2	11.7
5	69.3	0.219	63.8	3.8	6.16	0.389	6.979	6.798	18.8	12.0	15.0	8.2	1.83	0.56	15.4	3.4	11.6
6	71.8	0.224	64.2	4.2	6.17	0.477	7.391	7.168	19.1	12.0	15.0	7.8	1.92	0.58	15.5	3.6	11.4
7	74.6	0.228	64.5	4.4	6.17	0.555	7.841	7.580	19.5	12.0	15.1	7.5	2.01	0.59	15.7	3.8	11.3
8	76.9	0.233	64.7	4.7	6.18	0.643	8.217	7.911	19.9	12.0	15.2	7.3	2.09	0.59	15.9	4.0	11.2
9	78.8	0.238	65.0	4.9	6.18	0.721	8.536	8.191	20.2	12.0	15.2	7.0	2.17	0.60	16.1	4.1	11.1
10	80.5	0.243	65.2	5.1	6.19	0.798	8.798	8.414	20.4	12.0	15.2	6.8	2.23	0.61	16.2	4.2	11.0
11	82.0	0.247	65.3	5.3	6.19	0.876	9.042	8.618	20.6	12.0	15.3	6.7	2.29	0.61	16.3	4.3	11.0
12	83.7	0.252	65.5	5.4	6.20	0.954	9.323	8.859	20.8	12.0	15.4	6.5	2.35	0.61	16.4	4.4	11.0
13	85.8	0.256	65.6	5.5	6.20	1.032	9.661	9.155	21.1	12.0	15.6	6.4	2.42	0.60	16.5	4.6	11.0
14	87.6	0.261	65.7	5.7	6.20	1.110	9.961	9.414	21.4	12.0	15.7	6.3	2.50	0.60	16.7	4.7	11.0
15	89.8	0.266	65.8	5.8	6.21	1.188	10.318	9.728	21.7	12.0	15.9	6.2	2.57	0.59	16.8	4.9	11.1
16	92.0	0.270	65.9	5.9	6.21	1.256	10.674	10.046	22.0	12.0	16.2	6.1	2.64	0.58	17.0	5.0	11.1
17	94.0	0.274	66.0	5.9	6.22	1.324	11.012	10.345	22.3	12.0	16.4	6.0	2.72	0.57	17.1	5.2	11.2
18	96.2	0.278	66.0	6.0	6.22	1.392	11.368	10.662	22.6	12.0	16.6	6.0	2.78	0.56	17.3	5.3	11.3

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	98.3	0.282	66.1	6.1	6.23	1.461	11.706	10.960	22.9	12.0	16.9	5.9	2.86	0.55	17.4	5.5	11.4
20	100.1	0.286	66.1	6.1	6.23	1.529	12.006	11.221	23.2	12.0	17.1	5.9	2.91	0.54	17.6	5.6	11.5
21	102.1	0.290	66.2	6.1	6.24	1.597	12.325	11.500	23.5	12.0	17.3	5.8	2.97	0.53	17.7	5.7	11.6
22	102.8	0.293	66.2	6.2	6.24	1.655	12.438	11.580	23.5	12.0	17.4	5.8	3.00	0.53	17.8	5.8	11.6
23	104.1	0.297	66.2	6.2	6.24	1.714	12.644	11.753	23.7	12.0	17.5	5.8	3.03	0.53	17.8	5.9	11.7
24	105.2	0.300	66.3	6.2	6.25	1.772	12.831	11.907	23.9	12.0	17.7	5.7	3.07	0.52	17.9	6.0	11.7
25	106.9	0.304	66.3	6.2	6.25	1.840	13.113	12.147	24.1	12.0	17.9	5.7	3.11	0.51	18.0	6.1	11.8
26	109.4	0.307	66.3	6.3	6.25	1.899	13.507	12.503	24.5	12.0	18.2	5.7	3.19	0.50	18.2	6.3	12.0
27	111.3	0.311	66.3	6.3	6.26	1.967	13.826	12.780	24.7	12.0	18.5	5.7	3.24	0.49	18.3	6.4	12.1
28	112.8	0.314	66.3	6.3	6.26	2.016	14.070	12.999	25.0	12.0	18.7	5.7	3.28	0.48	18.5	6.5	12.2
29	113.6	0.317	66.3	6.3	6.26	2.055	14.201	13.122	25.1	12.0	18.8	5.7	3.30	0.48	18.5	6.6	12.3
30	114.5	0.318	66.3	6.3	6.27	2.084	14.351	13.265	25.2	12.0	19.0	5.7	3.32	0.47	18.6	6.6	12.3
31	115.7	0.320	66.3	6.3	6.27	2.113	14.539	13.444	25.4	12.0	19.2	5.7	3.36	0.47	18.7	6.7	12.4
32	116.6	0.322	66.3	6.3	6.27	2.142	14.689	13.587	25.5	12.0	19.3	5.7	3.38	0.46	18.8	6.8	12.5
33	118.9	0.324	66.3	6.3	6.27	2.181	15.064	13.948	25.9	12.0	19.7	5.7	3.44	0.45	18.9	7.0	12.7
34	121.1	0.326	66.3	6.3	6.28	2.220	15.420	14.291	26.3	12.0	20.0	5.7	3.50	0.44	19.1	7.1	12.9
35	123.5	0.330	66.3	6.3	6.28	2.278	15.814	14.667	26.6	12.0	20.4	5.7	3.57	0.43	19.3	7.3	13.0
36	125.8	0.334	66.3	6.3	6.28	2.347	16.189	15.022	27.0	12.0	20.7	5.7	3.63	0.42	19.5	7.5	13.2
37	127.8	0.338	66.3	6.2	6.29	2.415	16.508	15.323	27.3	12.0	21.1	5.7	3.67	0.41	19.6	7.7	13.4
38	130.0	0.342	66.2	6.2	6.29	2.483	16.865	15.659	27.6	12.0	21.4	5.8	3.71	0.39	19.8	7.8	13.6
39	132.1	0.346	66.2	6.2	6.30	2.551	17.221	15.995	28.0	12.0	21.8	5.8	3.76	0.39	20.0	8.0	13.8
40	134.8	0.350	66.2	6.1	6.30	2.629	17.653	16.402	28.4	12.0	22.2	5.8	3.81	0.37	20.2	8.2	14.0
41	136.9	0.354	66.1	6.1	6.31	2.697	17.990	16.718	28.7	12.0	22.6	5.9	3.85	0.36	20.3	8.4	14.2
42	139.5	0.359	66.1	6.1	6.31	2.775	18.422	17.124	29.1	12.0	23.0	5.9	3.90	0.35	20.5	8.6	14.5
43	141.5	0.363	66.1	6.1	6.32	2.843	18.741	17.421	29.4	12.0	23.3	5.9	3.95	0.35	20.7	8.7	14.6
44	143.9	0.368	66.1	6.0	6.32	2.931	19.135	17.787	29.7	12.0	23.7	5.9	3.99	0.34	20.9	8.9	14.8
45	146.0	0.373	66.0	5.9	6.33	3.009	19.472	18.099	30.1	12.0	24.1	6.0	4.00	0.33	21.0	9.0	15.1
46	148.0	0.377	65.9	5.9	6.33	3.087	19.810	18.411	30.4	12.0	24.5	6.1	4.03	0.32	21.2	9.2	15.3
47	149.8	0.382	65.9	5.9	6.34	3.165	20.091	18.669	30.6	12.0	24.8	6.1	4.06	0.31	21.3	9.3	15.4
48	151.1	0.387	65.9	5.8	6.34	3.252	20.317	18.869	30.8	12.0	25.0	6.1	4.07	0.31	21.4	9.4	15.6
49	152.6	0.392	65.8	5.8	6.35	3.330	20.560	19.089	31.0	12.0	25.3	6.2	4.08	0.30	21.5	9.5	15.7
50	153.8	0.397	65.8	5.7	6.35	3.418	20.748	19.252	31.2	12.0	25.5	6.2	4.09	0.30	21.6	9.6	15.9
51	155.2	0.401	65.7	5.7	6.36	3.496	20.973	19.453	31.4	12.0	25.8	6.3	4.08	0.29	21.7	9.7	16.0
52	156.5	0.407	65.7	5.6	6.36	3.583	21.198	19.652	31.6	12.0	26.0	6.3	4.10	0.29	21.8	9.8	16.2
53	158.3	0.411	65.6	5.6	6.37	3.661	21.480	19.906	31.9	12.0	26.3	6.4	4.12	0.28	21.9	10.0	16.3
54	159.8	0.416	65.5	5.5	6.37	3.739	21.723	20.124	32.1	12.0	26.6	6.5	4.11	0.27	22.0	10.1	16.5
55	161.5	0.420	65.5	5.5	6.38	3.817	22.005	20.378	32.3	12.0	26.9	6.5	4.13	0.27	22.1	10.2	16.7
56	163.3	0.424	65.4	5.4	6.38	3.885	22.305	20.651	32.6	12.0	27.2	6.6	4.13	0.26	22.3	10.3	16.9
57	165.2	0.429	65.4	5.3	6.39	3.963	22.605	20.922	32.9	12.0	27.6	6.6	4.16	0.25	22.4	10.5	17.1
58	166.6	0.434	65.3	5.3	6.39	4.041	22.830	21.121	33.1	12.0	27.8	6.7	4.15	0.25	22.5	10.6	17.3
59	168.3	0.438	65.3	5.2	6.40	4.119	23.112	21.373	33.3	12.0	28.1	6.7	4.17	0.24	22.6	10.7	17.4

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	170.0	0.442	65.2	5.1	6.40	4.187	23.393	21.627	33.6	12.0	28.5	6.8	4.17	0.24	22.8	10.8	17.6
61	172.0	0.447	65.1	5.1	6.41	4.265	23.712	21.914	33.9	12.0	28.8	6.9	4.19	0.23	22.9	11.0	17.8
62	173.5	0.451	65.1	5.0	6.41	4.343	23.956	22.128	34.1	12.0	29.1	6.9	4.18	0.23	23.0	11.1	18.0
63	175.4	0.456	65.0	4.9	6.42	4.421	24.275	22.415	34.4	12.0	29.4	7.0	4.19	0.22	23.2	11.2	18.2
64	177.2	0.460	64.9	4.9	6.42	4.489	24.556	22.667	34.6	12.0	29.7	7.1	4.21	0.22	23.3	11.3	18.4
65	178.8	0.465	64.8	4.8	6.43	4.576	24.819	22.896	34.9	12.0	30.0	7.2	4.20	0.21	23.4	11.4	18.6
66	180.0	0.470	64.8	4.7	6.44	4.654	25.025	23.073	35.0	12.0	30.3	7.2	4.19	0.20	23.5	11.5	18.8
67	181.3	0.475	64.7	4.7	6.44	4.742	25.232	23.248	35.2	12.0	30.5	7.3	4.20	0.20	23.6	11.6	18.9
68	182.7	0.480	64.6	4.6	6.45	4.830	25.457	23.440	35.4	12.0	30.8	7.4	4.19	0.20	23.7	11.7	19.1
69	184.1	0.485	64.6	4.5	6.45	4.907	25.682	23.634	35.6	12.0	31.1	7.4	4.18	0.19	23.8	11.8	19.2
70	186.1	0.489	64.5	4.5	6.46	4.976	26.019	23.938	35.9	12.0	31.4	7.5	4.20	0.19	23.9	12.0	19.4
71	188.3	0.493	64.4	4.4	6.46	5.044	26.376	24.258	36.2	12.0	31.8	7.6	4.21	0.18	24.1	12.1	19.7
72	190.3	0.497	64.4	4.3	6.47	5.112	26.695	24.543	36.5	12.0	32.2	7.6	4.22	0.18	24.2	12.3	19.9
73	192.3	0.501	64.3	4.2	6.47	5.180	27.032	24.845	36.8	12.0	32.6	7.7	4.22	0.17	24.4	12.4	20.1
74	194.5	0.505	64.2	4.2	6.48	5.248	27.389	25.164	37.1	12.0	32.9	7.8	4.25	0.17	24.5	12.6	20.3
75	196.7	0.509	64.2	4.1	6.48	5.316	27.745	25.483	37.4	12.0	33.3	7.8	4.25	0.16	24.7	12.7	20.6
76	198.9	0.513	64.1	4.0	6.49	5.385	28.102	25.801	37.8	12.0	33.7	7.9	4.26	0.16	24.9	12.9	20.8
77	200.5	0.517	64.0	4.0	6.49	5.462	28.364	26.028	38.0	12.0	34.0	8.0	4.26	0.15	25.0	13.0	21.0
78	202.6	0.521	63.9	3.9	6.50	5.531	28.702	26.328	38.3	12.0	34.4	8.1	4.26	0.15	25.1	13.2	21.2
79	204.8	0.525	63.9	3.8	6.50	5.599	29.058	26.644	38.6	12.0	34.8	8.1	4.28	0.14	25.3	13.3	21.4
80	206.3	0.529	63.8	3.8	6.50	5.667	29.302	26.855	38.8	12.0	35.0	8.2	4.28	0.14	25.4	13.4	21.6
81	208.7	0.533	63.7	3.7	6.51	5.735	29.696	27.206	39.2	12.0	35.5	8.3	4.29	0.14	25.6	13.6	21.9
82	210.1	0.537	63.6	3.6	6.51	5.803	29.921	27.398	39.4	12.0	35.8	8.4	4.28	0.13	25.7	13.7	22.1
83	211.3	0.540	63.6	3.6	6.52	5.852	30.128	27.578	39.5	12.0	36.0	8.4	4.29	0.13	25.7	13.8	22.2
84	212.6	0.544	63.5	3.5	6.52	5.910	30.334	27.754	39.7	12.0	36.2	8.5	4.28	0.13	25.8	13.9	22.4
85	214.6	0.548	63.5	3.4	6.53	5.979	30.653	28.033	40.0	12.0	36.5	8.5	4.29	0.12	26.0	14.0	22.5
86	215.9	0.552	63.4	3.4	6.53	6.047	30.878	28.224	40.2	12.0	36.8	8.6	4.28	0.12	26.1	14.1	22.7
87	218.5	0.556	63.4	3.3	6.54	6.125	31.291	28.587	40.5	12.0	37.2	8.6	4.31	0.12	26.3	14.3	22.9
88	219.6	0.561	63.2	3.2	6.54	6.202	31.478	28.739	40.7	12.0	37.5	8.8	4.28	0.11	26.3	14.4	23.1
89	220.8	0.566	63.2	3.2	6.55	6.280	31.666	28.890	40.9	12.0	37.7	8.8	4.29	0.11	26.4	14.4	23.2
90	222.2	0.571	63.1	3.1	6.55	6.368	31.891	29.073	41.0	12.0	37.9	8.9	4.28	0.11	26.5	14.5	23.4
91	223.8	0.575	63.0	3.0	6.56	6.446	32.154	29.294	41.3	12.0	38.2	9.0	4.27	0.10	26.6	14.6	23.6
92	225.0	0.580	63.0	2.9	6.56	6.534	32.360	29.459	41.4	12.0	38.5	9.0	4.26	0.10	26.7	14.7	23.8
93	226.3	0.585	62.9	2.9	6.57	6.611	32.566	29.626	41.6	12.0	38.7	9.1	4.26	0.10	26.8	14.8	23.9
94	227.8	0.590	62.8	2.8	6.58	6.689	32.810	29.828	41.8	12.0	39.0	9.2	4.26	0.09	26.9	14.9	24.1
95	229.3	0.595	62.8	2.7	6.58	6.777	33.054	30.027	42.0	12.0	39.3	9.2	4.25	0.09	27.0	15.0	24.2
96	230.1	0.599	62.7	2.6	6.59	6.855	33.186	30.124	42.1	12.0	39.4	9.3	4.23	0.09	27.0	15.1	24.4
97	231.6	0.604	62.6	2.6	6.59	6.933	33.429	30.325	42.3	12.0	39.7	9.4	4.24	0.09	27.1	15.2	24.5
98	227.3	0.607	62.5	2.5	6.60	6.981	32.735	29.663	41.6	12.0	39.1	9.5	4.13	0.08	26.8	14.8	24.3
99	230.1	0.609	62.6	2.5	6.60	7.011	33.186	30.072	42.0	12.0	39.5	9.4	4.19	0.08	27.0	15.0	24.5
100	230.8	0.611	62.5	2.5	6.60	7.050	33.298	30.164	42.1	12.0	39.6	9.5	4.18	0.08	27.0	15.1	24.6

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	231.0	0.613	62.5	2.4	6.60	7.089	33.336	30.186	42.1	12.0	39.7	9.5	4.17	0.08	27.1	15.1	24.6
102	231.1	0.615	62.4	2.4	6.61	7.127	33.354	30.190	42.1	12.0	39.7	9.6	4.16	0.08	27.1	15.1	24.7
103	232.3	0.618	62.4	2.4	6.61	7.176	33.542	30.348	42.3	12.0	39.9	9.6	4.16	0.08	27.1	15.2	24.8
104	233.6	0.621	62.4	2.3	6.61	7.225	33.748	30.523	42.5	12.0	40.2	9.6	4.17	0.08	27.2	15.3	24.9
105	234.2	0.624	62.3	2.3	6.62	7.274	33.861	30.611	42.6	12.0	40.3	9.7	4.16	0.07	27.3	15.3	25.0
106	234.9	0.627	62.2	2.2	6.62	7.322	33.973	30.699	42.7	12.0	40.5	9.8	4.15	0.07	27.3	15.3	25.1
107	235.3	0.630	62.2	2.2	6.62	7.371	34.030	30.734	42.7	12.0	40.5	9.8	4.14	0.07	27.3	15.4	25.2
108	236.1	0.633	62.2	2.1	6.63	7.420	34.161	30.839	42.8	12.0	40.7	9.8	4.14	0.07	27.4	15.4	25.3
109	239.3	0.636	62.1	2.1	6.63	7.478	34.686	31.305	43.3	12.0	41.2	9.9	4.17	0.07	27.6	15.7	25.5
110	240.8	0.641	62.0	2.0	6.64	7.556	34.930	31.504	43.5	12.0	41.5	10.0	4.16	0.06	27.7	15.8	25.7
111	242.0	0.645	61.9	1.9	6.64	7.624	35.118	31.653	43.6	12.0	41.7	10.1	4.14	0.06	27.8	15.8	25.9
112	243.1	0.650	61.8	1.8	6.65	7.712	35.305	31.796	43.8	12.0	42.0	10.2	4.13	0.06	27.9	15.9	26.1
113	243.9	0.654	61.8	1.7	6.65	7.790	35.437	31.889	43.8	12.0	42.1	10.2	4.12	0.05	27.9	15.9	26.2
114	245.5	0.658	61.7	1.7	6.66	7.858	35.699	32.107	44.1	12.0	42.4	10.3	4.12	0.05	28.0	16.1	26.3
115	246.7	0.662	61.6	1.6	6.66	7.926	35.887	32.255	44.2	12.0	42.6	10.4	4.11	0.05	28.1	16.1	26.5
116	248.4	0.666	61.6	1.5	6.67	7.994	36.168	32.490	44.4	12.0	42.9	10.4	4.11	0.05	28.2	16.2	26.7
117	250.0	0.670	61.5	1.4	6.67	8.062	36.431	32.707	44.7	12.0	43.2	10.5	4.11	0.04	28.3	16.4	26.9
118	251.5	0.675	61.4	1.4	6.68	8.140	36.675	32.902	44.9	12.0	43.5	10.6	4.10	0.04	28.4	16.5	27.0
119	252.4	0.679	61.3	1.3	6.68	8.208	36.825	33.015	45.0	12.0	43.7	10.7	4.09	0.04	28.5	16.5	27.2
120	253.9	0.683	61.2	1.2	6.69	8.276	37.069	33.214	45.2	12.0	44.0	10.8	4.09	0.04	28.6	16.6	27.4
121	255.8	0.688	61.2	1.1	6.70	8.354	37.369	33.460	45.4	12.0	44.3	10.8	4.09	0.03	28.7	16.7	27.6
122	257.6	0.692	61.1	1.0	6.70	8.423	37.669	33.709	45.7	12.0	44.6	10.9	4.09	0.03	28.8	16.9	27.8
123	258.8	0.696	61.0	1.0	6.71	8.491	37.857	33.855	45.8	12.0	44.9	11.0	4.08	0.03	28.9	16.9	27.9
124	260.4	0.700	61.0	0.9	6.71	8.569	38.119	34.066	46.0	12.0	45.1	11.0	4.09	0.03	29.0	17.0	28.1
125	262.0	0.704	60.9	0.8	6.72	8.637	38.382	34.280	46.2	12.0	45.4	11.1	4.08	0.02	29.1	17.1	28.3
126	262.9	0.709	60.8	0.8	6.72	8.715	38.532	34.387	46.3	12.0	45.6	11.2	4.07	0.02	29.2	17.2	28.4
127	264.1	0.713	60.7	0.7	6.73	8.783	38.720	34.532	46.5	12.0	45.8	11.3	4.06	0.02	29.2	17.3	28.5
128	265.7	0.718	60.6	0.6	6.73	8.861	38.982	34.741	46.7	12.0	46.1	11.4	4.06	0.02	29.3	17.4	28.7
129	266.7	0.722	60.6	0.6	6.74	8.939	39.151	34.864	46.8	12.0	46.3	11.4	4.06	0.02	29.4	17.4	28.8
130	267.5	0.727	60.5	0.5	6.74	9.016	39.282	34.953	46.9	12.0	46.4	11.5	4.04	0.01	29.4	17.5	29.0
131	268.1	0.731	60.4	0.4	6.75	9.094	39.376	35.008	47.0	12.0	46.6	11.6	4.03	0.01	29.5	17.5	29.1
132	269.5	0.736	60.4	0.4	6.76	9.172	39.601	35.182	47.1	12.0	46.8	11.6	4.03	0.01	29.6	17.6	29.2
133	270.0	0.740	60.3	0.3	6.76	9.250	39.695	35.236	47.2	12.0	46.9	11.7	4.02	0.01	29.6	17.6	29.3
134	270.6	0.745	60.2	0.2	6.77	9.328	39.789	35.290	47.3	12.0	47.0	11.8	4.00	0.01	29.6	17.6	29.4
135	270.7	0.750	60.2	0.1	6.77	9.416	39.808	35.272	47.2	12.0	47.1	11.8	3.98	0.00	29.6	17.6	29.5
136	271.7	0.755	60.1	0.0	6.78	9.494	39.958	35.377	47.3	12.0	47.3	11.9	3.97	0.00	29.6	17.7	29.6
137	271.8	0.760	60.0	0.0	6.79	9.581	39.976	35.359	47.3	12.0	47.3	12.0	3.96	0.00	29.6	17.7	29.6
138	272.1	0.765	60.0	-0.1	6.79	9.669	40.033	35.375	47.3	12.0	47.4	12.0	3.94	0.00	29.6	17.7	29.7
139	272.6	0.770	59.9	-0.2	6.80	9.747	40.108	35.412	47.4	12.0	47.5	12.1	3.92	0.00	29.7	17.7	29.8
140	274.0	0.774	59.8	-0.2	6.80	9.825	40.333	35.583	47.5	12.0	47.7	12.2	3.93	-0.01	29.8	17.8	30.0
141	274.9	0.779	59.8	-0.3	6.81	9.903	40.483	35.687	47.6	12.0	47.9	12.2	3.92	-0.01	29.8	17.8	30.1

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	274.8	0.783	59.7	-0.4	6.82	9.980	40.464	35.639	47.6	12.0	48.0	12.3	3.89	-0.01	29.8	17.8	30.1
143	275.8	0.788	59.6	-0.4	6.82	10.058	40.633	35.759	47.7	12.0	48.1	12.4	3.89	-0.01	29.8	17.9	30.2
144	276.6	0.793	59.6	-0.5	6.83	10.136	40.764	35.845	47.8	12.0	48.3	12.4	3.88	-0.01	29.9	17.9	30.4
145	277.3	0.797	59.5	-0.6	6.83	10.214	40.877	35.915	47.9	12.0	48.4	12.5	3.87	-0.02	29.9	18.0	30.5
146	277.2	0.802	59.4	-0.6	6.84	10.292	40.858	35.866	47.8	12.0	48.4	12.6	3.86	-0.02	29.9	17.9	30.5
147	278.1	0.806	59.4	-0.7	6.85	10.370	41.008	35.969	47.9	12.0	48.6	12.6	3.85	-0.02	29.9	18.0	30.6
148	279.5	0.810	59.3	-0.7	6.85	10.438	41.233	36.142	48.1	12.0	48.8	12.7	3.85	-0.02	30.0	18.1	30.8
149	280.2	0.815	59.2	-0.8	6.86	10.516	41.346	36.211	48.2	12.0	49.0	12.8	3.84	-0.02	30.1	18.1	30.9
150	280.2	0.820	59.2	-0.9	6.86	10.594	41.346	36.179	48.1	12.0	49.0	12.8	3.82	-0.02	30.0	18.1	30.9
151	280.9	0.824	59.1	-0.9	6.87	10.672	41.458	36.247	48.2	12.0	49.1	12.9	3.81	-0.03	30.1	18.1	31.0
152	281.4	0.829	59.0	-1.0	6.88	10.750	41.552	36.298	48.3	12.0	49.3	13.0	3.80	-0.03	30.1	18.1	31.1
153	281.3	0.833	59.0	-1.0	6.88	10.828	41.534	36.249	48.2	12.0	49.3	13.0	3.79	-0.03	30.1	18.1	31.1
154	281.6	0.837	58.9	-1.1	6.89	10.896	41.571	36.254	48.2	12.0	49.3	13.1	3.77	-0.03	30.1	18.1	31.2
155	281.8	0.842	58.9	-1.2	6.89	10.974	41.609	36.256	48.2	12.0	49.4	13.1	3.76	-0.03	30.1	18.1	31.3
156	282.7	0.847	58.8	-1.2	6.90	11.052	41.759	36.357	48.3	12.0	49.6	13.2	3.75	-0.03	30.1	18.2	31.4
157	282.8	0.851	58.8	-1.3	6.90	11.129	41.777	36.341	48.3	12.0	49.6	13.2	3.74	-0.04	30.1	18.2	31.4
158	283.7	0.855	58.7	-1.4	6.91	11.198	41.927	36.446	48.4	12.0	49.8	13.3	3.74	-0.04	30.2	18.2	31.5
159	284.7	0.859	58.6	-1.4	6.92	11.266	42.078	36.550	48.5	12.0	49.9	13.4	3.74	-0.04	30.2	18.3	31.6
160	285.6	0.864	58.6	-1.4	6.92	11.344	42.228	36.650	48.6	12.0	50.1	13.4	3.73	-0.04	30.3	18.3	31.7
161	285.9	0.868	58.5	-1.5	6.93	11.412	42.284	36.671	48.6	12.0	50.2	13.5	3.72	-0.04	30.3	18.3	31.8
162	286.5	0.872	58.5	-1.6	6.93	11.480	42.378	36.726	48.7	12.0	50.2	13.5	3.72	-0.04	30.3	18.4	31.9
163	287.8	0.876	58.4	-1.6	6.94	11.558	42.584	36.875	48.8	12.0	50.4	13.6	3.72	-0.04	30.4	18.4	32.0
164	288.5	0.880	58.4	-1.7	6.94	11.626	42.697	36.946	48.9	12.0	50.6	13.6	3.71	-0.05	30.4	18.5	32.1
165	289.4	0.885	58.3	-1.7	6.95	11.704	42.847	37.045	49.0	12.0	50.7	13.7	3.71	-0.05	30.5	18.5	32.2
166	290.0	0.889	58.2	-1.8	6.95	11.772	42.940	37.098	49.1	12.0	50.9	13.8	3.70	-0.05	30.5	18.5	32.3
167	291.0	0.894	58.2	-1.8	6.96	11.850	43.109	37.214	49.2	12.0	51.0	13.8	3.70	-0.05	30.6	18.6	32.4
168	291.7	0.898	58.2	-1.9	6.97	11.918	43.222	37.284	49.2	12.0	51.1	13.8	3.69	-0.05	30.6	18.6	32.5
169	292.7	0.902	58.1	-2.0	6.97	11.996	43.391	37.398	49.4	12.0	51.3	13.9	3.69	-0.05	30.7	18.7	32.6
170	293.2	0.907	58.0	-2.0	6.98	12.074	43.466	37.431	49.4	12.0	51.4	14.0	3.68	-0.05	30.7	18.7	32.7
171	294.1	0.911	58.0	-2.0	6.98	12.142	43.616	37.533	49.5	12.0	51.5	14.0	3.68	-0.05	30.7	18.8	32.8
172	294.2	0.915	57.9	-2.1	6.99	12.220	43.635	37.515	49.5	12.0	51.6	14.1	3.66	-0.06	30.7	18.8	32.8
173	294.3	0.920	57.9	-2.2	7.00	12.298	43.653	37.498	49.5	12.0	51.6	14.1	3.65	-0.06	30.7	18.7	32.9
174	294.9	0.925	57.8	-2.2	7.00	12.376	43.747	37.546	49.5	12.0	51.7	14.2	3.65	-0.06	30.7	18.8	32.9
175	295.7	0.929	57.8	-2.2	7.01	12.454	43.878	37.627	49.6	12.0	51.8	14.2	3.65	-0.06	30.8	18.8	33.0
176	296.5	0.934	57.8	-2.3	7.02	12.532	44.010	37.708	49.7	12.0	52.0	14.2	3.65	-0.06	30.8	18.9	33.1
177	296.3	0.939	57.7	-2.4	7.02	12.619	43.972	37.636	49.6	12.0	52.0	14.3	3.63	-0.06	30.8	18.8	33.1
178	297.7	0.944	57.6	-2.4	7.03	12.697	44.197	37.799	49.8	12.0	52.2	14.4	3.63	-0.06	30.9	18.9	33.3
179	298.0	0.949	57.6	-2.4	7.04	12.785	44.254	37.809	49.8	12.0	52.2	14.4	3.63	-0.06	30.9	18.9	33.3
180	298.0	0.953	57.6	-2.4	7.04	12.863	44.254	37.774	49.7	12.0	52.2	14.4	3.62	-0.06	30.8	18.9	33.3
181	298.0	0.958	57.6	-2.5	7.05	12.950	44.254	37.736	49.7	12.0	52.2	14.4	3.61	-0.07	30.8	18.9	33.3
182	299.2	0.963	57.5	-2.5	7.06	13.028	44.441	37.864	49.8	12.0	52.3	14.5	3.61	-0.07	30.9	18.9	33.4

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	299.6	0.968	57.5	-2.6	7.06	13.106	44.516	37.895	49.9	12.0	52.4	14.5	3.61	-0.07	30.9	18.9	33.5
184	300.0	0.972	57.4	-2.6	7.07	13.184	44.573	37.909	49.9	12.0	52.5	14.6	3.60	-0.07	30.9	19.0	33.5
185	300.2	0.977	57.4	-2.6	7.07	13.262	44.610	37.907	49.9	12.0	52.5	14.6	3.60	-0.07	30.9	19.0	33.6
186	301.4	0.981	57.4	-2.7	7.08	13.340	44.798	38.035	50.0	12.0	52.7	14.6	3.60	-0.07	31.0	19.0	33.7
187	301.7	0.985	57.4	-2.7	7.09	13.408	44.854	38.053	50.0	12.0	52.7	14.6	3.60	-0.07	31.0	19.0	33.7
188	301.0	0.991	57.3	-2.8	7.09	13.496	44.741	37.916	49.9	12.0	52.6	14.7	3.57	-0.07	30.9	19.0	33.7
189	301.9	0.995	57.2	-2.8	7.10	13.573	44.891	38.011	50.0	12.0	52.8	14.8	3.57	-0.07	31.0	19.0	33.8
190	302.0	0.999	57.2	-2.8	7.11	13.642	44.910	37.997	50.0	12.0	52.8	14.8	3.57	-0.07	31.0	19.0	33.8
191	302.7	1.004	57.2	-2.8	7.11	13.719	45.023	38.059	50.0	12.0	52.9	14.8	3.57	-0.07	31.0	19.0	33.8
192	302.5	1.008	57.2	-2.9	7.12	13.797	44.985	37.991	50.0	12.0	52.8	14.8	3.56	-0.08	31.0	19.0	33.8
193	302.8	1.013	57.1	-3.0	7.12	13.875	45.042	38.005	50.0	12.0	52.9	14.9	3.55	-0.08	31.0	19.0	33.9
194	303.4	1.017	57.0	-3.0	7.13	13.953	45.135	38.050	50.0	12.0	53.0	15.0	3.54	-0.08	31.0	19.0	34.0
195	304.1	1.022	57.0	-3.0	7.14	14.031	45.248	38.112	50.1	12.0	53.1	15.0	3.54	-0.08	31.0	19.1	34.1
196	303.5	1.027	57.0	-3.0	7.14	14.109	45.154	37.996	50.0	12.0	53.0	15.0	3.53	-0.08	31.0	19.0	34.0
197	304.1	1.031	57.0	-3.1	7.15	14.187	45.248	38.042	50.0	12.0	53.1	15.0	3.53	-0.08	31.0	19.0	34.1
198	305.0	1.036	57.0	-3.1	7.16	14.265	45.398	38.135	50.1	12.0	53.2	15.0	3.53	-0.08	31.0	19.1	34.1
199	304.6	1.040	56.9	-3.1	7.16	14.343	45.323	38.035	50.0	12.0	53.1	15.1	3.52	-0.08	31.0	19.0	34.1
200	304.6	1.045	56.8	-3.2	7.17	14.421	45.323	38.000	50.0	12.0	53.2	15.2	3.51	-0.08	31.0	19.0	34.2
201	304.9	1.050	56.8	-3.2	7.18	14.498	45.379	38.013	50.0	12.0	53.2	15.2	3.51	-0.08	31.0	19.0	34.2
202	305.3	1.054	56.8	-3.2	7.18	14.567	45.436	38.030	50.0	12.0	53.2	15.2	3.50	-0.09	31.0	19.0	34.2
203	305.0	1.058	56.8	-3.2	7.19	14.635	45.398	37.967	49.9	12.0	53.2	15.2	3.50	-0.09	30.9	19.0	34.2
204	305.4	1.062	56.8	-3.3	7.19	14.713	45.454	37.980	49.9	12.0	53.2	15.2	3.49	-0.09	30.9	19.0	34.2
205	306.2	1.066	56.7	-3.3	7.20	14.781	45.586	38.061	50.0	12.0	53.3	15.3	3.49	-0.09	31.0	19.0	34.3
206	307.0	1.070	56.7	-3.3	7.21	14.849	45.717	38.141	50.1	12.0	53.4	15.3	3.50	-0.09	31.0	19.1	34.4
207	306.8	1.074	56.7	-3.4	7.21	14.917	45.679	38.078	50.0	12.0	53.4	15.3	3.48	-0.09	31.0	19.0	34.4
208	307.2	1.079	56.7	-3.4	7.22	14.995	45.754	38.106	50.1	12.0	53.4	15.3	3.49	-0.09	31.0	19.1	34.4
209	307.9	1.083	56.6	-3.4	7.22	15.073	45.867	38.166	50.1	12.0	53.5	15.4	3.48	-0.09	31.0	19.1	34.4
210	307.9	1.087	56.6	-3.4	7.23	15.141	45.867	38.135	50.1	12.0	53.5	15.4	3.48	-0.09	31.0	19.1	34.5
211	307.9	1.092	56.6	-3.5	7.24	15.219	45.867	38.099	50.1	12.0	53.5	15.4	3.47	-0.09	31.0	19.0	34.5
212	307.7	1.096	56.6	-3.5	7.24	15.287	45.829	38.036	50.0	12.0	53.5	15.4	3.46	-0.09	31.0	19.0	34.5
213	308.1	1.101	56.5	-3.5	7.25	15.365	45.904	38.064	50.0	12.0	53.6	15.5	3.46	-0.09	31.0	19.0	34.5
214	308.7	1.105	56.5	-3.5	7.26	15.443	45.998	38.108	50.1	12.0	53.6	15.5	3.46	-0.09	31.0	19.1	34.5
215	308.4	1.110	56.5	-3.6	7.26	15.521	45.942	38.024	50.0	12.0	53.6	15.5	3.45	-0.09	31.0	19.0	34.5
216	308.4	1.114	56.4	-3.6	7.27	15.589	45.942	37.993	50.0	12.0	53.6	15.6	3.44	-0.09	31.0	19.0	34.6
217	308.3	1.118	56.4	-3.6	7.28	15.667	45.923	37.941	49.9	12.0	53.5	15.6	3.44	-0.10	30.9	19.0	34.5
218	307.7	1.123	56.4	-3.6	7.28	15.745	45.829	37.827	49.8	12.0	53.4	15.6	3.42	-0.10	30.9	18.9	34.5
219	307.9	1.128	56.4	-3.6	7.29	15.823	45.867	37.823	49.8	12.0	53.4	15.6	3.42	-0.10	30.9	18.9	34.5
220	307.9	1.132	56.4	-3.6	7.30	15.901	45.867	37.787	49.7	12.0	53.4	15.6	3.42	-0.10	30.9	18.9	34.5
221	308.3	1.137	56.4	-3.7	7.30	15.978	45.923	37.798	49.8	12.0	53.4	15.6	3.42	-0.10	30.9	18.9	34.5
222	308.8	1.141	56.4	-3.7	7.31	16.056	46.017	37.841	49.8	12.0	53.5	15.6	3.42	-0.10	30.9	18.9	34.6
223	307.9	1.147	56.3	-3.7	7.32	16.144	45.867	37.675	49.6	12.0	53.4	15.7	3.40	-0.10	30.8	18.8	34.5

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	308.1	1.152	56.3	-3.8	7.32	16.232	45.904	37.666	49.6	12.0	53.4	15.7	3.39	-0.10	30.8	18.8	34.6
225	308.4	1.156	56.3	-3.8	7.33	16.309	45.942	37.662	49.6	12.0	53.4	15.7	3.39	-0.10	30.8	18.8	34.6
226	308.4	1.161	56.2	-3.8	7.34	16.387	45.942	37.626	49.6	12.0	53.4	15.8	3.39	-0.10	30.8	18.8	34.6
227	308.0	1.165	56.2	-3.8	7.35	16.465	45.886	37.543	49.5	12.0	53.3	15.8	3.38	-0.10	30.7	18.8	34.5
228	308.1	1.170	56.2	-3.8	7.35	16.543	45.904	37.523	49.5	12.0	53.3	15.8	3.37	-0.10	30.7	18.8	34.6
229	308.5	1.175	56.2	-3.8	7.36	16.621	45.961	37.534	49.5	12.0	53.3	15.8	3.37	-0.10	30.7	18.8	34.6
230	308.6	1.179	56.2	-3.8	7.37	16.699	45.980	37.514	49.5	12.0	53.3	15.8	3.37	-0.10	30.7	18.8	34.6
231	308.8	1.183	56.2	-3.9	7.37	16.767	46.017	37.514	49.5	12.0	53.4	15.8	3.37	-0.10	30.7	18.8	34.6
232	309.6	1.188	56.1	-3.9	7.38	16.855	46.148	37.583	49.5	12.0	53.5	15.9	3.37	-0.10	30.8	18.8	34.7
233	310.2	1.192	56.1	-3.9	7.39	16.923	46.242	37.630	49.6	12.0	53.5	15.9	3.37	-0.10	30.8	18.8	34.7
234	310.1	1.197	56.1	-4.0	7.39	17.001	46.223	37.578	49.5	12.0	53.5	15.9	3.36	-0.11	30.7	18.8	34.7
235	310.4	1.202	56.1	-4.0	7.40	17.079	46.280	37.589	49.5	12.0	53.5	15.9	3.36	-0.11	30.8	18.8	34.7
236	311.7	1.206	56.1	-4.0	7.41	17.157	46.486	37.724	49.7	12.0	53.7	15.9	3.37	-0.11	30.8	18.9	34.8
237	312.7	1.211	56.0	-4.0	7.41	17.235	46.655	37.827	49.8	12.0	53.8	16.0	3.37	-0.11	30.9	18.9	34.9
238	313.2	1.215	56.0	-4.0	7.42	17.312	46.730	37.853	49.8	12.0	53.9	16.0	3.36	-0.11	30.9	18.9	34.9
239	313.3	1.220	56.0	-4.0	7.43	17.390	46.749	37.832	49.8	12.0	53.8	16.0	3.36	-0.11	30.9	18.9	34.9
240	314.0	1.225	56.0	-4.0	7.43	17.468	46.861	37.888	49.8	12.0	53.9	16.0	3.37	-0.11	30.9	18.9	35.0
241	314.2	1.229	56.0	-4.1	7.44	17.546	46.899	37.883	49.8	12.0	53.9	16.0	3.36	-0.11	30.9	18.9	35.0
242	313.4	1.234	55.9	-4.1	7.45	17.624	46.767	37.738	49.7	12.0	53.8	16.1	3.35	-0.11	30.8	18.9	35.0
243	314.2	1.238	55.9	-4.1	7.46	17.702	46.899	37.810	49.8	12.0	53.9	16.1	3.35	-0.11	30.9	18.9	35.0
244	314.6	1.243	55.9	-4.1	7.46	17.780	46.955	37.819	49.8	12.0	53.9	16.1	3.35	-0.11	30.9	18.9	35.0
245	314.9	1.247	55.9	-4.1	7.47	17.858	47.011	37.829	49.8	12.0	53.9	16.1	3.35	-0.11	30.9	18.9	35.0
246	315.2	1.252	55.9	-4.2	7.48	17.926	47.049	37.828	49.8	12.0	54.0	16.1	3.35	-0.11	30.9	18.9	35.0
247	315.6	1.256	55.9	-4.2	7.48	17.994	47.124	37.857	49.8	12.0	54.0	16.1	3.35	-0.11	30.9	18.9	35.1
248	316.8	1.260	55.8	-4.2	7.49	18.072	47.311	37.974	49.9	12.0	54.1	16.2	3.35	-0.11	30.9	19.0	35.2
249	317.6	1.264	55.8	-4.2	7.50	18.140	47.443	38.050	50.0	12.0	54.3	16.2	3.35	-0.11	31.0	19.0	35.2
250	317.1	1.268	55.8	-4.3	7.50	18.208	47.368	37.956	49.9	12.0	54.2	16.2	3.34	-0.11	30.9	19.0	35.2
251	317.9	1.273	55.8	-4.3	7.51	18.286	47.499	38.026	50.0	12.0	54.3	16.2	3.34	-0.11	31.0	19.0	35.3
252	318.7	1.277	55.7	-4.3	7.52	18.354	47.630	38.101	50.1	12.0	54.4	16.3	3.34	-0.11	31.0	19.1	35.3
253	319.0	1.281	55.7	-4.3	7.52	18.432	47.668	38.095	50.1	12.0	54.4	16.3	3.34	-0.11	31.0	19.0	35.3
254	319.0	1.285	55.6	-4.4	7.53	18.500	47.668	38.062	50.0	12.0	54.4	16.4	3.33	-0.12	31.0	19.0	35.4
255	320.0	1.290	55.6	-4.4	7.54	18.578	47.837	38.162	50.1	12.0	54.5	16.4	3.33	-0.12	31.0	19.1	35.4
256	320.6	1.295	55.6	-4.4	7.54	18.656	47.931	38.201	50.2	12.0	54.6	16.4	3.33	-0.12	31.1	19.1	35.5
257	319.8	1.299	55.6	-4.4	7.55	18.724	47.799	38.062	50.0	12.0	54.5	16.4	3.32	-0.12	31.0	19.0	35.4
258	320.1	1.303	55.6	-4.5	7.56	18.802	47.855	38.071	50.0	12.0	54.5	16.4	3.31	-0.12	31.0	19.0	35.5
259	321.4	1.307	55.5	-4.5	7.56	18.870	48.062	38.205	50.2	12.0	54.7	16.5	3.32	-0.12	31.1	19.1	35.6
260	321.7	1.312	55.5	-4.5	7.57	18.948	48.118	38.213	50.2	12.0	54.7	16.5	3.32	-0.12	31.1	19.1	35.6
261	322.5	1.316	55.5	-4.6	7.58	19.026	48.249	38.282	50.2	12.0	54.8	16.5	3.32	-0.12	31.1	19.1	35.7
262	322.5	1.321	55.5	-4.6	7.59	19.104	48.249	38.245	50.2	12.0	54.8	16.5	3.31	-0.12	31.1	19.1	35.7
263	322.1	1.325	55.4	-4.6	7.59	19.182	48.174	38.147	50.1	12.0	54.7	16.6	3.30	-0.12	31.0	19.1	35.6
264	322.6	1.330	55.4	-4.6	7.60	19.260	48.268	38.185	50.1	12.0	54.8	16.6	3.30	-0.12	31.1	19.1	35.7

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
265	322.6	1.335	55.4	-4.7	7.61	19.338	48.268	38.147	50.1	12.0	54.8	16.6	3.29	-0.12	31.0	19.1	35.7
266	323.5	1.339	55.4	-4.7	7.61	19.416	48.400	38.215	50.2	12.0	54.9	16.6	3.30	-0.12	31.1	19.1	35.8
267	324.4	1.344	55.4	-4.7	7.62	19.494	48.550	38.298	50.3	12.0	54.9	16.6	3.30	-0.12	31.1	19.1	35.8
268	324.9	1.349	55.4	-4.7	7.63	19.581	48.643	38.331	50.3	12.0	55.0	16.6	3.30	-0.12	31.1	19.2	35.8
269	325.1	1.354	55.3	-4.7	7.64	19.659	48.662	38.309	50.3	12.0	55.0	16.7	3.30	-0.12	31.1	19.2	35.8
270	326.0	1.358	55.3	-4.8	7.64	19.737	48.812	38.391	50.4	12.0	55.1	16.7	3.29	-0.12	31.2	19.2	35.9
271	326.8	1.363	55.3	-4.8	7.65	19.815	48.944	38.458	50.4	12.0	55.2	16.7	3.30	-0.12	31.2	19.2	36.0
272	327.0	1.367	55.2	-4.8	7.66	19.893	48.981	38.450	50.4	12.0	55.2	16.8	3.29	-0.13	31.2	19.2	36.0
273	326.8	1.371	55.2	-4.8	7.67	19.961	48.944	38.387	50.3	12.0	55.2	16.8	3.29	-0.13	31.2	19.2	36.0
274	327.1	1.374	55.2	-4.8	7.67	20.000	49.000	38.413	50.4	12.0	55.2	16.8	3.29	-0.13	31.2	19.2	36.0

Photographs of Sample Failure

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. U-2412B

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project 39406.1.1 **County** GUILFORD **Owner**

Date: Sampled 3/1/13 **Received** 11/22/13 **Reported** 11/26/13

Sampled from RDWY **By** N. ROBERSON

Submitted by M HURT 1995 **Standard Specifications**

788454 TO 788455
12/4/13

TEST RESULTS

Proj. Sample No.		ST-19 #1	ST-19 #2				
Lab. Sample No.		788454	788455				
Retained #4 Sieve	%	-	-				
Passing #10 Sieve	%	96	98				
Passing #40 Sieve	%	73	80				
Passing #200 Sieve	%	35	38				

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	40.5	36.9				
Fine Sand Ret - #270	%	26.8	29.4				
Silt 0.05 - 0.005 mm	%	26.6	27.6				
Clay < 0.005 mm	%	6.0	6.0				
T-#		T-5784	T-5784				
Specific Gravity		2.671	2.643				

L. L.		32	30				
P. I.		6	6				
AASHTO Classification		A-2-4(0)	A-4(0)				
Station		403+45	403+45				
Offset		3 FT RT	3 FT RT				
Alignment		L	L				
Location							
Depth (Ft)		14.6 FT	14.6 FT				
	to	16.4 FT	16.4 FT				
Final Moisture Content	%	21.92	21.15				

cc: N. ROBERSON
SURIYATI BS

Soils Engineer

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	11.64	19.20	**Plastic Limits:**	0	
Dry Density (pcf):	108.10	116.51	**Plasticity Index (%):**	0	
Saturation (%):	57.88	120.40			
Void Ratio:	0.5349	0.4241	**Specific Gravity:**	2.657	Measured

Soil Description: Brownish white colored silt

Project Number: 39406.1.1 **Depth:** 14.6 - 16.4 ft

Sample Number: ST-19 **Boring Number:**

Project: U-2412B

Client: T-5784

Location: Guilford County (Sta.403+45)

Remarks: Solid height is 0.65383 inches ; Blows/ft = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	11.64	19.20	**Plastic Limits:**	0	
Dry Density (pcf):	108.10	116.51	**Plasticity Index (%):**	0	
Saturation (%):	57.88	120.40			
Void Ratio:	0.5349	0.4241	**Specific Gravity:**	2.657	Measured

Soil Description: Brownish white colored silt

Project Number: 39406.1.1 **Depth:** 14.6 - 16.4 ft

Sample Number: ST-19 **Boring Number:**

Project: U-2412B

Client: T-5784

Location: Guilford County (Sta.403+45)

Remarks: Solid height is 0.65383 inches ; Blows/ft = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	11.64	19.20	**Plastic Limits:**	0	
Dry Density (pcf):	108.10	116.51	**Plasticity Index (%):**	0	
Saturation (%):	57.88	120.40			
Void Ratio:	0.5349	0.4241	**Specific Gravity:**	2.657	Measured

Soil Description: Brownish white colored silt

Project Number: 39406.1.1 **Depth:** 14.6 - 16.4 ft

Sample Number: ST-19 **Boring Number:**

Project: U-2412B

Client: T-5784

Location: Guilford County (Sta.403+45)

Remarks: Solid height is 0.65383 inches ; Blows/ft = NA

Consolidation Test Results
Summary

Project: U-2412B
Location: Guilford County (Sta.403+45)
Job Number: T-5784

Project Number: 39406.1.1

Sample Number: ST-19
Boring Number:
Depth: 14.6 - 16.4 ft
Sample Type: Undisturbed

Soil Description:
Brownish white colored silt
Remarks:
Solid height is 0.65383 inches ; Blows/ft = NA

Test Number:
Test Date:

Index	Load Sequence (tsf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	1.0006	0.3487	0.00	0.5349	0.000		0.000	
1	0.063	0.0055	0.9951	0.3432	0.55	0.5264	0.044		17374.949	
2	0.125	0.0113	0.9893	0.3374	1.13	0.5175	0.046		16535.570	
3	0.250	0.0198	0.9808	0.3289	1.98	0.5045	0.059		12616.463	
4	0.500	0.0314	0.9692	0.3173	3.14	0.4867	0.073		9902.833	
5	1.000	0.0451	0.9555	0.3036	4.51	0.4657	0.063		11303.425	
6	2.000	0.0606	0.9400	0.2881	6.06	0.4419	0.063		10939.673	
7	4.000	0.0780	0.9226	0.2707	7.80	0.4152	0.066		9979.564	
8	2.000	0.0759	0.9247	0.2728	7.59	0.4184	0.000		0.000	
9	1.000	0.0727	0.9279	0.2760	7.27	0.4233	0.000		0.000	
10	0.500	0.0690	0.9316	0.2797	6.90	0.4290	0.000		0.000	
11	1.000	0.0708	0.9298	0.2779	7.08	0.4263	0.000		0.000	
12	2.000	0.0745	0.9261	0.2742	7.45	0.4206	0.000		0.000	
13	4.000	0.0804	0.9202	0.2683	8.04	0.4115	0.000		0.000	
14	8.000	0.0979	0.9027	0.2508	9.78	0.3847	0.070		9046.544	
15	16.000	0.1187	0.8819	0.2300	11.86	0.3528	0.098		6159.887	
16	4.000	0.1133	0.8873	0.2354	11.32	0.3611	0.000		0.000	
17	0.016	0.0722	0.9284	0.2765	7.22	0.4241	0.000		0.000	

Tested By:

Checked By:

Consolidation Test
Consolidation Specimen Information

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County (Sta.403+45)
Job Number: T-5784 **Test Date:**

Sample Number: ST-19 **Soil Description:**
Boring Number: Brownish white colored silt
Depth: 14.6 - 16.4 ft **Remarks:**
Sample Type: Undisturbed Solid height is 0.65383 inches ; Blows/ft = NA

Test Number:
Liquid Limit: 0.0000 **Initial Void Ratio:** 0.5349 **Initial Height (in):** 1.0006
Plastic Limit: 0.0000 **Plasticity Index (%):** 0.0000 **Initial Diameter (in):** 2.4996
Specific Gravity: 2.6570 Measured **Weight of Ring (g):** 107.3500

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	155.55	166.08
Dry Soil + Container (g)	139.33	139.33
Weight of Container (g)	0.00	0.00
Moisture Content (%)	11.64	19.20
Void Ratio	0.5349	0.4241
Saturation (%)	57.88	120.40
Dry Density (pcf)	108.10	116.51

Tested By: **Checked By:**

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Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date

Tested By:

Effective Stress at Maximum Deviator Stress Criterion

Deviator Stress Vs. Axial Strain

Initial	Specimen A	B	C	D
Water Content (%)	11.9	8.9		
Dry Density (pcf)	99.1	105.1		
Saturation (%)	46.68	41.42		
Void Ratio	0.679	0.566		
Diameter (in)	2.854	2.856		
Height (in)	6.443	6.209		
Specific Gravity	2.67	2.64		
Liquid Limit	0	0		
Plastic Limit	0	0		
After Consolidation	**A**	**B**	**C**	**D**
B-Value	0.00	0.00		
Water Content (%)	12.4	10.1		
Dry Density (pcf)	104.77	111.96		
Saturation (%)	100.00	100.00		
Void Ratio	0.592	0.474		
Effective Stress (psi)	6.0	12.0		
Back Press. (psi)	69.7	70.1		
Rate of Strain	0.009	0.009		

Maximium Deviator Stress Criterion		After Shear	A	B	C	D
C (psi)	0.0	σ'1 at Failure (psi)	23.88	28.93		
C' (psi)	0.0	σ'3 at Failure (psi)	6.45	7.77		
Ø (deg)	0.0					
Ø' (deg)	0.0					

		A	B	C	D
Project:	U-2412B	N/A	N/A	N/A	N/A
Location:	Guilford County (Sta. 403+45)				
Project Number:	39406.1.1				
Boring Number:					
Sample Number:	ST-19				
Depth:	14.6 - 16.4 ft				
Sample Type:	Undisturbed	Failure Photographs			
Description:					
Test Type	Consolidated Undrained				
Remarks					

ncdot

Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date:

Tested By:

Deviator Stress vs. Axial Strain

Principal Stress Ratio vs. Axial Strain

Change in Pore Pressure vs. Axial Strain
Change in Pore Pressure (psi)
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
0.000
5.000
10.000
15.000
20.000
25.000
Axial Strain (%)
Specimen A
Specimen B
Specimen C
Specimen D

Mohr Stress Circles at Maximum Deviator Stress Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at Maximum Principal Stress Ratio Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at 15% Axial Strain Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)
Q (psi)
P' (psi)
0.0
5.0
10.0
15.0
20.0
25.0
Specimen A
Specimen B
Specimen C
Specimen D
Tangent Line

Stress Paths (Total)
(C' = 0.0 Ø' = 0.0)
Q (psi)
P (psi)
0.0
5.0
10.0
15.0
20.0
25.0

Specimen A Shear Data

CU Triaxial Test

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File Location
T-5784.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5784
Sample Location: Guilford County (Sta. 403+45)
Sample Description: Brownish colored silty sand
Remarks: 25° shear plane.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.671
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.854	2.807	
Height (in)	6.443	6.298	
Weight (grams)	1200.00		1307.00
Moisture (%)	11.94		21.92
Dry Density (pcf)	99.06	104.77	
Saturation (%)	46.68	100.00	
Void Ratio	0.679	0.592	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 75.700
Effective Confining Stress (psi): 6.0
Corrected Peak Deviator Stress (psi): 17.428 at reading number: 284

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	41.7	0.191	69.7	0.0	6.19	0.000	0.000	0.000	6.0	6.0	6.0	6.0	1.00	0.00	6.0	0.0	6.0
1	52.3	0.196	70.5	0.8	6.19	0.073	1.721	1.691	7.7	6.0	6.9	5.2	1.32	0.45	6.8	0.8	6.1
2	56.2	0.200	70.9	1.2	6.20	0.139	2.339	2.281	8.3	6.0	7.1	4.8	1.47	0.52	7.1	1.1	5.9
3	59.2	0.204	71.2	1.5	6.20	0.205	2.825	2.739	8.7	6.0	7.3	4.5	1.61	0.54	7.4	1.4	5.9
4	61.5	0.208	71.4	1.7	6.21	0.278	3.199	3.082	9.1	6.0	7.4	4.3	1.72	0.54	7.5	1.5	5.8
5	63.1	0.213	71.5	1.8	6.21	0.351	3.461	3.312	9.3	6.0	7.5	4.2	1.80	0.55	7.6	1.7	5.8
6	65.5	0.218	71.7	1.9	6.22	0.424	3.854	3.672	9.7	6.0	7.7	4.0	1.91	0.53	7.8	1.8	5.9
7	67.3	0.222	71.8	2.1	6.22	0.490	4.135	3.923	9.9	6.0	7.8	3.9	2.01	0.53	7.9	2.0	5.9
8	68.0	0.226	71.9	2.2	6.22	0.563	4.247	4.003	10.0	6.0	7.8	3.8	2.05	0.54	8.0	2.0	5.8
9	69.5	0.231	72.0	2.3	6.23	0.636	4.490	4.213	10.2	6.0	7.9	3.7	2.13	0.54	8.1	2.1	5.8
10	71.6	0.235	72.0	2.3	6.23	0.701	4.827	4.518	10.5	6.0	8.2	3.7	2.23	0.51	8.2	2.3	5.9
11	72.4	0.240	72.1	2.4	6.24	0.775	4.958	4.616	10.6	6.0	8.2	3.6	2.27	0.51	8.3	2.3	5.9
12	74.9	0.244	72.1	2.4	6.24	0.840	5.370	4.995	11.0	6.0	8.6	3.6	2.40	0.48	8.5	2.5	6.1
13	75.5	0.248	72.2	2.5	6.25	0.906	5.463	5.059	11.0	6.0	8.5	3.5	2.45	0.49	8.5	2.5	6.0
14	77.5	0.252	72.2	2.5	6.25	0.972	5.781	5.344	11.3	6.0	8.8	3.5	2.55	0.47	8.7	2.7	6.1
15	79.2	0.257	72.3	2.6	6.25	1.045	6.062	5.589	11.6	6.0	9.0	3.4	2.63	0.46	8.8	2.8	6.2
16	80.6	0.261	72.3	2.6	6.26	1.111	6.287	5.782	11.8	6.0	9.2	3.4	2.69	0.44	8.9	2.9	6.3
17	82.6	0.266	72.3	2.6	6.26	1.184	6.605	6.063	12.0	6.0	9.5	3.4	2.79	0.43	9.0	3.0	6.4
18	83.6	0.270	72.3	2.6	6.27	1.249	6.773	6.199	12.2	6.0	9.6	3.4	2.84	0.42	9.1	3.1	6.5

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	85.0	0.274	72.4	2.6	6.27	1.323	6.998	6.387	12.4	6.0	9.7	3.3	2.91	0.41	9.2	3.2	6.5
20	86.2	0.278	72.4	2.6	6.28	1.388	7.185	6.541	12.5	6.0	9.9	3.3	2.96	0.40	9.3	3.3	6.6
21	87.4	0.283	72.4	2.6	6.28	1.461	7.390	6.710	12.7	6.0	10.0	3.3	3.01	0.39	9.3	3.4	6.7
22	88.2	0.287	72.4	2.6	6.29	1.527	7.521	6.808	12.8	6.0	10.1	3.3	3.04	0.39	9.4	3.4	6.7
23	89.1	0.291	72.4	2.6	6.29	1.593	7.652	6.906	12.9	6.0	10.2	3.3	3.07	0.38	9.4	3.5	6.8
24	89.7	0.296	72.4	2.6	6.29	1.666	7.765	6.983	13.0	6.0	10.3	3.3	3.09	0.38	9.5	3.5	6.8
25	90.4	0.300	72.4	2.6	6.30	1.732	7.877	7.062	13.0	6.0	10.4	3.3	3.12	0.37	9.5	3.5	6.9
26	91.5	0.304	72.3	2.6	6.30	1.797	8.045	7.196	13.2	6.0	10.6	3.4	3.14	0.36	9.6	3.6	7.0
27	92.8	0.308	72.3	2.6	6.31	1.863	8.251	7.367	13.3	6.0	10.8	3.4	3.17	0.35	9.7	3.7	7.1
28	93.8	0.313	72.3	2.6	6.31	1.936	8.420	7.498	13.5	6.0	10.9	3.4	3.21	0.35	9.7	3.7	7.1
29	95.2	0.317	72.3	2.6	6.32	2.002	8.644	7.687	13.7	6.0	11.1	3.4	3.26	0.34	9.8	3.8	7.2
30	95.2	0.321	72.3	2.6	6.32	2.068	8.644	7.682	13.7	6.0	11.1	3.4	3.26	0.34	9.8	3.8	7.2
31	96.8	0.326	72.3	2.6	6.32	2.141	8.906	7.932	13.9	6.0	11.4	3.4	3.32	0.32	9.9	4.0	7.4
32	96.1	0.330	72.2	2.5	6.33	2.214	8.794	7.815	13.8	6.0	11.3	3.5	3.26	0.32	9.9	3.9	7.4
33	98.4	0.335	72.2	2.5	6.33	2.287	9.168	8.175	14.2	6.0	11.7	3.5	3.35	0.31	10.1	4.1	7.6
34	99.2	0.340	72.2	2.5	6.34	2.360	9.299	8.296	14.3	6.0	11.8	3.5	3.38	0.30	10.1	4.1	7.6
35	98.9	0.344	72.2	2.5	6.34	2.426	9.243	8.235	14.2	6.0	11.7	3.5	3.36	0.30	10.1	4.1	7.6
36	99.5	0.348	72.2	2.5	6.35	2.499	9.336	8.319	14.3	6.0	11.8	3.5	3.37	0.30	10.1	4.2	7.7
37	100.2	0.353	72.2	2.4	6.35	2.572	9.449	8.422	14.4	6.0	12.0	3.5	3.38	0.29	10.2	4.2	7.8
38	100.9	0.358	72.1	2.4	6.36	2.645	9.561	8.524	14.5	6.0	12.1	3.6	3.39	0.28	10.2	4.3	7.8
39	101.1	0.362	72.1	2.4	6.36	2.718	9.598	8.554	14.5	6.0	12.1	3.6	3.40	0.28	10.3	4.3	7.8
40	101.4	0.366	72.1	2.4	6.37	2.784	9.654	8.602	14.6	6.0	12.2	3.6	3.39	0.28	10.3	4.3	7.9
41	102.5	0.371	72.1	2.4	6.37	2.857	9.823	8.758	14.7	6.0	12.4	3.6	3.43	0.27	10.4	4.4	8.0
42	103.4	0.376	72.1	2.4	6.38	2.930	9.972	8.897	14.9	6.0	12.5	3.6	3.45	0.26	10.4	4.4	8.1
43	104.6	0.380	72.0	2.3	6.38	3.003	10.160	9.071	15.1	6.0	12.7	3.7	3.48	0.26	10.5	4.5	8.2
44	104.7	0.385	72.0	2.3	6.39	3.076	10.178	9.081	15.1	6.0	12.8	3.7	3.46	0.25	10.5	4.5	8.2
45	105.6	0.389	72.0	2.3	6.39	3.149	10.328	9.219	15.2	6.0	12.9	3.7	3.48	0.25	10.6	4.6	8.3
46	106.2	0.394	72.0	2.3	6.40	3.222	10.422	9.302	15.3	6.0	13.0	3.7	3.50	0.24	10.6	4.7	8.4
47	106.3	0.398	72.0	2.2	6.40	3.288	10.440	9.313	15.3	6.0	13.1	3.7	3.49	0.24	10.6	4.7	8.4
48	106.9	0.403	71.9	2.2	6.40	3.361	10.534	9.396	15.4	6.0	13.2	3.8	3.49	0.23	10.7	4.7	8.5
49	107.7	0.407	71.9	2.2	6.41	3.434	10.665	9.515	15.5	6.0	13.3	3.8	3.50	0.23	10.7	4.8	8.6
50	108.6	0.411	71.9	2.1	6.41	3.500	10.814	9.652	15.6	6.0	13.5	3.8	3.52	0.22	10.8	4.8	8.7
51	108.3	0.416	71.9	2.1	6.42	3.573	10.758	9.590	15.6	6.0	13.4	3.8	3.50	0.22	10.8	4.8	8.6
52	109.8	0.420	71.8	2.1	6.42	3.639	11.002	9.818	15.8	6.0	13.7	3.9	3.54	0.22	10.9	4.9	8.8
53	110.0	0.425	71.8	2.1	6.43	3.712	11.039	9.845	15.8	6.0	13.7	3.9	3.53	0.21	10.9	4.9	8.8
54	110.9	0.429	71.8	2.1	6.43	3.778	11.189	9.982	16.0	6.0	13.9	3.9	3.54	0.21	11.0	5.0	8.9
55	111.3	0.434	71.7	2.0	6.44	3.851	11.245	10.028	16.0	6.0	14.0	4.0	3.54	0.20	11.0	5.0	9.0
56	110.7	0.438	71.7	2.0	6.44	3.916	11.151	9.931	15.9	6.0	13.9	4.0	3.49	0.20	10.9	5.0	8.9
57	111.7	0.442	71.7	2.0	6.45	3.982	11.320	10.085	16.1	6.0	14.1	4.0	3.53	0.20	11.0	5.0	9.0
58	111.6	0.446	71.7	2.0	6.45	4.048	11.301	10.060	16.0	6.0	14.1	4.0	3.51	0.20	11.0	5.0	9.0
59	112.3	0.451	71.7	1.9	6.46	4.121	11.413	10.159	16.1	6.0	14.2	4.0	3.51	0.19	11.1	5.1	9.1

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	112.8	0.455	71.6	1.9	6.46	4.187	11.488	10.223	16.2	6.0	14.3	4.1	3.51	0.19	11.1	5.1	9.2
61	113.6	0.459	71.6	1.9	6.46	4.260	11.619	10.340	16.3	6.0	14.4	4.1	3.54	0.18	11.2	5.2	9.2
62	113.4	0.463	71.6	1.9	6.47	4.326	11.582	10.297	16.3	6.0	14.4	4.1	3.51	0.18	11.1	5.1	9.2
63	113.6	0.468	71.6	1.9	6.47	4.399	11.619	10.324	16.3	6.0	14.4	4.1	3.52	0.18	11.1	5.2	9.3
64	114.1	0.473	71.6	1.9	6.48	4.472	11.694	10.387	16.4	6.0	14.5	4.1	3.52	0.18	11.2	5.2	9.3
65	114.2	0.477	71.5	1.8	6.48	4.537	11.713	10.397	16.4	6.0	14.6	4.2	3.50	0.18	11.2	5.2	9.4
66	115.7	0.481	71.5	1.8	6.49	4.603	11.956	10.622	16.6	6.0	14.8	4.2	3.54	0.17	11.3	5.3	9.5
67	115.5	0.486	71.5	1.8	6.49	4.676	11.918	10.577	16.6	6.0	14.8	4.2	3.51	0.17	11.3	5.3	9.5
68	115.8	0.490	71.5	1.8	6.50	4.749	11.974	10.622	16.6	6.0	14.8	4.2	3.52	0.17	11.3	5.3	9.5
69	116.1	0.495	71.5	1.7	6.50	4.822	12.031	10.667	16.6	6.0	14.9	4.2	3.51	0.16	11.3	5.3	9.6
70	116.5	0.499	71.4	1.7	6.51	4.888	12.087	10.712	16.7	6.0	15.0	4.3	3.50	0.16	11.3	5.4	9.6
71	117.2	0.503	71.4	1.7	6.51	4.961	12.199	10.810	16.8	6.0	15.1	4.3	3.51	0.16	11.4	5.4	9.7
72	117.3	0.508	71.4	1.7	6.52	5.034	12.218	10.819	16.8	6.0	15.1	4.3	3.51	0.15	11.4	5.4	9.7
73	117.5	0.513	71.4	1.6	6.52	5.107	12.255	10.845	16.8	6.0	15.2	4.3	3.50	0.15	11.4	5.4	9.8
74	117.9	0.517	71.4	1.6	6.53	5.173	12.311	10.891	16.9	6.0	15.2	4.3	3.51	0.15	11.4	5.4	9.8
75	117.7	0.521	71.3	1.6	6.53	5.246	12.274	10.846	16.8	6.0	15.2	4.4	3.49	0.15	11.4	5.4	9.8
76	118.3	0.526	71.3	1.6	6.54	5.319	12.386	10.944	16.9	6.0	15.3	4.4	3.49	0.15	11.5	5.5	9.9
77	118.6	0.531	71.3	1.6	6.54	5.392	12.423	10.970	17.0	6.0	15.4	4.4	3.48	0.14	11.5	5.5	9.9
78	118.6	0.535	71.3	1.6	6.55	5.465	12.423	10.961	16.9	6.0	15.4	4.4	3.48	0.14	11.5	5.5	9.9
79	119.0	0.540	71.3	1.6	6.55	5.539	12.498	11.022	17.0	6.0	15.4	4.4	3.49	0.14	11.5	5.5	9.9
80	120.1	0.544	71.2	1.5	6.56	5.612	12.667	11.172	17.2	6.0	15.6	4.5	3.51	0.14	11.6	5.6	10.0
81	120.3	0.549	71.2	1.5	6.56	5.685	12.704	11.198	17.2	6.0	15.7	4.5	3.50	0.13	11.6	5.6	10.1
82	120.5	0.554	71.2	1.5	6.57	5.758	12.742	11.224	17.2	6.0	15.7	4.5	3.49	0.13	11.6	5.6	10.1
83	121.7	0.558	71.2	1.5	6.57	5.823	12.929	11.392	17.4	6.0	15.9	4.5	3.53	0.13	11.7	5.7	10.2
84	123.1	0.562	71.2	1.5	6.58	5.897	13.153	11.594	17.6	6.0	16.1	4.5	3.57	0.13	11.8	5.8	10.3
85	123.0	0.567	71.2	1.4	6.58	5.970	13.134	11.567	17.5	6.0	16.1	4.5	3.55	0.12	11.8	5.8	10.3
86	123.3	0.571	71.1	1.4	6.59	6.035	13.191	11.611	17.6	6.0	16.2	4.6	3.54	0.12	11.8	5.8	10.4
87	123.7	0.576	71.1	1.4	6.59	6.108	13.247	11.654	17.6	6.0	16.3	4.6	3.53	0.12	11.8	5.8	10.4
88	124.7	0.580	71.1	1.4	6.60	6.174	13.415	11.803	17.8	6.0	16.4	4.6	3.57	0.12	11.9	5.9	10.5
89	124.6	0.584	71.1	1.4	6.60	6.247	13.396	11.776	17.8	6.0	16.4	4.6	3.54	0.11	11.9	5.9	10.5
90	124.9	0.589	71.1	1.4	6.61	6.320	13.453	11.819	17.8	6.0	16.4	4.6	3.55	0.11	11.9	5.9	10.5
91	125.3	0.593	71.0	1.3	6.61	6.386	13.509	11.862	17.8	6.0	16.5	4.7	3.55	0.11	11.9	5.9	10.6
92	125.3	0.598	71.0	1.3	6.62	6.459	13.509	11.852	17.8	6.0	16.5	4.7	3.53	0.11	11.9	5.9	10.6
93	125.8	0.602	71.0	1.3	6.62	6.525	13.584	11.913	17.9	6.0	16.6	4.7	3.53	0.11	11.9	6.0	10.7
94	125.8	0.607	71.0	1.3	6.63	6.598	13.584	11.904	17.9	6.0	16.6	4.7	3.52	0.11	11.9	6.0	10.7
95	126.2	0.611	71.0	1.3	6.63	6.671	13.658	11.963	17.9	6.0	16.7	4.7	3.54	0.11	12.0	6.0	10.7
96	125.8	0.615	71.0	1.2	6.64	6.737	13.584	11.885	17.9	6.0	16.6	4.7	3.50	0.10	11.9	5.9	10.7
97	126.1	0.620	70.9	1.2	6.64	6.810	13.640	11.927	17.9	6.0	16.7	4.8	3.50	0.10	11.9	6.0	10.7
98	127.1	0.624	70.9	1.2	6.65	6.876	13.808	12.075	18.1	6.0	16.9	4.8	3.51	0.10	12.0	6.0	10.8
99	126.8	0.629	70.9	1.2	6.65	6.956	13.752	12.012	18.0	6.0	16.8	4.8	3.50	0.10	12.0	6.0	10.8
100	126.9	0.634	70.9	1.1	6.66	7.029	13.771	12.019	18.0	6.0	16.9	4.8	3.49	0.10	12.0	6.0	10.8

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	126.2	0.638	70.9	1.1	6.66	7.095	13.658	11.906	17.9	6.0	16.7	4.8	3.46	0.10	11.9	6.0	10.8
102	127.1	0.642	70.9	1.1	6.67	7.168	13.808	12.035	18.0	6.0	16.9	4.8	3.49	0.10	12.0	6.0	10.9
103	128.0	0.647	70.8	1.1	6.67	7.241	13.939	12.146	18.1	6.0	17.0	4.9	3.50	0.09	12.1	6.1	10.9
104	129.2	0.651	70.8	1.1	6.68	7.307	14.145	12.328	18.3	6.0	17.2	4.9	3.52	0.09	12.1	6.2	11.1
105	128.2	0.656	70.8	1.1	6.68	7.380	13.976	12.161	18.1	6.0	17.1	4.9	3.49	0.09	12.1	6.1	11.0
106	128.7	0.660	70.8	1.1	6.69	7.453	14.051	12.220	18.2	6.0	17.1	4.9	3.50	0.09	12.1	6.1	11.0
107	128.9	0.665	70.8	1.1	6.69	7.519	14.089	12.246	18.2	6.0	17.2	4.9	3.49	0.09	12.1	6.1	11.0
108	129.2	0.669	70.8	1.1	6.70	7.592	14.145	12.287	18.3	6.0	17.2	4.9	3.50	0.09	12.1	6.1	11.1
109	129.2	0.673	70.7	1.0	6.70	7.657	14.145	12.278	18.3	6.0	17.2	5.0	3.48	0.08	12.1	6.1	11.1
110	129.9	0.677	70.7	1.0	6.71	7.723	14.257	12.372	18.4	6.0	17.4	5.0	3.48	0.08	12.2	6.2	11.2
111	129.7	0.682	70.7	1.0	6.71	7.796	14.220	12.327	18.3	6.0	17.3	5.0	3.47	0.08	12.1	6.2	11.1
112	129.2	0.686	70.7	1.0	6.72	7.862	14.145	12.249	18.2	6.0	17.2	5.0	3.46	0.08	12.1	6.1	11.1
113	129.3	0.690	70.7	1.0	6.72	7.928	14.164	12.257	18.2	6.0	17.2	5.0	3.46	0.08	12.1	6.1	11.1
114	129.7	0.695	70.7	1.0	6.73	8.001	14.220	12.298	18.3	6.0	17.3	5.0	3.45	0.08	12.1	6.1	11.2
115	129.6	0.699	70.7	1.0	6.73	8.067	14.201	12.272	18.3	6.0	17.3	5.0	3.45	0.08	12.1	6.1	11.1
116	130.3	0.703	70.7	0.9	6.74	8.132	14.313	12.365	18.3	6.0	17.4	5.0	3.45	0.08	12.2	6.2	11.2
117	130.7	0.707	70.7	0.9	6.74	8.198	14.388	12.425	18.4	6.0	17.5	5.0	3.46	0.08	12.2	6.2	11.3
118	130.9	0.712	70.7	0.9	6.75	8.271	14.407	12.431	18.4	6.0	17.5	5.0	3.47	0.08	12.2	6.2	11.3
119	130.7	0.717	70.7	0.9	6.75	8.344	14.388	12.404	18.4	6.0	17.4	5.0	3.46	0.08	12.2	6.2	11.2
120	131.2	0.721	70.7	0.9	6.76	8.410	14.463	12.463	18.4	6.0	17.5	5.0	3.47	0.08	12.2	6.2	11.3
121	131.4	0.725	70.6	0.9	6.76	8.483	14.500	12.487	18.5	6.0	17.6	5.1	3.46	0.07	12.2	6.2	11.3
122	131.8	0.730	70.6	0.9	6.77	8.556	14.556	12.527	18.5	6.0	17.6	5.1	3.46	0.07	12.2	6.3	11.4
123	132.1	0.734	70.6	0.9	6.77	8.629	14.613	12.568	18.5	6.0	17.7	5.1	3.46	0.07	12.3	6.3	11.4
124	133.3	0.739	70.6	0.9	6.78	8.702	14.800	12.728	18.7	6.0	17.8	5.1	3.50	0.07	12.3	6.4	11.5
125	132.5	0.744	70.6	0.9	6.78	8.775	14.669	12.598	18.6	6.0	17.7	5.1	3.47	0.07	12.3	6.3	11.4
126	133.9	0.748	70.6	0.9	6.79	8.848	14.893	12.792	18.8	6.0	17.9	5.1	3.51	0.07	12.4	6.4	11.5
127	132.9	0.752	70.6	0.9	6.79	8.914	14.744	12.646	18.6	6.0	17.8	5.1	3.47	0.07	12.3	6.3	11.5
128	133.8	0.757	70.5	0.8	6.80	8.995	14.875	12.753	18.7	6.0	17.9	5.2	3.47	0.06	12.4	6.4	11.5
129	133.5	0.762	70.5	0.8	6.81	9.068	14.837	12.708	18.7	6.0	17.9	5.2	3.46	0.06	12.3	6.4	11.5
130	133.3	0.766	70.5	0.8	6.81	9.133	14.800	12.664	18.6	6.0	17.8	5.2	3.46	0.07	12.3	6.3	11.5
131	133.1	0.771	70.5	0.8	6.82	9.206	14.762	12.619	18.6	6.0	17.8	5.2	3.45	0.07	12.3	6.3	11.5
132	133.4	0.775	70.5	0.8	6.82	9.280	14.818	12.660	18.6	6.0	17.8	5.2	3.44	0.06	12.3	6.3	11.5
133	134.6	0.780	70.5	0.8	6.83	9.353	15.005	12.818	18.8	6.0	18.0	5.2	3.47	0.06	12.4	6.4	11.6
134	134.6	0.784	70.5	0.8	6.83	9.418	15.005	12.809	18.8	6.0	18.0	5.2	3.46	0.06	12.4	6.4	11.6
135	135.5	0.789	70.5	0.8	6.84	9.491	15.155	12.933	18.9	6.0	18.2	5.2	3.48	0.06	12.4	6.5	11.7
136	135.3	0.793	70.5	0.8	6.84	9.565	15.118	12.888	18.9	6.0	18.1	5.2	3.47	0.06	12.4	6.4	11.7
137	135.4	0.798	70.5	0.8	6.85	9.638	15.136	12.894	18.9	6.0	18.1	5.2	3.47	0.06	12.4	6.4	11.7
138	135.5	0.802	70.5	0.7	6.85	9.703	15.155	12.901	18.9	6.0	18.1	5.2	3.46	0.06	12.4	6.5	11.7
139	136.2	0.806	70.5	0.7	6.86	9.769	15.267	12.992	19.0	6.0	18.2	5.2	3.48	0.06	12.5	6.5	11.7
140	136.6	0.811	70.5	0.7	6.86	9.842	15.342	13.049	19.0	6.0	18.3	5.2	3.49	0.06	12.5	6.5	11.8
141	137.1	0.815	70.5	0.7	6.87	9.915	15.417	13.105	19.1	6.0	18.4	5.2	3.50	0.06	12.5	6.6	11.8

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	137.3	0.820	70.5	0.7	6.88	9.981	15.455	13.128	19.1	6.0	18.4	5.2	3.50	0.06	12.5	6.6	11.8
143	137.8	0.824	70.4	0.7	6.88	10.054	15.529	13.184	19.2	6.0	18.5	5.3	3.50	0.05	12.6	6.6	11.9
144	139.0	0.828	70.4	0.7	6.89	10.120	15.716	13.342	19.3	6.0	18.6	5.3	3.53	0.05	12.7	6.7	11.9
145	139.1	0.833	70.4	0.7	6.89	10.193	15.735	13.348	19.3	6.0	18.6	5.3	3.53	0.05	12.7	6.7	11.9
146	139.3	0.837	70.4	0.7	6.90	10.259	15.773	13.371	19.4	6.0	18.7	5.3	3.52	0.05	12.7	6.7	12.0
147	139.2	0.842	70.4	0.7	6.90	10.332	15.754	13.343	19.3	6.0	18.6	5.3	3.53	0.05	12.7	6.7	11.9
148	139.1	0.846	70.4	0.7	6.91	10.397	15.735	13.315	19.3	6.0	18.6	5.3	3.51	0.05	12.6	6.7	12.0
149	139.3	0.850	70.4	0.6	6.91	10.471	15.773	13.337	19.3	6.0	18.7	5.3	3.50	0.05	12.7	6.7	12.0
150	139.0	0.855	70.4	0.6	6.92	10.536	15.716	13.277	19.3	6.0	18.6	5.3	3.49	0.05	12.6	6.6	12.0
151	139.3	0.860	70.4	0.6	6.92	10.617	15.773	13.314	19.3	6.0	18.6	5.3	3.50	0.05	12.6	6.7	12.0
152	139.1	0.864	70.4	0.6	6.93	10.682	15.735	13.271	19.3	6.0	18.6	5.3	3.49	0.05	12.6	6.6	12.0
153	139.7	0.868	70.4	0.6	6.94	10.756	15.829	13.343	19.3	6.0	18.7	5.3	3.50	0.05	12.7	6.7	12.0
154	140.6	0.873	70.3	0.6	6.94	10.821	15.978	13.466	19.4	6.0	18.8	5.4	3.51	0.05	12.7	6.7	12.1
155	140.4	0.877	70.3	0.6	6.95	10.894	15.941	13.421	19.4	6.0	18.8	5.4	3.50	0.05	12.7	6.7	12.1
156	141.7	0.881	70.3	0.6	6.95	10.960	16.166	13.610	19.6	6.0	19.0	5.4	3.54	0.05	12.8	6.8	12.2
157	142.0	0.886	70.3	0.6	6.96	11.033	16.203	13.632	19.6	6.0	19.0	5.4	3.54	0.05	12.8	6.8	12.2
158	141.9	0.890	70.3	0.6	6.96	11.106	16.184	13.603	19.6	6.0	19.0	5.4	3.54	0.05	12.8	6.8	12.2
159	142.1	0.895	70.3	0.6	6.97	11.172	16.222	13.626	19.6	6.0	19.0	5.4	3.54	0.05	12.8	6.8	12.2
160	142.0	0.899	70.3	0.6	6.97	11.245	16.203	13.597	19.6	6.0	19.0	5.4	3.52	0.04	12.8	6.8	12.2
161	142.2	0.903	70.3	0.6	6.98	11.311	16.240	13.620	19.6	6.0	19.0	5.4	3.53	0.04	12.8	6.8	12.2
162	143.5	0.908	70.3	0.6	6.98	11.384	16.446	13.790	19.8	6.0	19.2	5.4	3.56	0.04	12.9	6.9	12.3
163	144.2	0.913	70.3	0.6	6.99	11.457	16.558	13.878	19.9	6.0	19.3	5.4	3.57	0.04	12.9	6.9	12.3
164	144.1	0.917	70.3	0.6	7.00	11.523	16.540	13.850	19.8	6.0	19.2	5.4	3.57	0.04	12.9	6.9	12.3
165	143.9	0.921	70.3	0.6	7.00	11.596	16.521	13.822	19.8	6.0	19.2	5.4	3.55	0.04	12.9	6.9	12.3
166	145.2	0.926	70.2	0.5	7.01	11.669	16.727	13.991	20.0	6.0	19.4	5.5	3.57	0.04	13.0	7.0	12.4
167	145.0	0.931	70.2	0.5	7.01	11.742	16.689	13.946	19.9	6.0	19.4	5.5	3.56	0.04	13.0	7.0	12.4
168	145.0	0.935	70.2	0.5	7.02	11.808	16.689	13.935	19.9	6.0	19.4	5.5	3.56	0.04	12.9	7.0	12.4
169	145.6	0.939	70.2	0.5	7.02	11.881	16.783	14.005	20.0	6.0	19.5	5.5	3.57	0.04	13.0	7.0	12.5
170	145.9	0.943	70.2	0.5	7.03	11.947	16.839	14.044	20.0	6.0	19.5	5.5	3.58	0.04	13.0	7.0	12.5
171	146.7	0.948	70.2	0.5	7.03	12.020	16.970	14.147	20.1	6.0	19.6	5.5	3.58	0.04	13.1	7.1	12.6
172	146.1	0.953	70.2	0.5	7.04	12.093	16.876	14.052	20.0	6.0	19.5	5.5	3.56	0.04	13.0	7.0	12.5
173	147.9	0.957	70.2	0.5	7.05	12.166	17.157	14.286	20.3	6.0	19.8	5.5	3.61	0.03	13.1	7.1	12.6
174	147.5	0.961	70.2	0.5	7.05	12.231	17.101	14.226	20.2	6.0	19.7	5.5	3.60	0.04	13.1	7.1	12.6
175	147.9	0.966	70.2	0.5	7.06	12.305	17.157	14.262	20.2	6.0	19.8	5.5	3.59	0.03	13.1	7.1	12.6
176	148.5	0.970	70.2	0.5	7.06	12.370	17.251	14.333	20.3	6.0	19.8	5.5	3.60	0.03	13.1	7.2	12.7
177	148.5	0.975	70.2	0.4	7.07	12.443	17.251	14.320	20.3	6.0	19.9	5.5	3.58	0.03	13.1	7.2	12.7
178	149.3	0.979	70.1	0.4	7.07	12.516	17.382	14.422	20.4	6.0	20.0	5.6	3.59	0.03	13.2	7.2	12.8
179	149.3	0.983	70.1	0.4	7.08	12.582	17.382	14.411	20.4	6.0	20.0	5.6	3.59	0.03	13.2	7.2	12.8
180	149.3	0.988	70.1	0.4	7.09	12.655	17.382	14.398	20.4	6.0	20.0	5.6	3.58	0.03	13.2	7.2	12.8
181	149.5	0.993	70.1	0.4	7.09	12.728	17.419	14.418	20.4	6.0	20.0	5.6	3.59	0.03	13.2	7.2	12.8
182	150.4	0.997	70.1	0.4	7.10	12.801	17.569	14.536	20.5	6.0	20.1	5.6	3.60	0.03	13.2	7.3	12.9

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	150.5	1.001	70.1	0.4	7.10	12.867	17.587	14.541	20.5	6.0	20.1	5.6	3.60	0.03	13.3	7.3	12.9
184	149.7	1.006	70.1	0.4	7.11	12.940	17.456	14.414	20.4	6.0	20.0	5.6	3.57	0.03	13.2	7.2	12.8
185	150.7	1.011	70.1	0.4	7.12	13.013	17.606	14.531	20.5	6.0	20.1	5.6	3.60	0.03	13.2	7.3	12.9
186	150.5	1.015	70.1	0.4	7.12	13.079	17.587	14.503	20.5	6.0	20.1	5.6	3.59	0.03	13.2	7.3	12.9
187	150.5	1.019	70.1	0.4	7.13	13.152	17.587	14.491	20.5	6.0	20.1	5.6	3.57	0.02	13.2	7.2	12.9
188	150.4	1.024	70.0	0.3	7.13	13.225	17.569	14.462	20.4	6.0	20.1	5.7	3.56	0.02	13.2	7.2	12.9
189	151.4	1.029	70.1	0.4	7.14	13.298	17.718	14.578	20.6	6.0	20.2	5.6	3.59	0.02	13.3	7.3	12.9
190	152.4	1.033	70.1	0.4	7.14	13.371	17.887	14.711	20.7	6.0	20.3	5.6	3.61	0.02	13.3	7.4	13.0
191	152.4	1.037	70.1	0.4	7.15	13.437	17.887	14.700	20.7	6.0	20.3	5.6	3.61	0.02	13.3	7.3	13.0
192	152.4	1.041	70.1	0.4	7.16	13.503	17.887	14.688	20.7	6.0	20.3	5.6	3.61	0.02	13.3	7.3	13.0
193	152.7	1.046	70.0	0.3	7.16	13.576	17.943	14.723	20.7	6.0	20.4	5.7	3.60	0.02	13.3	7.4	13.0
194	152.5	1.050	70.0	0.3	7.17	13.642	17.906	14.679	20.7	6.0	20.4	5.7	3.58	0.02	13.3	7.3	13.0
195	153.0	1.054	70.0	0.3	7.17	13.707	17.980	14.732	20.7	6.0	20.4	5.7	3.60	0.02	13.3	7.4	13.0
196	153.3	1.059	70.0	0.3	7.18	13.781	18.037	14.767	20.7	6.0	20.4	5.7	3.61	0.02	13.4	7.4	13.0
197	152.7	1.063	70.0	0.3	7.18	13.846	17.943	14.675	20.7	6.0	20.3	5.7	3.59	0.02	13.3	7.3	13.0
198	155.1	1.068	70.0	0.3	7.19	13.919	18.317	14.984	21.0	6.0	20.7	5.7	3.63	0.02	13.5	7.5	13.2
199	153.2	1.072	70.0	0.3	7.20	13.985	18.018	14.714	20.7	6.0	20.4	5.7	3.57	0.02	13.3	7.4	13.1
200	153.6	1.076	70.0	0.3	7.20	14.058	18.074	14.749	20.7	6.0	20.5	5.7	3.58	0.02	13.4	7.4	13.1
201	154.4	1.081	70.0	0.3	7.21	14.124	18.205	14.850	20.8	6.0	20.6	5.7	3.60	0.02	13.4	7.4	13.1
202	154.8	1.085	70.0	0.3	7.21	14.197	18.280	14.901	20.9	6.0	20.6	5.7	3.61	0.02	13.4	7.5	13.2
203	154.9	1.089	70.0	0.3	7.22	14.263	18.298	14.905	20.9	6.0	20.6	5.7	3.61	0.02	13.4	7.5	13.2
204	155.9	1.094	70.0	0.2	7.23	14.336	18.448	15.020	21.0	6.0	20.8	5.7	3.61	0.02	13.5	7.5	13.3
205	155.4	1.098	69.9	0.2	7.23	14.402	18.373	14.944	20.9	6.0	20.7	5.8	3.59	0.01	13.5	7.5	13.2
206	155.6	1.103	70.0	0.2	7.24	14.475	18.411	14.962	20.9	6.0	20.7	5.7	3.60	0.02	13.5	7.5	13.2
207	155.5	1.107	70.0	0.2	7.24	14.540	18.392	14.934	20.9	6.0	20.7	5.7	3.60	0.02	13.4	7.5	13.2
208	156.4	1.111	70.0	0.2	7.25	14.613	18.542	15.048	21.0	6.0	20.8	5.7	3.62	0.02	13.5	7.5	13.3
209	156.6	1.116	70.0	0.2	7.25	14.687	18.560	15.051	21.0	6.0	20.8	5.7	3.62	0.02	13.5	7.5	13.3
210	156.6	1.121	69.9	0.2	7.26	14.760	18.560	15.037	21.0	6.0	20.8	5.8	3.59	0.01	13.5	7.5	13.3
211	156.8	1.125	69.9	0.2	7.27	14.825	18.598	15.057	21.0	6.0	20.9	5.8	3.59	0.01	13.5	7.5	13.3
212	156.0	1.129	69.9	0.2	7.27	14.898	18.467	14.932	20.9	6.0	20.7	5.8	3.57	0.01	13.4	7.5	13.3
213	157.8	1.134	69.9	0.2	7.28	14.972	18.766	15.173	21.2	6.0	21.0	5.8	3.61	0.01	13.6	7.6	13.4
214	157.7	1.139	69.9	0.2	7.29	15.045	18.747	15.143	21.1	6.0	20.9	5.8	3.62	0.01	13.6	7.6	13.3
215	158.6	1.143	69.9	0.2	7.29	15.118	18.897	15.257	21.2	6.0	21.1	5.8	3.63	0.01	13.6	7.6	13.4
216	158.4	1.147	69.9	0.1	7.30	15.183	18.860	15.212	21.2	6.0	21.0	5.8	3.61	0.01	13.6	7.6	13.4
217	158.3	1.152	69.9	0.1	7.30	15.256	18.841	15.183	21.2	6.0	21.0	5.8	3.60	0.01	13.6	7.6	13.4
218	158.4	1.156	69.9	0.1	7.31	15.330	18.860	15.185	21.2	6.0	21.0	5.8	3.60	0.01	13.6	7.6	13.4
219	159.0	1.161	69.9	0.1	7.32	15.403	18.953	15.250	21.2	6.0	21.1	5.8	3.61	0.01	13.6	7.6	13.5
220	159.6	1.165	69.9	0.1	7.32	15.468	19.047	15.317	21.3	6.0	21.2	5.8	3.63	0.01	13.6	7.7	13.5
221	160.6	1.170	69.8	0.1	7.33	15.541	19.215	15.445	21.4	6.0	21.3	5.9	3.63	0.01	13.7	7.7	13.6
222	160.4	1.174	69.8	0.1	7.33	15.615	19.178	15.400	21.4	6.0	21.3	5.9	3.61	0.01	13.7	7.7	13.6
223	160.6	1.179	69.8	0.1	7.34	15.680	19.215	15.419	21.4	6.0	21.3	5.9	3.62	0.01	13.7	7.7	13.6

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	160.7	1.183	69.8	0.1	7.35	15.753	19.234	15.420	21.4	6.0	21.3	5.9	3.63	0.01	13.7	7.7	13.6
225	162.4	1.188	69.8	0.1	7.35	15.826	19.496	15.627	21.6	6.0	21.5	5.9	3.65	0.01	13.8	7.8	13.7
226	162.5	1.192	69.8	0.1	7.36	15.892	19.515	15.630	21.6	6.0	21.5	5.9	3.65	0.01	13.8	7.8	13.7
227	161.9	1.196	69.8	0.1	7.36	15.958	19.421	15.538	21.5	6.0	21.5	5.9	3.62	0.00	13.8	7.8	13.7
228	162.0	1.201	69.7	0.0	7.37	16.031	19.440	15.540	21.5	6.0	21.5	6.0	3.61	0.00	13.8	7.8	13.7
229	162.7	1.205	69.7	0.0	7.38	16.104	19.552	15.620	21.6	6.0	21.6	6.0	3.62	0.00	13.8	7.8	13.8
230	163.5	1.210	69.7	0.0	7.38	16.177	19.683	15.715	21.7	6.0	21.7	6.0	3.64	0.00	13.8	7.9	13.8
231	163.7	1.214	69.7	0.0	7.39	16.243	19.720	15.734	21.7	6.0	21.7	6.0	3.64	0.00	13.8	7.9	13.8
232	165.0	1.219	69.7	0.0	7.40	16.316	19.926	15.891	21.9	6.0	21.8	6.0	3.67	0.00	13.9	7.9	13.9
233	164.8	1.223	69.7	0.0	7.40	16.389	19.889	15.846	21.8	6.0	21.8	6.0	3.65	0.00	13.9	7.9	13.9
234	165.7	1.228	69.7	0.0	7.41	16.462	20.038	15.956	21.9	6.0	21.9	6.0	3.67	0.00	14.0	8.0	14.0
235	165.8	1.232	69.7	0.0	7.41	16.528	20.057	15.958	21.9	6.0	21.9	6.0	3.67	0.00	14.0	8.0	14.0
236	165.9	1.237	69.7	0.0	7.42	16.601	20.076	15.959	21.9	6.0	21.9	6.0	3.67	0.00	14.0	8.0	14.0
237	167.4	1.241	69.7	0.0	7.43	16.667	20.319	16.149	22.1	6.0	22.2	6.0	3.69	0.00	14.1	8.1	14.1
238	166.4	1.245	69.7	-0.1	7.43	16.740	20.151	15.994	22.0	6.0	22.0	6.0	3.65	0.00	14.0	8.0	14.0
239	167.1	1.250	69.7	-0.1	7.44	16.813	20.263	16.073	22.1	6.0	22.1	6.0	3.66	0.00	14.0	8.0	14.1
240	167.1	1.254	69.7	-0.1	7.45	16.879	20.263	16.059	22.0	6.0	22.1	6.0	3.66	0.00	14.0	8.0	14.1
241	167.6	1.259	69.7	-0.1	7.45	16.952	20.338	16.107	22.1	6.0	22.1	6.0	3.67	0.00	14.0	8.1	14.1
242	167.7	1.263	69.7	-0.1	7.46	17.017	20.357	16.109	22.1	6.0	22.1	6.0	3.67	0.00	14.0	8.1	14.1
243	168.6	1.267	69.6	-0.1	7.47	17.090	20.506	16.218	22.2	6.0	22.3	6.1	3.67	-0.01	14.1	8.1	14.2
244	169.3	1.272	69.6	-0.1	7.47	17.164	20.618	16.296	22.3	6.0	22.4	6.1	3.67	-0.01	14.1	8.1	14.2
245	169.5	1.276	69.6	-0.1	7.48	17.229	20.656	16.313	22.3	6.0	22.4	6.1	3.67	-0.01	14.1	8.2	14.3
246	169.8	1.281	69.6	-0.1	7.48	17.302	20.693	16.329	22.3	6.0	22.4	6.1	3.68	-0.01	14.1	8.2	14.3
247	169.9	1.285	69.6	-0.1	7.49	17.368	20.712	16.331	22.3	6.0	22.4	6.1	3.68	-0.01	14.1	8.2	14.3
248	169.8	1.289	69.6	-0.1	7.50	17.434	20.693	16.302	22.3	6.0	22.4	6.1	3.67	-0.01	14.1	8.2	14.3
249	170.5	1.293	69.6	-0.1	7.50	17.500	20.806	16.381	22.4	6.0	22.5	6.1	3.67	-0.01	14.2	8.2	14.3
250	171.2	1.298	69.5	-0.2	7.51	17.573	20.918	16.458	22.4	6.0	22.6	6.2	3.67	-0.01	14.2	8.2	14.4
251	171.2	1.302	69.5	-0.2	7.51	17.638	20.918	16.445	22.4	6.0	22.6	6.2	3.67	-0.01	14.2	8.2	14.4
252	171.4	1.306	69.5	-0.2	7.52	17.704	20.955	16.462	22.4	6.0	22.6	6.2	3.67	-0.01	14.2	8.2	14.4
253	171.6	1.310	69.5	-0.2	7.53	17.770	20.993	16.479	22.5	6.0	22.6	6.2	3.68	-0.01	14.2	8.2	14.4
254	171.5	1.315	69.5	-0.2	7.53	17.843	20.974	16.448	22.4	6.0	22.6	6.2	3.67	-0.01	14.2	8.2	14.4
255	171.0	1.319	69.5	-0.2	7.54	17.916	20.899	16.371	22.4	6.0	22.6	6.2	3.65	-0.01	14.2	8.2	14.4
256	171.5	1.324	69.5	-0.2	7.55	17.982	20.974	16.419	22.4	6.0	22.6	6.2	3.65	-0.01	14.2	8.2	14.4
257	172.1	1.328	69.5	-0.2	7.55	18.055	21.068	16.480	22.5	6.0	22.7	6.2	3.66	-0.01	14.2	8.2	14.4
258	172.3	1.332	69.5	-0.2	7.56	18.121	21.105	16.497	22.5	6.0	22.7	6.2	3.67	-0.01	14.2	8.2	14.4
259	172.0	1.337	69.5	-0.2	7.57	18.194	21.049	16.436	22.4	6.0	22.6	6.2	3.66	-0.01	14.2	8.2	14.4
260	172.9	1.341	69.5	-0.2	7.57	18.267	21.199	16.543	22.5	6.0	22.8	6.2	3.66	-0.01	14.3	8.3	14.5
261	172.5	1.346	69.5	-0.2	7.58	18.340	21.142	16.481	22.5	6.0	22.7	6.2	3.65	-0.01	14.2	8.2	14.5
262	172.8	1.351	69.5	-0.2	7.59	18.413	21.180	16.496	22.5	6.0	22.7	6.2	3.65	-0.01	14.2	8.2	14.5
263	174.3	1.355	69.5	-0.3	7.59	18.479	21.423	16.681	22.7	6.0	22.9	6.2	3.67	-0.02	14.3	8.3	14.6
264	174.5	1.359	69.5	-0.3	7.60	18.552	21.460	16.695	22.7	6.0	22.9	6.2	3.67	-0.02	14.3	8.3	14.6

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
265	175.6	1.364	69.5	-0.3	7.61	18.625	21.629	16.817	22.8	6.0	23.1	6.2	3.69	-0.02	14.4	8.4	14.7
266	175.6	1.369	69.4	-0.3	7.61	18.698	21.629	16.801	22.8	6.0	23.1	6.3	3.68	-0.02	14.4	8.4	14.7
267	176.1	1.373	69.4	-0.3	7.62	18.771	21.722	16.861	22.8	6.0	23.2	6.3	3.67	-0.02	14.4	8.4	14.7
268	175.9	1.377	69.4	-0.3	7.63	18.837	21.685	16.817	22.8	6.0	23.1	6.3	3.68	-0.02	14.4	8.4	14.7
269	175.6	1.382	69.4	-0.3	7.63	18.910	21.629	16.755	22.7	6.0	23.0	6.3	3.67	-0.02	14.4	8.4	14.7
270	176.1	1.387	69.4	-0.3	7.64	18.983	21.722	16.815	22.8	6.0	23.1	6.3	3.67	-0.02	14.4	8.4	14.7
271	177.2	1.391	69.4	-0.3	7.65	19.049	21.891	16.937	22.9	6.0	23.2	6.3	3.69	-0.02	14.5	8.5	14.8
272	177.4	1.395	69.4	-0.4	7.65	19.122	21.928	16.951	22.9	6.0	23.3	6.3	3.68	-0.02	14.5	8.5	14.8
273	178.2	1.400	69.3	-0.4	7.66	19.195	22.059	17.041	23.0	6.0	23.4	6.4	3.68	-0.02	14.5	8.5	14.9
274	178.0	1.405	69.3	-0.4	7.67	19.268	22.022	16.995	23.0	6.0	23.4	6.4	3.67	-0.02	14.5	8.5	14.9
275	179.1	1.409	69.3	-0.4	7.67	19.334	22.209	17.131	23.1	6.0	23.5	6.4	3.69	-0.02	14.5	8.6	14.9
276	179.6	1.413	69.3	-0.4	7.68	19.407	22.284	17.175	23.2	6.0	23.5	6.4	3.70	-0.02	14.6	8.6	15.0
277	179.7	1.418	69.3	-0.4	7.69	19.480	22.302	17.174	23.2	6.0	23.6	6.4	3.69	-0.02	14.6	8.6	15.0
278	180.1	1.422	69.3	-0.4	7.69	19.546	22.359	17.205	23.2	6.0	23.6	6.4	3.69	-0.02	14.6	8.6	15.0
279	181.0	1.427	69.3	-0.4	7.70	19.619	22.508	17.309	23.3	6.0	23.7	6.4	3.71	-0.02	14.6	8.7	15.0
280	180.5	1.431	69.3	-0.4	7.71	19.684	22.433	17.234	23.2	6.0	23.6	6.4	3.70	-0.02	14.6	8.6	15.0
281	180.6	1.435	69.3	-0.4	7.71	19.750	22.452	17.234	23.2	6.0	23.7	6.4	3.68	-0.03	14.6	8.6	15.0
282	181.5	1.439	69.3	-0.4	7.72	19.823	22.583	17.323	23.3	6.0	23.7	6.4	3.70	-0.03	14.6	8.7	15.1
283	181.5	1.444	69.2	-0.5	7.73	19.889	22.583	17.308	23.3	6.0	23.8	6.5	3.68	-0.03	14.6	8.7	15.1
284	182.5	1.448	69.2	-0.5	7.73	19.955	22.751	17.428	23.4	6.0	23.9	6.5	3.70	-0.03	14.7	8.7	15.2
285	182.5	1.451	69.2	-0.5	7.74	19.999	22.751	17.418	23.4	6.0	23.9	6.5	3.70	-0.03	14.7	8.7	15.2

Specimen B Shear Data

CU Triaxial Test

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File Location
T-5784.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5784
Sample Location: Guilford County (Sta. 403+45)
Sample Description: Brownish white colored silt
Remarks: 30° shear plane.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.6429999
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.855	2.796	
Height (in)	6.209	6.078	
Weight (grams)	1195.00		1329.00
Moisture (%)	8.93		21.15
Dry Density (pcf)	105.10	111.96	
Saturation (%)	41.42	100.00	
Void Ratio	0.566	0.474	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 82.100
Effective Confining Stress (psi): 12.0
Corrected Peak Deviator Stress (psi): 21.161 at reading number: 66

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	39.9	0.159	70.1	0.0	6.14	0.000	0.000	0.000	12.0	12.0	12.0	12.0	1.00	0.00	12.0	0.0	12.0
1	61.8	0.163	71.5	1.4	6.14	0.066	3.561	3.533	15.5	12.0	14.1	10.6	1.33	0.41	13.8	1.8	12.3
2	68.8	0.168	72.3	2.2	6.15	0.142	4.705	4.643	16.7	12.0	14.4	9.8	1.48	0.48	14.3	2.3	12.1
3	73.8	0.172	72.9	2.8	6.15	0.208	5.511	5.418	17.4	12.0	14.6	9.2	1.59	0.52	14.7	2.7	11.9
4	77.9	0.176	73.4	3.3	6.16	0.274	6.186	6.061	18.1	12.0	14.8	8.7	1.69	0.54	15.0	3.0	11.8
5	81.6	0.181	73.8	3.7	6.16	0.349	6.786	6.624	18.6	12.0	15.0	8.3	1.80	0.56	15.3	3.3	11.6
6	84.9	0.185	74.1	4.0	6.17	0.415	7.329	7.135	19.1	12.0	15.1	8.0	1.89	0.56	15.6	3.6	11.6
7	87.9	0.189	74.4	4.3	6.17	0.491	7.816	7.585	19.6	12.0	15.3	7.7	1.98	0.56	15.8	3.8	11.5
8	89.9	0.193	74.6	4.5	6.17	0.547	8.135	7.875	19.9	12.0	15.4	7.5	2.05	0.57	16.0	3.9	11.5
9	91.6	0.196	74.7	4.6	6.18	0.594	8.416	8.132	20.1	12.0	15.5	7.4	2.10	0.57	16.1	4.1	11.5
10	94.2	0.199	74.9	4.8	6.18	0.651	8.829	8.515	20.5	12.0	15.7	7.2	2.18	0.56	16.3	4.3	11.5
11	96.2	0.203	75.0	4.9	6.19	0.717	9.166	8.818	20.8	12.0	15.9	7.1	2.24	0.56	16.4	4.4	11.5
12	98.0	0.206	75.2	5.1	6.19	0.774	9.447	9.070	21.1	12.0	16.0	6.9	2.31	0.56	16.5	4.5	11.5
13	99.1	0.209	75.3	5.2	6.19	0.821	9.635	9.233	21.2	12.0	16.1	6.8	2.35	0.56	16.6	4.6	11.5
14	101.4	0.212	75.3	5.2	6.19	0.868	10.010	9.581	21.6	12.0	16.4	6.8	2.42	0.55	16.8	4.8	11.6
15	103.9	0.217	75.5	5.4	6.20	0.944	10.422	9.952	22.0	12.0	16.6	6.6	2.50	0.54	17.0	5.0	11.6
16	106.0	0.221	75.5	5.4	6.20	1.019	10.759	10.249	22.3	12.0	16.8	6.6	2.56	0.53	17.1	5.1	11.7
17	108.0	0.227	75.6	5.5	6.21	1.104	11.078	10.521	22.5	12.0	17.0	6.5	2.62	0.52	17.3	5.3	11.8
18	110.2	0.231	75.7	5.6	6.21	1.180	11.434	10.835	22.8	12.0	17.2	6.4	2.69	0.52	17.4	5.4	11.8

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	112.2	0.236	75.8	5.7	6.22	1.255	11.772	11.130	23.1	12.0	17.5	6.3	2.76	0.51	17.6	5.6	11.9
20	114.6	0.240	75.8	5.7	6.22	1.331	12.165	11.480	23.5	12.0	17.8	6.3	2.83	0.50	17.8	5.7	12.0
21	116.5	0.245	75.9	5.8	6.23	1.406	12.465	11.737	23.8	12.0	18.0	6.2	2.88	0.49	17.9	5.9	12.1
22	117.9	0.249	75.9	5.8	6.23	1.472	12.690	11.924	23.9	12.0	18.1	6.2	2.93	0.49	18.0	6.0	12.1
23	118.9	0.250	76.0	5.9	6.23	1.491	12.859	12.081	24.1	12.0	18.2	6.1	2.97	0.49	18.1	6.0	12.2
24	119.5	0.252	76.0	5.9	6.24	1.529	12.952	12.153	24.2	12.0	18.3	6.1	2.98	0.48	18.1	6.1	12.2
25	120.3	0.254	76.0	5.9	6.24	1.557	13.084	12.267	24.3	12.0	18.4	6.1	3.00	0.48	18.1	6.1	12.3
26	122.1	0.256	76.0	5.9	6.24	1.595	13.384	12.543	24.6	12.0	18.6	6.1	3.06	0.47	18.3	6.3	12.4
27	124.0	0.259	76.0	5.9	6.24	1.642	13.684	12.813	24.8	12.0	18.9	6.1	3.10	0.46	18.4	6.4	12.5
28	125.8	0.262	76.1	6.0	6.25	1.689	13.983	13.083	25.1	12.0	19.1	6.0	3.16	0.46	18.6	6.5	12.6
29	128.5	0.266	76.1	6.0	6.25	1.746	14.415	13.476	25.5	12.0	19.5	6.0	3.23	0.44	18.8	6.7	12.8
30	130.9	0.270	76.1	6.0	6.25	1.821	14.808	13.822	25.8	12.0	19.9	6.0	3.28	0.43	18.9	6.9	13.0
31	132.9	0.275	76.0	5.9	6.26	1.906	15.146	14.107	26.1	12.0	20.2	6.1	3.32	0.42	19.1	7.1	13.1
32	133.8	0.279	76.1	6.0	6.26	1.972	15.277	14.200	26.2	12.0	20.2	6.0	3.35	0.42	19.1	7.1	13.1
33	135.7	0.284	76.1	6.0	6.27	2.048	15.595	14.489	26.5	12.0	20.5	6.0	3.40	0.41	19.3	7.2	13.3
34	138.2	0.289	76.0	5.9	6.27	2.123	16.008	14.881	26.9	12.0	21.0	6.1	3.44	0.40	19.5	7.4	13.5
35	141.1	0.293	76.0	5.9	6.28	2.189	16.476	15.329	27.3	12.0	21.4	6.1	3.52	0.39	19.7	7.7	13.8
36	143.4	0.297	76.0	5.9	6.28	2.255	16.851	15.685	27.7	12.0	21.8	6.1	3.56	0.38	19.9	7.8	14.0
37	145.8	0.301	75.9	5.8	6.29	2.321	17.245	16.058	28.1	12.0	22.2	6.2	3.60	0.36	20.0	8.0	14.2
38	148.4	0.304	75.9	5.8	6.29	2.378	17.657	16.451	28.5	12.0	22.6	6.2	3.67	0.36	20.2	8.2	14.4
39	150.7	0.308	75.9	5.8	6.29	2.444	18.032	16.805	28.8	12.0	23.0	6.2	3.71	0.35	20.4	8.4	14.6
40	153.0	0.312	75.9	5.8	6.30	2.510	18.407	17.158	29.2	12.0	23.4	6.2	3.75	0.34	20.6	8.6	14.8
41	154.9	0.316	75.8	5.7	6.30	2.576	18.726	17.457	29.5	12.0	23.7	6.3	3.78	0.33	20.7	8.7	15.0
42	156.9	0.320	75.7	5.6	6.31	2.642	19.044	17.754	29.8	12.0	24.1	6.4	3.79	0.32	20.9	8.9	15.2
43	158.7	0.325	75.7	5.6	6.31	2.718	19.344	18.032	30.0	12.0	24.4	6.4	3.81	0.31	21.0	9.0	15.4
44	160.7	0.329	75.7	5.6	6.32	2.784	19.663	18.329	30.3	12.0	24.8	6.4	3.84	0.30	21.2	9.2	15.6
45	162.1	0.333	75.6	5.5	6.32	2.850	19.888	18.534	30.5	12.0	25.1	6.5	3.84	0.30	21.3	9.3	15.8
46	163.6	0.337	75.5	5.4	6.33	2.916	20.132	18.758	30.8	12.0	25.3	6.6	3.86	0.29	21.4	9.4	15.9
47	165.3	0.341	75.5	5.4	6.33	2.991	20.413	19.015	31.0	12.0	25.7	6.6	3.86	0.28	21.5	9.5	16.2
48	166.7	0.345	75.4	5.3	6.33	3.057	20.638	19.220	31.2	12.0	25.9	6.7	3.87	0.28	21.6	9.6	16.3
49	167.9	0.350	75.3	5.2	6.34	3.133	20.844	19.404	31.4	12.0	26.2	6.8	3.87	0.27	21.7	9.7	16.5
50	169.4	0.354	75.3	5.2	6.34	3.199	21.088	19.626	31.6	12.0	26.4	6.8	3.88	0.27	21.8	9.8	16.6
51	170.7	0.358	75.3	5.2	6.35	3.274	21.294	19.810	31.8	12.0	26.7	6.8	3.89	0.26	21.9	9.9	16.8
52	171.9	0.363	75.2	5.1	6.35	3.350	21.481	19.975	32.0	12.0	26.9	6.9	3.88	0.25	22.0	10.0	16.9
53	172.9	0.367	75.1	5.0	6.36	3.416	21.650	20.124	32.1	12.0	27.1	7.0	3.87	0.25	22.1	10.1	17.1
54	174.2	0.372	75.1	5.0	6.36	3.491	21.856	20.306	32.3	12.0	27.4	7.0	3.88	0.24	22.2	10.2	17.2
55	175.5	0.377	75.0	4.9	6.37	3.576	22.081	20.505	32.5	12.0	27.6	7.1	3.89	0.24	22.3	10.3	17.3
56	176.2	0.381	74.9	4.8	6.37	3.652	22.194	20.596	32.6	12.0	27.8	7.2	3.87	0.24	22.3	10.3	17.5
57	177.3	0.386	74.9	4.8	6.38	3.727	22.362	20.742	32.8	12.0	28.0	7.2	3.88	0.23	22.4	10.4	17.6
58	178.1	0.391	74.8	4.7	6.38	3.803	22.493	20.851	32.9	12.0	28.1	7.3	3.86	0.23	22.4	10.4	17.7
59	178.3	0.396	74.8	4.7	6.39	3.888	22.531	20.868	32.9	12.0	28.2	7.3	3.85	0.22	22.4	10.4	17.8

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	178.6	0.401	74.7	4.6	6.39	3.973	22.587	20.903	32.9	12.0	28.3	7.4	3.82	0.22	22.5	10.5	17.9
61	179.0	0.406	74.6	4.6	6.40	4.048	22.643	20.940	33.0	12.0	28.4	7.5	3.81	0.22	22.5	10.5	17.9
62	179.8	0.410	74.6	4.5	6.41	4.124	22.775	21.049	33.1	12.0	28.6	7.5	3.80	0.21	22.5	10.5	18.1
63	180.3	0.415	74.5	4.4	6.41	4.199	22.850	21.103	33.1	12.0	28.7	7.6	3.79	0.21	22.6	10.6	18.1
64	179.9	0.419	74.4	4.4	6.42	4.275	22.793	21.032	33.0	12.0	28.7	7.7	3.75	0.21	22.5	10.5	18.2
65	180.5	0.424	74.4	4.3	6.42	4.350	22.887	21.105	33.1	12.0	28.8	7.7	3.74	0.20	22.6	10.6	18.2
66	180.9	0.428	74.3	4.2	6.42	4.416	22.962	21.161	33.2	12.0	28.9	7.8	3.72	0.20	22.6	10.6	18.4
67	180.7	0.432	74.3	4.2	6.43	4.492	22.925	21.108	33.1	12.0	28.9	7.8	3.70	0.20	22.6	10.6	18.4
68	180.7	0.437	74.2	4.1	6.43	4.567	22.925	21.091	33.1	12.0	29.0	7.9	3.67	0.20	22.6	10.5	18.4
69	181.2	0.442	74.2	4.1	6.44	4.643	23.000	21.145	33.2	12.0	29.1	7.9	3.67	0.19	22.6	10.6	18.5
70	181.3	0.446	74.1	4.0	6.44	4.718	23.018	21.145	33.2	12.0	29.2	8.0	3.64	0.19	22.6	10.6	18.6
71	181.3	0.451	74.0	4.0	6.45	4.794	23.018	21.128	33.1	12.0	29.2	8.1	3.62	0.19	22.6	10.6	18.6
72	180.7	0.455	74.0	3.9	6.46	4.869	22.925	21.022	33.0	12.0	29.2	8.1	3.59	0.18	22.5	10.5	18.6
73	180.7	0.460	73.9	3.8	6.46	4.945	22.925	21.004	33.0	12.0	29.2	8.2	3.57	0.18	22.5	10.5	18.7
74	180.4	0.465	73.8	3.8	6.47	5.020	22.868	20.934	32.9	12.0	29.2	8.3	3.54	0.18	22.5	10.5	18.7
75	179.8	0.469	73.8	3.7	6.47	5.096	22.775	20.827	32.8	12.0	29.1	8.3	3.51	0.18	22.4	10.4	18.7
76	178.4	0.475	73.8	3.7	6.48	5.190	22.550	20.593	32.6	12.0	28.9	8.3	3.47	0.18	22.3	10.3	18.6
77	177.4	0.480	73.7	3.6	6.48	5.275	22.381	20.414	32.4	12.0	28.8	8.4	3.43	0.18	22.2	10.2	18.6
78	176.6	0.485	73.6	3.6	6.49	5.350	22.250	20.273	32.3	12.0	28.7	8.5	3.40	0.18	22.1	10.1	18.6
79	175.5	0.489	73.6	3.5	6.49	5.426	22.081	20.096	32.1	12.0	28.6	8.5	3.36	0.17	22.1	10.0	18.6
80	174.8	0.493	73.5	3.4	6.50	5.492	21.969	19.975	32.0	12.0	28.5	8.6	3.33	0.17	22.0	10.0	18.6
81	174.8	0.498	73.5	3.4	6.50	5.567	21.969	19.959	32.0	12.0	28.6	8.6	3.32	0.17	22.0	10.0	18.6
82	174.7	0.501	73.4	3.4	6.51	5.624	21.950	19.929	31.9	12.0	28.6	8.7	3.30	0.17	22.0	10.0	18.6
83	174.5	0.505	73.4	3.3	6.51	5.690	21.912	19.879	31.9	12.0	28.6	8.7	3.29	0.17	22.0	9.9	18.6
84	174.6	0.509	73.4	3.3	6.52	5.756	21.931	19.882	31.9	12.0	28.6	8.7	3.28	0.17	22.0	9.9	18.7
85	174.4	0.513	73.3	3.2	6.52	5.822	21.894	19.832	31.8	12.0	28.6	8.8	3.25	0.16	21.9	9.9	18.7
86	173.7	0.517	73.2	3.2	6.53	5.888	21.781	19.712	31.7	12.0	28.6	8.9	3.23	0.16	21.9	9.9	18.7
87	173.4	0.521	73.2	3.2	6.53	5.954	21.725	19.645	31.7	12.0	28.5	8.9	3.22	0.16	21.8	9.8	18.7
88	172.9	0.526	73.2	3.1	6.53	6.030	21.650	19.558	31.6	12.0	28.4	8.9	3.20	0.16	21.8	9.8	18.7
89	172.5	0.531	73.2	3.1	6.54	6.105	21.594	19.489	31.5	12.0	28.4	8.9	3.18	0.16	21.8	9.7	18.7
90	172.5	0.535	73.1	3.0	6.54	6.171	21.594	19.474	31.5	12.0	28.4	9.0	3.17	0.16	21.8	9.7	18.7
91	172.2	0.539	73.1	3.0	6.55	6.247	21.537	19.405	31.4	12.0	28.4	9.0	3.15	0.15	21.7	9.7	18.7
92	172.2	0.544	73.0	3.0	6.56	6.322	21.537	19.389	31.4	12.0	28.4	9.1	3.14	0.15	21.7	9.7	18.7
93	171.9	0.548	73.0	2.9	6.56	6.388	21.481	19.322	31.3	12.0	28.4	9.1	3.13	0.15	21.7	9.7	18.8
94	171.7	0.552	73.0	2.9	6.57	6.464	21.462	19.288	31.3	12.0	28.4	9.1	3.12	0.15	21.7	9.6	18.7
95	171.4	0.557	73.0	2.9	6.57	6.539	21.406	19.220	31.2	12.0	28.4	9.1	3.10	0.15	21.6	9.6	18.7
96	171.3	0.561	72.9	2.8	6.58	6.605	21.388	19.188	31.2	12.0	28.4	9.2	3.09	0.15	21.6	9.6	18.8
97	171.7	0.566	72.9	2.8	6.58	6.681	21.462	19.242	31.3	12.0	28.4	9.2	3.10	0.15	21.6	9.6	18.8
98	171.9	0.570	72.9	2.8	6.59	6.756	21.481	19.243	31.3	12.0	28.5	9.2	3.09	0.15	21.6	9.6	18.8
99	171.3	0.575	72.8	2.8	6.59	6.832	21.388	19.140	31.2	12.0	28.4	9.3	3.07	0.14	21.6	9.6	18.8
100	172.1	0.580	72.8	2.8	6.60	6.917	21.519	19.244	31.3	12.0	28.5	9.3	3.08	0.14	21.6	9.6	18.9

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	172.1	0.584	72.8	2.7	6.60	6.992	21.519	19.227	31.2	12.0	28.5	9.3	3.07	0.14	21.6	9.6	18.9
102	172.1	0.589	72.8	2.7	6.61	7.068	21.519	19.211	31.2	12.0	28.5	9.3	3.07	0.14	21.6	9.6	18.9
103	171.4	0.594	72.8	2.7	6.61	7.153	21.406	19.088	31.1	12.0	28.4	9.3	3.05	0.14	21.6	9.5	18.9
104	171.7	0.599	72.8	2.7	6.62	7.228	21.462	19.124	31.1	12.0	28.5	9.3	3.05	0.14	21.6	9.6	18.9
105	171.4	0.603	72.8	2.7	6.62	7.304	21.406	19.056	31.1	12.0	28.4	9.3	3.04	0.14	21.5	9.5	18.9
106	171.1	0.609	72.7	2.6	6.63	7.389	21.350	18.986	31.0	12.0	28.4	9.4	3.03	0.14	21.5	9.5	18.9
107	170.8	0.613	72.7	2.6	6.64	7.464	21.313	18.935	30.9	12.0	28.3	9.4	3.01	0.14	21.5	9.5	18.9
108	171.3	0.617	72.7	2.6	6.64	7.530	21.388	18.990	31.0	12.0	28.4	9.4	3.02	0.14	21.5	9.5	18.9
109	171.3	0.622	72.6	2.6	6.65	7.606	21.388	18.974	31.0	12.0	28.4	9.5	3.01	0.14	21.5	9.5	18.9
110	170.9	0.626	72.6	2.6	6.65	7.681	21.331	18.906	30.9	12.0	28.4	9.5	3.00	0.14	21.5	9.5	18.9
111	170.9	0.631	72.6	2.5	6.66	7.757	21.331	18.890	30.9	12.0	28.4	9.5	2.99	0.13	21.5	9.4	18.9
112	171.3	0.636	72.6	2.5	6.66	7.832	21.388	18.926	30.9	12.0	28.4	9.5	2.99	0.13	21.5	9.5	19.0
113	171.5	0.640	72.6	2.5	6.67	7.898	21.425	18.946	31.0	12.0	28.5	9.5	2.99	0.13	21.5	9.5	19.0
114	171.4	0.644	72.6	2.5	6.67	7.974	21.406	18.913	30.9	12.0	28.4	9.5	2.98	0.13	21.5	9.5	19.0
115	171.4	0.649	72.5	2.4	6.68	8.049	21.406	18.896	30.9	12.0	28.5	9.6	2.97	0.13	21.5	9.4	19.0
116	171.3	0.653	72.5	2.4	6.68	8.125	21.388	18.863	30.9	12.0	28.4	9.6	2.97	0.13	21.4	9.4	19.0
117	171.4	0.658	72.5	2.4	6.69	8.200	21.406	18.864	30.9	12.0	28.5	9.6	2.96	0.13	21.4	9.4	19.0
118	170.8	0.662	72.5	2.4	6.69	8.276	21.313	18.762	30.8	12.0	28.4	9.6	2.95	0.13	21.4	9.4	19.0
119	171.3	0.667	72.4	2.4	6.70	8.351	21.388	18.815	30.8	12.0	28.5	9.7	2.95	0.13	21.4	9.4	19.1
120	170.6	0.672	72.4	2.4	6.71	8.436	21.275	18.693	30.7	12.0	28.3	9.7	2.94	0.13	21.4	9.3	19.0
121	170.0	0.678	72.4	2.3	6.71	8.530	21.181	18.588	30.6	12.0	28.3	9.7	2.92	0.12	21.3	9.3	19.0
122	170.1	0.683	72.4	2.3	6.72	8.615	21.200	18.587	30.6	12.0	28.3	9.7	2.92	0.12	21.3	9.3	19.0
123	170.4	0.687	72.4	2.3	6.72	8.681	21.238	18.607	30.6	12.0	28.3	9.7	2.91	0.12	21.3	9.3	19.0
124	171.2	0.692	72.4	2.3	6.73	8.757	21.369	18.711	30.7	12.0	28.4	9.7	2.92	0.12	21.4	9.4	19.1
125	172.1	0.695	72.4	2.3	6.73	8.814	21.519	18.835	30.8	12.0	28.6	9.7	2.94	0.12	21.4	9.4	19.1
126	172.7	0.699	72.3	2.2	6.74	8.880	21.612	18.907	30.9	12.0	28.7	9.8	2.93	0.12	21.5	9.5	19.2
127	173.2	0.703	72.3	2.2	6.74	8.946	21.706	18.978	31.0	12.0	28.7	9.8	2.94	0.12	21.5	9.5	19.3
128	173.4	0.707	72.3	2.2	6.75	9.012	21.725	18.980	31.0	12.0	28.8	9.8	2.93	0.12	21.5	9.5	19.3
129	173.6	0.711	72.3	2.2	6.75	9.078	21.762	19.000	31.0	12.0	28.8	9.8	2.94	0.12	21.5	9.5	19.3
130	174.4	0.715	72.2	2.2	6.76	9.144	21.894	19.105	31.1	12.0	29.0	9.9	2.94	0.11	21.6	9.6	19.4
131	174.3	0.720	72.2	2.1	6.76	9.219	21.875	19.071	31.1	12.0	29.0	9.9	2.93	0.11	21.5	9.5	19.4
132	174.4	0.724	72.2	2.1	6.77	9.285	21.894	19.074	31.1	12.0	29.0	9.9	2.93	0.11	21.6	9.5	19.4
133	174.7	0.728	72.2	2.1	6.77	9.351	21.950	19.110	31.1	12.0	29.0	9.9	2.93	0.11	21.6	9.6	19.4
134	174.7	0.732	72.2	2.1	6.78	9.427	21.950	19.094	31.1	12.0	29.0	9.9	2.92	0.11	21.6	9.5	19.5
135	174.7	0.736	72.2	2.1	6.78	9.493	21.950	19.079	31.1	12.0	29.0	9.9	2.92	0.11	21.6	9.5	19.5
136	175.3	0.741	72.2	2.1	6.79	9.568	22.044	19.148	31.2	12.0	29.1	9.9	2.93	0.11	21.6	9.6	19.5
137	175.5	0.745	72.1	2.0	6.80	9.634	22.081	19.167	31.2	12.0	29.1	10.0	2.92	0.11	21.6	9.6	19.6
138	175.9	0.750	72.1	2.0	6.80	9.710	22.137	19.201	31.2	12.0	29.2	10.0	2.92	0.10	21.6	9.6	19.6
139	176.6	0.754	72.1	2.0	6.81	9.785	22.250	19.286	31.3	12.0	29.3	10.0	2.93	0.10	21.7	9.6	19.7
140	176.6	0.758	72.0	2.0	6.81	9.852	22.250	19.271	31.3	12.0	29.3	10.1	2.92	0.10	21.6	9.6	19.7
141	176.6	0.763	72.0	2.0	6.82	9.936	22.250	19.252	31.3	12.0	29.3	10.1	2.92	0.10	21.6	9.6	19.7

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	176.7	0.767	72.0	2.0	6.82	10.003	22.269	19.254	31.3	12.0	29.3	10.1	2.92	0.10	21.6	9.6	19.7
143	176.7	0.773	72.0	2.0	6.83	10.087	22.269	19.235	31.2	12.0	29.3	10.1	2.91	0.10	21.6	9.6	19.7
144	176.5	0.777	72.0	1.9	6.84	10.163	22.231	19.185	31.2	12.0	29.3	10.1	2.90	0.10	21.6	9.6	19.7
145	176.2	0.782	72.0	1.9	6.84	10.238	22.194	19.134	31.1	12.0	29.3	10.1	2.89	0.10	21.6	9.6	19.7
146	176.1	0.787	72.0	1.9	6.85	10.323	22.175	19.099	31.1	12.0	29.2	10.1	2.88	0.10	21.6	9.5	19.7
147	176.6	0.792	72.0	1.9	6.85	10.399	22.250	19.149	31.2	12.0	29.3	10.1	2.89	0.10	21.6	9.6	19.7
148	176.3	0.797	71.9	1.8	6.86	10.484	22.212	19.097	31.1	12.0	29.3	10.2	2.88	0.10	21.6	9.5	19.7
149	176.3	0.801	71.9	1.8	6.87	10.559	22.212	19.080	31.1	12.0	29.3	10.2	2.88	0.10	21.6	9.5	19.7
150	176.1	0.806	71.9	1.8	6.87	10.635	22.175	19.030	31.0	12.0	29.2	10.2	2.87	0.10	21.5	9.5	19.7
151	176.0	0.810	71.9	1.8	6.88	10.710	22.156	18.996	31.0	12.0	29.2	10.2	2.86	0.09	21.5	9.5	19.7
152	176.0	0.814	71.9	1.8	6.88	10.776	22.156	18.982	31.0	12.0	29.2	10.2	2.86	0.09	21.5	9.5	19.7
153	176.0	0.819	71.8	1.8	6.89	10.852	22.156	18.965	31.0	12.0	29.2	10.3	2.85	0.09	21.5	9.5	19.7
154	175.8	0.824	71.8	1.8	6.89	10.927	22.119	18.915	30.9	12.0	29.2	10.3	2.84	0.09	21.5	9.5	19.7
155	177.0	0.828	71.8	1.8	6.90	11.003	22.325	19.082	31.1	12.0	29.3	10.3	2.86	0.09	21.6	9.5	19.8
156	176.8	0.833	71.8	1.8	6.91	11.078	22.287	19.031	31.0	12.0	29.3	10.3	2.86	0.09	21.5	9.5	19.8
157	177.5	0.837	71.8	1.8	6.91	11.154	22.400	19.115	31.1	12.0	29.4	10.3	2.86	0.09	21.6	9.6	19.8
158	178.3	0.841	71.8	1.7	6.92	11.220	22.531	19.216	31.2	12.0	29.5	10.3	2.87	0.09	21.6	9.6	19.9
159	178.8	0.846	71.8	1.7	6.92	11.295	22.606	19.266	31.3	12.0	29.6	10.3	2.87	0.09	21.6	9.6	19.9
160	179.3	0.851	71.8	1.7	6.93	11.371	22.700	19.332	31.3	12.0	29.6	10.3	2.88	0.09	21.7	9.7	20.0
161	180.1	0.855	71.8	1.7	6.93	11.446	22.831	19.431	31.4	12.0	29.7	10.3	2.89	0.09	21.7	9.7	20.0
162	180.3	0.860	71.9	1.8	6.94	11.522	22.850	19.430	31.4	12.0	29.6	10.2	2.90	0.09	21.7	9.7	19.9
163	170.8	0.865	73.2	3.2	6.95	11.607	21.313	18.052	30.1	12.0	26.9	8.9	3.04	0.18	21.0	9.0	17.9
164	161.5	0.870	74.0	3.9	6.95	11.692	19.794	16.693	28.7	12.0	24.8	8.1	3.06	0.23	20.4	8.3	16.4
165	162.1	0.875	73.3	3.2	6.96	11.777	19.888	16.759	28.8	12.0	25.5	8.8	2.91	0.19	20.4	8.4	17.2
166	162.8	0.880	73.2	3.1	6.97	11.852	20.000	16.843	28.9	12.0	25.8	8.9	2.89	0.18	20.4	8.4	17.4
167	163.0	0.884	73.0	3.0	6.97	11.928	20.038	16.861	28.9	12.0	25.9	9.1	2.86	0.18	20.4	8.4	17.5
168	163.7	0.888	73.0	2.9	6.98	11.994	20.150	16.947	29.0	12.0	26.1	9.1	2.86	0.17	20.5	8.5	17.6
169	164.6	0.892	72.9	2.8	6.98	12.060	20.300	17.065	29.1	12.0	26.3	9.2	2.85	0.16	20.5	8.5	17.7
170	165.8	0.896	72.8	2.8	6.99	12.126	20.488	17.217	29.2	12.0	26.5	9.3	2.86	0.16	20.6	8.6	17.9
171	166.9	0.900	72.8	2.7	6.99	12.192	20.675	17.368	29.4	12.0	26.7	9.3	2.87	0.16	20.7	8.7	18.0
172	167.6	0.905	72.8	2.7	7.00	12.258	20.788	17.453	29.5	12.0	26.8	9.3	2.87	0.15	20.7	8.7	18.1
173	169.2	0.909	72.7	2.6	7.00	12.324	21.050	17.669	29.7	12.0	27.0	9.4	2.89	0.15	20.8	8.8	18.2
174	170.1	0.913	72.7	2.6	7.01	12.390	21.200	17.787	29.8	12.0	27.2	9.4	2.89	0.15	20.9	8.9	18.3
175	170.6	0.917	72.6	2.5	7.01	12.456	21.275	17.838	29.9	12.0	27.3	9.5	2.88	0.14	20.9	8.9	18.4
176	171.6	0.921	72.6	2.5	7.02	12.531	21.444	17.970	30.0	12.0	27.5	9.5	2.89	0.14	21.0	9.0	18.5
177	172.5	0.925	72.5	2.4	7.03	12.597	21.594	18.087	30.1	12.0	27.7	9.6	2.89	0.13	21.1	9.0	18.6
178	172.5	0.929	72.5	2.4	7.03	12.664	21.594	18.072	30.1	12.0	27.6	9.6	2.89	0.14	21.0	9.0	18.6
179	173.1	0.934	72.5	2.4	7.04	12.739	21.687	18.138	30.2	12.0	27.7	9.6	2.89	0.13	21.1	9.1	18.7
180	173.7	0.938	72.4	2.4	7.04	12.805	21.781	18.205	30.2	12.0	27.9	9.7	2.89	0.13	21.1	9.1	18.8
181	174.6	0.942	72.4	2.3	7.05	12.881	21.931	18.319	30.3	12.0	28.0	9.7	2.89	0.13	21.2	9.2	18.9
182	174.8	0.947	72.4	2.3	7.05	12.956	21.969	18.336	30.3	12.0	28.1	9.7	2.88	0.12	21.2	9.2	18.9

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	175.1	0.951	72.4	2.3	7.06	13.022	22.006	18.354	30.4	12.0	28.1	9.7	2.89	0.12	21.2	9.2	18.9
184	176.0	0.956	72.3	2.2	7.07	13.107	22.156	18.465	30.5	12.0	28.2	9.8	2.89	0.12	21.2	9.2	19.0
185	176.8	0.960	72.3	2.2	7.07	13.173	22.287	18.565	30.6	12.0	28.3	9.8	2.90	0.12	21.3	9.3	19.1
186	177.3	0.965	72.3	2.2	7.08	13.249	22.362	18.613	30.6	12.0	28.4	9.8	2.90	0.12	21.3	9.3	19.1
187	177.0	0.970	72.2	2.2	7.09	13.334	22.325	18.561	30.6	12.0	28.4	9.9	2.88	0.12	21.3	9.3	19.1
188	177.6	0.974	72.2	2.2	7.09	13.409	22.418	18.626	30.6	12.0	28.5	9.9	2.89	0.12	21.3	9.3	19.2
189	178.5	0.980	72.2	2.2	7.10	13.494	22.568	18.736	30.7	12.0	28.6	9.9	2.90	0.12	21.4	9.4	19.2
190	178.4	0.984	72.2	2.1	7.10	13.569	22.550	18.703	30.7	12.0	28.6	9.9	2.89	0.11	21.4	9.4	19.2
191	178.5	0.989	72.2	2.1	7.11	13.645	22.568	18.702	30.7	12.0	28.6	9.9	2.89	0.11	21.4	9.4	19.2
192	178.8	0.994	72.2	2.1	7.12	13.730	22.606	18.715	30.7	12.0	28.6	9.9	2.88	0.11	21.4	9.4	19.3
193	179.2	0.999	72.1	2.0	7.12	13.805	22.681	18.763	30.8	12.0	28.7	10.0	2.88	0.11	21.4	9.4	19.4
194	179.6	1.003	72.1	2.0	7.13	13.881	22.737	18.794	30.8	12.0	28.8	10.0	2.88	0.11	21.4	9.4	19.4
195	179.8	1.007	72.1	2.0	7.14	13.947	22.775	18.811	30.8	12.0	28.8	10.0	2.88	0.11	21.4	9.4	19.4
196	180.1	1.012	72.1	2.0	7.14	14.022	22.831	18.843	30.9	12.0	28.9	10.0	2.88	0.11	21.4	9.4	19.4
197	180.7	1.016	72.0	2.0	7.15	14.098	22.925	18.906	30.9	12.0	29.0	10.1	2.88	0.10	21.5	9.5	19.5
198	180.8	1.021	72.0	1.9	7.15	14.173	22.943	18.905	30.9	12.0	29.0	10.1	2.87	0.10	21.5	9.5	19.5
199	180.0	1.025	72.0	1.9	7.16	14.239	22.812	18.777	30.8	12.0	28.9	10.1	2.86	0.10	21.4	9.4	19.5
200	180.1	1.030	72.0	1.9	7.17	14.315	22.831	18.776	30.8	12.0	28.9	10.1	2.85	0.10	21.4	9.4	19.5
201	180.4	1.034	72.0	1.9	7.17	14.390	22.868	18.791	30.8	12.0	28.9	10.1	2.85	0.10	21.4	9.4	19.5
202	180.3	1.039	72.0	1.9	7.18	14.466	22.850	18.757	30.8	12.0	28.9	10.1	2.85	0.10	21.4	9.4	19.5
203	180.7	1.043	71.9	1.8	7.18	14.532	22.925	18.806	30.8	12.0	29.0	10.2	2.85	0.10	21.4	9.4	19.6
204	180.3	1.047	71.9	1.8	7.19	14.607	22.850	18.725	30.7	12.0	28.9	10.2	2.84	0.10	21.4	9.4	19.5
205	181.4	1.052	71.9	1.8	7.20	14.683	23.037	18.868	30.9	12.0	29.1	10.2	2.85	0.10	21.4	9.4	19.6
206	181.3	1.056	71.9	1.8	7.20	14.758	23.018	18.834	30.8	12.0	29.0	10.2	2.84	0.10	21.4	9.4	19.6
207	181.8	1.062	71.9	1.8	7.21	14.843	23.093	18.879	30.9	12.0	29.1	10.2	2.85	0.10	21.5	9.4	19.7
208	181.2	1.066	71.8	1.8	7.22	14.919	23.000	18.781	30.8	12.0	29.0	10.3	2.83	0.09	21.4	9.4	19.6
209	180.6	1.072	71.8	1.8	7.23	15.013	22.906	18.680	30.7	12.0	28.9	10.3	2.82	0.09	21.4	9.3	19.6
210	181.3	1.077	71.8	1.7	7.23	15.089	23.018	18.758	30.8	12.0	29.1	10.3	2.82	0.09	21.4	9.4	19.7
211	181.6	1.081	71.8	1.7	7.24	15.164	23.075	18.789	30.8	12.0	29.1	10.3	2.83	0.09	21.4	9.4	19.7
212	182.8	1.086	71.8	1.7	7.24	15.240	23.262	18.930	30.9	12.0	29.2	10.3	2.84	0.09	21.5	9.5	19.8
213	183.1	1.090	71.8	1.7	7.25	15.306	23.318	18.962	31.0	12.0	29.3	10.3	2.84	0.09	21.5	9.5	19.8
214	183.1	1.094	71.8	1.7	7.26	15.372	23.318	18.947	31.0	12.0	29.3	10.3	2.83	0.09	21.5	9.5	19.8
215	183.8	1.098	71.7	1.6	7.26	15.438	23.431	19.027	31.0	12.0	29.4	10.4	2.83	0.09	21.5	9.5	19.9
216	184.3	1.102	71.7	1.6	7.27	15.504	23.506	19.075	31.1	12.0	29.4	10.4	2.84	0.09	21.6	9.5	19.9
217	184.9	1.106	71.7	1.6	7.27	15.570	23.599	19.138	31.2	12.0	29.5	10.4	2.85	0.09	21.6	9.6	19.9
218	185.1	1.110	71.7	1.6	7.28	15.636	23.637	19.154	31.2	12.0	29.5	10.4	2.85	0.09	21.6	9.6	19.9
219	186.1	1.114	71.7	1.6	7.29	15.711	23.806	19.279	31.3	12.0	29.7	10.4	2.85	0.08	21.7	9.6	20.1
220	186.4	1.118	71.6	1.6	7.29	15.778	23.843	19.294	31.3	12.0	29.7	10.5	2.85	0.08	21.7	9.6	20.1
221	186.9	1.122	71.6	1.6	7.30	15.844	23.937	19.358	31.4	12.0	29.8	10.5	2.85	0.08	21.7	9.7	20.1
222	187.6	1.127	71.6	1.6	7.30	15.919	24.049	19.434	31.4	12.0	29.9	10.5	2.86	0.08	21.7	9.7	20.2
223	187.6	1.132	71.6	1.6	7.31	15.995	24.049	19.416	31.4	12.0	29.9	10.5	2.86	0.08	21.7	9.7	20.2

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	188.0	1.136	71.6	1.5	7.32	16.061	24.105	19.447	31.5	12.0	29.9	10.5	2.85	0.08	21.7	9.7	20.2
225	188.3	1.140	71.6	1.5	7.32	16.136	24.162	19.476	31.5	12.0	30.0	10.5	2.86	0.08	21.8	9.7	20.2
226	188.5	1.145	71.6	1.5	7.33	16.212	24.199	19.489	31.5	12.0	30.0	10.5	2.85	0.08	21.8	9.7	20.3
227	188.1	1.149	71.6	1.5	7.33	16.278	24.124	19.411	31.4	12.0	29.9	10.5	2.84	0.08	21.7	9.7	20.2
228	188.7	1.153	71.6	1.5	7.34	16.353	24.218	19.471	31.5	12.0	30.0	10.5	2.85	0.08	21.7	9.7	20.3
229	188.9	1.158	71.6	1.5	7.35	16.429	24.255	19.484	31.5	12.0	30.0	10.5	2.85	0.08	21.8	9.7	20.3
230	189.4	1.163	71.6	1.5	7.35	16.504	24.330	19.528	31.5	12.0	30.1	10.5	2.85	0.08	21.8	9.8	20.3
231	189.9	1.167	71.5	1.4	7.36	16.580	24.424	19.588	31.6	12.0	30.2	10.6	2.85	0.07	21.8	9.8	20.4
232	189.4	1.172	71.5	1.4	7.37	16.665	24.330	19.489	31.5	12.0	30.1	10.6	2.84	0.07	21.8	9.7	20.3
233	189.6	1.177	71.5	1.4	7.38	16.740	24.368	19.502	31.5	12.0	30.1	10.6	2.84	0.07	21.8	9.8	20.3
234	190.5	1.182	71.5	1.4	7.38	16.816	24.518	19.608	31.6	12.0	30.2	10.6	2.85	0.07	21.8	9.8	20.4
235	190.5	1.186	71.5	1.4	7.39	16.891	24.518	19.590	31.6	12.0	30.2	10.6	2.85	0.07	21.8	9.8	20.4
236	190.4	1.191	71.5	1.4	7.40	16.967	24.499	19.556	31.6	12.0	30.2	10.6	2.84	0.07	21.8	9.8	20.4
237	190.2	1.195	71.5	1.4	7.40	17.042	24.462	19.506	31.5	12.0	30.1	10.6	2.84	0.07	21.8	9.8	20.4
238	190.2	1.200	71.5	1.4	7.41	17.118	24.462	19.488	31.5	12.0	30.1	10.6	2.84	0.07	21.8	9.7	20.4
239	191.1	1.204	71.4	1.4	7.42	17.193	24.612	19.593	31.6	12.0	30.2	10.7	2.84	0.07	21.8	9.8	20.4
240	191.3	1.209	71.4	1.4	7.42	17.268	24.649	19.606	31.6	12.0	30.3	10.7	2.84	0.07	21.8	9.8	20.5
241	192.0	1.213	71.4	1.4	7.43	17.335	24.762	19.682	31.7	12.0	30.3	10.7	2.85	0.07	21.9	9.8	20.5
242	192.5	1.218	71.4	1.3	7.44	17.410	24.837	19.726	31.7	12.0	30.4	10.7	2.84	0.07	21.9	9.9	20.6
243	192.5	1.222	71.4	1.3	7.44	17.486	24.837	19.707	31.7	12.0	30.4	10.7	2.84	0.07	21.9	9.9	20.5
244	191.8	1.227	71.4	1.3	7.45	17.561	24.724	19.595	31.6	12.0	30.3	10.7	2.83	0.07	21.8	9.8	20.5
245	190.5	1.231	71.4	1.3	7.46	17.636	24.518	19.407	31.4	12.0	30.1	10.7	2.82	0.07	21.7	9.7	20.4
246	190.7	1.236	71.4	1.3	7.46	17.712	24.555	19.419	31.4	12.0	30.2	10.7	2.81	0.07	21.7	9.7	20.4
247	190.8	1.241	71.4	1.3	7.47	17.787	24.574	19.416	31.4	12.0	30.1	10.7	2.81	0.07	21.7	9.7	20.4
248	191.1	1.245	71.4	1.3	7.48	17.863	24.612	19.428	31.4	12.0	30.2	10.7	2.81	0.07	21.7	9.7	20.4
249	189.2	1.250	71.3	1.2	7.48	17.938	24.312	19.164	31.2	12.0	29.9	10.8	2.78	0.06	21.6	9.6	20.4
250	191.7	1.254	71.3	1.2	7.49	18.014	24.705	19.468	31.5	12.0	30.2	10.8	2.81	0.06	21.7	9.7	20.5
251	191.2	1.259	71.3	1.2	7.50	18.089	24.630	19.388	31.4	12.0	30.2	10.8	2.80	0.06	21.7	9.7	20.5
252	191.0	1.264	71.3	1.2	7.50	18.165	24.593	19.339	31.4	12.0	30.1	10.8	2.80	0.06	21.7	9.7	20.4
253	191.3	1.269	71.3	1.2	7.51	18.250	24.649	19.364	31.4	12.0	30.2	10.8	2.79	0.06	21.7	9.7	20.5
254	191.1	1.274	71.3	1.2	7.52	18.335	24.612	19.312	31.3	12.0	30.1	10.8	2.79	0.06	21.7	9.7	20.5
255	190.7	1.278	71.3	1.2	7.53	18.410	24.555	19.248	31.3	12.0	30.1	10.8	2.78	0.06	21.6	9.6	20.4
256	190.8	1.283	71.3	1.2	7.53	18.486	24.574	19.245	31.3	12.0	30.1	10.8	2.78	0.06	21.6	9.6	20.4
257	190.8	1.287	71.3	1.2	7.54	18.552	24.574	19.228	31.2	12.0	30.0	10.8	2.78	0.06	21.6	9.6	20.4
258	191.3	1.291	71.2	1.2	7.55	18.618	24.649	19.273	31.3	12.0	30.1	10.9	2.78	0.06	21.6	9.6	20.5
259	191.1	1.296	71.2	1.2	7.55	18.693	24.612	19.224	31.2	12.0	30.1	10.9	2.77	0.06	21.6	9.6	20.5
260	191.1	1.300	71.2	1.2	7.56	18.759	24.612	19.208	31.2	12.0	30.1	10.9	2.77	0.06	21.6	9.6	20.5
261	191.5	1.304	71.2	1.2	7.57	18.825	24.687	19.252	31.3	12.0	30.1	10.9	2.77	0.06	21.6	9.6	20.5
262	191.9	1.308	71.2	1.2	7.57	18.892	24.743	19.282	31.3	12.0	30.1	10.9	2.78	0.06	21.7	9.6	20.5
263	192.2	1.312	71.2	1.2	7.58	18.958	24.799	19.311	31.3	12.0	30.2	10.9	2.78	0.06	21.7	9.7	20.5
264	192.6	1.316	71.2	1.1	7.58	19.024	24.855	19.340	31.4	12.0	30.2	10.9	2.78	0.06	21.7	9.7	20.6

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
265	192.7	1.320	71.2	1.1	7.59	19.099	24.874	19.337	31.3	12.0	30.2	10.9	2.78	0.06	21.7	9.7	20.6
266	193.7	1.324	71.2	1.1	7.60	19.165	25.043	19.456	31.5	12.0	30.3	10.9	2.79	0.06	21.7	9.7	20.6
267	194.0	1.328	71.2	1.1	7.60	19.231	25.080	19.470	31.5	12.0	30.4	10.9	2.79	0.06	21.7	9.7	20.6
268	193.7	1.333	71.2	1.1	7.61	19.307	25.043	19.421	31.4	12.0	30.4	10.9	2.78	0.06	21.7	9.7	20.6
269	192.3	1.338	71.2	1.1	7.62	19.382	24.818	19.221	31.2	12.0	30.1	10.9	2.76	0.06	21.6	9.6	20.5
270	194.2	1.342	71.2	1.1	7.62	19.448	25.118	19.446	31.5	12.0	30.4	10.9	2.78	0.06	21.7	9.7	20.7
271	194.9	1.346	71.2	1.1	7.63	19.524	25.230	19.517	31.5	12.0	30.5	10.9	2.79	0.06	21.8	9.8	20.7
272	195.2	1.351	71.2	1.1	7.64	19.599	25.286	19.544	31.6	12.0	30.5	10.9	2.79	0.06	21.8	9.8	20.7
273	195.6	1.355	71.2	1.1	7.65	19.675	25.343	19.570	31.6	12.0	30.5	10.9	2.79	0.06	21.8	9.8	20.7
274	195.5	1.360	71.2	1.1	7.65	19.750	25.324	19.536	31.5	12.0	30.5	10.9	2.79	0.06	21.8	9.8	20.7
275	194.9	1.364	71.1	1.0	7.66	19.826	25.230	19.441	31.5	12.0	30.4	11.0	2.77	0.05	21.7	9.7	20.7
276	195.3	1.369	71.1	1.0	7.67	19.901	25.305	19.482	31.5	12.0	30.5	11.0	2.78	0.05	21.8	9.7	20.7
277	194.9	1.374	71.1	1.0	7.67	19.977	25.230	19.403	31.4	12.0	30.4	11.0	2.77	0.05	21.7	9.7	20.7
278	194.4	1.377	71.1	1.0	7.68	20.024	25.155	19.331	31.3	12.0	30.3	11.0	2.76	0.05	21.7	9.7	20.6

Photographs of Sample Failure

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. U-2412B

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project 39406.1.1 **County** GUILFORD **Owner**

Date: Sampled 3/13/13 **Received** 11/18/13 **Reported** 11/20/13

Sampled from RDWY **By** N ROBERSON

Submitted by MASON HURT 1995 **Standard Specifications**

788392 TO 788393
11/26/13

TEST RESULTS

Proj. Sample No.		ST-20#1	ST-20#2				
Lab. Sample No.		788392	788393				
Retained #4 Sieve	%	2	1				
Passing #10 Sieve	%	90	93				
Passing #40 Sieve	%	84	86				
Passing #200 Sieve	%	60	61				

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	11.9	14.5				
Fine Sand Ret - #270	%	27.6	27.0				
Silt 0.05 - 0.005 mm	%	44.4	44.4				
Clay < 0.005 mm	%	16.1	14.1				
T-#		T-5785	T-5785				
Specific Gravity		2.715	2.706				

L. L.		39	38				
P. I.		8	6				
AASHTO Classification		A-4(4)	A-4(3)				
Station		403+45	403+45				
Offset		3 RT	3 RT				
Alignment		L	L				
Location							
Depth (Ft)		19.60	19.60				
	to	21.40	21.40				
Final Moisture Content	%	28	24.69				

cc: N ROBERSON
SURIYATI BS

Soils Engineer

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	23.68	28.02	**Plastic Limits:**	0	
Dry Density (pcf):	93.90	103.78	**Plasticity Index (%):**	0	
Saturation (%):	80.37	121.12			
Void Ratio:	0.7931	0.6225	**Specific Gravity:**	2.701	Measured

Soil Description: Tannish colored silt

Project Number: 39406.1.1 (Sta. 403+45) **Depth:** 19.6 - 21.4 ft

Sample Number: ST-20 **Boring Number:**

Project: U-2412B
Client: T-5785
Location: Guilford County

Remarks:
Solid Height is 0.55909 inch; Blows/ft = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	23.68	28.02	**Plastic Limits:**	0	
Dry Density (pcf):	93.90	103.78	**Plasticity Index (%):**	0	
Saturation (%):	80.37	121.12			
Void Ratio:	0.7931	0.6225	**Specific Gravity:**	2.701	Measured

Soil Description: Tannish colored silt

Project Number: 39406.1.1 (Sta. 403+45) **Depth:** 19.6 - 21.4 ft

Sample Number: ST-20 **Boring Number:**

Project: U-2412B
Client: T-5785
Location: Guilford County

Remarks:
Solid Height is 0.55909 inch; Blows/ft = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	23.68	28.02	**Plastic Limits:**	0	
Dry Density (pcf):	93.90	103.78	**Plasticity Index (%):**	0	
Saturation (%):	80.37	121.12			
Void Ratio:	0.7931	0.6225	**Specific Gravity:**	2.701	Measured

Soil Description: Tannish colored silt

Project Number: 39406.1.1 (Sta. 403+45) **Depth:** 19.6 - 21.4 ft

Sample Number: ST-20 **Boring Number:**

Project: U-2412B

Client: T-5785

Location: Guilford County

Remarks:
Solid Height is 0.55909 inch; Blows/ft = NA

Consolidation Test Results
Summary

Project: U-2412B
Location: Guilford County
Job Number: T-5785

Project Number: Sta. 403+45)

Sample Number: ST-20
Boring Number:
Depth: 19.6 - 21.4 ft
Sample Type: Undisturbed

Soil Description:
Tannish colored silt
Remarks:
Solid Height is 0.55909 inch; Blows/ft = NA

Test Number:
Test Date:

Index	Load Sequence (tsf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	1.0013	0.4429	0.00	0.7931	0.000		0.000	
1	0.063	0.0057	0.9956	0.4372	0.57	0.7829	0.046		16746.846	
2	0.125	0.0123	0.9890	0.4306	1.23	0.7711	0.073		10311.580	
3	0.250	0.0228	0.9785	0.4201	2.28	0.7523	0.082		9057.264	
4	0.500	0.0353	0.9660	0.4076	3.53	0.7299	0.090		8023.067	
5	1.000	0.0494	0.9519	0.3935	4.93	0.7047	0.073		9552.461	
6	2.000	0.0676	0.9337	0.3753	6.75	0.6721	0.118		5716.911	
7	4.000	0.0907	0.9106	0.3522	9.06	0.6307	0.160		4010.181	
8	2.000	0.0877	0.9136	0.3552	8.76	0.6361	0.000		0.000	
9	1.000	0.0836	0.9177	0.3593	8.35	0.6434	0.000		0.000	
10	0.500	0.0773	0.9240	0.3656	7.72	0.6547	0.000		0.000	
11	1.000	0.0804	0.9209	0.3625	8.03	0.6492	0.000		0.000	
12	2.000	0.0854	0.9159	0.3575	8.53	0.6402	0.000		0.000	
13	4.000	0.0933	0.9080	0.3496	9.32	0.6261	0.000		0.000	
14	8.000	0.1198	0.8815	0.3231	11.96	0.5786	0.127		4719.585	
15	16.000	0.1615	0.8398	0.2814	16.13	0.5039	0.413		1321.388	
16	4.000	0.1554	0.8459	0.2875	15.52	0.5148	0.000		0.000	
17	0.016	0.0953	0.9060	0.3476	9.52	0.6225	0.000		0.000	

Tested By:

Checked By:

Consolidation Test
Consolidation Specimen Information

Project: U-2412B **Project Number:** (Sta. 403+45)
Location: Guilford County
Job Number: T-5785 **Test Date:**

Sample Number: ST-20 **Soil Description:**
Boring Number: Tannish colored silt
Depth: 19.6 - 21.4 ft **Remarks:**
Sample Type: Undisturbed Solid Height is 0.55909 inch; Blows/ft = NA

Test Number:
Liquid Limit: 0.0000 **Initial Void Ratio:** 0.7931 **Initial Height (in):** 1.0013
Plastic Limit: 0.0000 **Plasticity Index (%):** 0.0000 **Initial Diameter (in):** 2.4999
Specific Gravity: 2.7010 Measured **Weight of Ring (g):** 106.5300

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	149.82	155.08
Dry Soil + Container (g)	121.14	121.14
Weight of Container (g)	0.00	0.00
Moisture Content (%)	23.68	28.02
Void Ratio	0.7931	0.6225
Saturation (%)	80.37	121.12
Dry Density (pcf)	93.90	103.78

Tested By: **Checked By:**

ncdot

Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date

Tested By:

Effective Stress at Maximum Deviator Stress Criterion

Deviator Stress Vs. Axial Strain

Initial	Specimen A	B	C	D
Water Content (%)	21.9	19.2		
Dry Density (pcf)	97.4	101.1		
Saturation (%)	80.40	77.52		
Void Ratio	0.735	0.666		
Diameter (in)	2.861	2.856		
Height (in)	6.083	6.121		
Specific Gravity	2.71	2.71		
Liquid Limit	0	0		
Plastic Limit	0	0		
After Consolidation	**A**	**B**	**C**	**D**
B-Value	0.00	0.00		
Water Content (%)	23.1	21.3		
Dry Density (pcf)	102.89	109.07		
Saturation (%)	100.00	100.00		
Void Ratio	0.647	0.549		
Effective Stress (psi)	12.0	24.0		
Back Press. (psi)	60.0	61.3		
Rate of Strain	0.009	0.009		

Maximium Deviator Stress Criterion		After Shear	A	B	C	D
C (psi)	0.0	σ'1 at Failure (psi)	38.34	78.56		
C' (psi)	0.0	σ'3 at Failure (psi)	11.64	21.70		
Ø (deg)	0.0					
Ø' (deg)	0.0					

Project:	U-2412B	N/A	N/A	N/A	N/A
Location:	Guilford County (Sta. 403+45)				
Project Number:	39406.1.1				
Boring Number:					
Sample Number:	ST-20				
Depth:	19.6 - 21.4 ft				
Sample Type:	Undisturbed	Failure Photographs			
Description:					
Test Type	Consolidated Undrained				
Remarks					

ncdot

Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date:

Tested By:

Deviator Stress vs. Axial Strain

Principal Stress Ratio vs. Axial Strain

Change in Pore Pressure vs. Axial Strain

Mohr Stress Circles at Maximum Deviator Stress Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at Maximum Principal Stress Ratio Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at 15% Axial Strain Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)
60.0
45.0
30.0
15.0
0.0
Q (psi)
0.0
15.0
30.0
45.0
60.0
P' (psi)
Specimen A
Specimen B
Specimen C
Specimen D
Tangent Line

Stress Paths (Total)
(C' = 0.0 Ø' = 0.0)
60.0
45.0
30.0
15.0
0.0
Q (psi)
0.0
15.0
30.0
45.0
60.0
P (psi)

Specimen A Shear Data

CU Triaxial Test

ncdot

File Location
T-5785.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5785
Sample Location: Guilford County (Sta. 403+45)
Sample Description: Tannish colored silt
Remarks: 30° shear plane

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.7149999
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.861	2.810	
Height (in)	6.083	5.969	
Weight (grams)	1219.00		1280.00
Moisture (%)	21.90		28.00
Dry Density (pcf)	97.43	102.89	
Saturation (%)	80.40	100.00	
Void Ratio	0.735	0.647	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 72.000
Effective Confining Stress (psi): 12.0
Corrected Peak Deviator Stress (psi): 26.706 at reading number: 221

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	30.6	0.152	60.0	0.0	6.20	0.000	0.000	0.000	12.0	12.0	12.0	12.0	1.00	0.00	12.0	0.0	12.0
1	53.2	0.156	61.3	1.3	6.21	0.067	3.637	3.608	15.6	12.0	14.3	10.7	1.34	0.35	13.8	1.8	12.5
2	60.0	0.160	61.9	1.9	6.21	0.135	4.732	4.673	16.7	12.0	14.7	10.1	1.46	0.41	14.3	2.3	12.4
3	64.2	0.165	62.4	2.4	6.22	0.211	5.419	5.324	17.3	12.0	14.9	9.6	1.56	0.45	14.6	2.7	12.3
4	68.0	0.169	62.8	2.8	6.22	0.279	6.031	5.905	17.9	12.0	15.1	9.2	1.64	0.47	14.9	3.0	12.1
5	70.7	0.173	63.1	3.1	6.22	0.346	6.458	6.300	18.3	12.0	15.2	8.9	1.71	0.50	15.1	3.2	12.0
6	73.3	0.177	63.4	3.4	6.23	0.423	6.885	6.690	18.7	12.0	15.3	8.6	1.78	0.50	15.3	3.3	12.0
7	76.0	0.182	63.6	3.6	6.23	0.509	7.311	7.075	19.1	12.0	15.5	8.4	1.84	0.51	15.5	3.5	11.9
8	78.8	0.187	63.8	3.8	6.24	0.586	7.775	7.500	19.5	12.0	15.7	8.2	1.91	0.50	15.7	3.8	12.0
9	81.7	0.192	64.0	3.9	6.24	0.663	8.239	7.925	19.9	12.0	16.0	8.0	1.99	0.50	15.9	4.0	12.0
10	84.5	0.196	64.1	4.1	6.25	0.730	8.685	8.335	20.3	12.0	16.3	7.9	2.05	0.49	16.2	4.2	12.1
11	87.4	0.200	64.2	4.2	6.25	0.798	9.149	8.763	20.7	12.0	16.5	7.8	2.13	0.48	16.4	4.4	12.1
12	89.9	0.204	64.4	4.3	6.26	0.865	9.557	9.136	21.1	12.0	16.8	7.6	2.20	0.48	16.6	4.6	12.2
13	92.3	0.208	64.5	4.4	6.26	0.942	9.947	9.484	21.5	12.0	17.0	7.5	2.26	0.47	16.7	4.7	12.3
14	94.6	0.212	64.5	4.5	6.27	1.009	10.318	9.819	21.8	12.0	17.3	7.5	2.32	0.46	16.9	4.9	12.4
15	96.8	0.216	64.6	4.6	6.27	1.076	10.670	10.134	22.1	12.0	17.5	7.4	2.37	0.46	17.1	5.1	12.4
16	99.2	0.220	64.7	4.7	6.27	1.143	11.060	10.486	22.5	12.0	17.8	7.3	2.43	0.45	17.2	5.2	12.6
17	100.9	0.224	64.7	4.7	6.28	1.211	11.338	10.727	22.7	12.0	18.0	7.3	2.47	0.44	17.3	5.4	12.6
18	102.4	0.228	64.8	4.8	6.28	1.268	11.580	10.936	22.9	12.0	18.2	7.2	2.51	0.44	17.5	5.5	12.7

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	104.2	0.231	64.8	4.8	6.29	1.326	11.858	11.182	23.2	12.0	18.4	7.2	2.55	0.43	17.6	5.6	12.8
20	105.6	0.234	64.9	4.8	6.29	1.374	12.081	11.377	23.4	12.0	18.5	7.1	2.59	0.43	17.7	5.7	12.8
21	107.6	0.238	64.9	4.8	6.29	1.441	12.415	11.672	23.7	12.0	18.8	7.1	2.63	0.42	17.8	5.8	13.0
22	108.4	0.240	64.9	4.9	6.30	1.480	12.544	11.780	23.8	12.0	18.9	7.1	2.66	0.41	17.9	5.9	13.0
23	110.5	0.244	64.9	4.9	6.30	1.537	12.879	12.079	24.1	12.0	19.2	7.1	2.71	0.41	18.0	6.0	13.1
24	112.6	0.248	64.9	4.9	6.30	1.605	13.213	12.372	24.4	12.0	19.5	7.1	2.75	0.40	18.2	6.2	13.3
25	113.7	0.251	64.9	4.9	6.31	1.662	13.398	12.525	24.5	12.0	19.6	7.1	2.77	0.39	18.2	6.3	13.3
26	114.3	0.254	65.0	5.0	6.31	1.701	13.491	12.596	24.6	12.0	19.6	7.0	2.79	0.39	18.3	6.3	13.3
27	115.2	0.256	65.0	5.0	6.31	1.739	13.639	12.721	24.7	12.0	19.7	7.0	2.81	0.39	18.3	6.4	13.4
28	116.3	0.258	65.0	5.0	6.32	1.778	13.806	12.865	24.9	12.0	19.9	7.0	2.83	0.39	18.4	6.4	13.5
29	118.0	0.261	65.0	5.0	6.32	1.826	14.085	13.113	25.1	12.0	20.1	7.0	2.87	0.38	18.5	6.6	13.6
30	118.8	0.264	65.0	5.0	6.32	1.874	14.215	13.215	25.2	12.0	20.2	7.0	2.88	0.38	18.6	6.6	13.6
31	120.7	0.267	65.0	5.0	6.33	1.931	14.530	13.494	25.5	12.0	20.5	7.0	2.92	0.37	18.7	6.7	13.8
32	122.0	0.271	64.9	4.9	6.33	1.989	14.734	13.663	25.6	12.0	20.7	7.1	2.94	0.36	18.8	6.8	13.9
33	123.5	0.275	65.0	5.0	6.33	2.056	14.975	13.885	25.9	12.0	20.9	7.0	2.98	0.36	18.9	6.9	14.0
34	125.0	0.280	64.9	4.9	6.34	2.143	15.217	14.108	26.1	12.0	21.2	7.1	3.00	0.35	19.0	7.1	14.1
35	126.5	0.285	64.9	4.9	6.34	2.229	15.458	14.331	26.3	12.0	21.4	7.1	3.03	0.34	19.2	7.2	14.2
36	128.0	0.290	64.9	4.9	6.35	2.306	15.699	14.554	26.5	12.0	21.6	7.1	3.06	0.34	19.3	7.3	14.3
37	129.2	0.294	64.9	4.9	6.35	2.373	15.885	14.725	26.7	12.0	21.8	7.1	3.08	0.33	19.3	7.4	14.4
38	130.9	0.298	64.9	4.9	6.36	2.450	16.163	14.984	27.0	12.0	22.1	7.1	3.11	0.33	19.5	7.5	14.6
39	132.4	0.302	64.9	4.8	6.36	2.517	16.404	15.209	27.2	12.0	22.3	7.1	3.13	0.32	19.6	7.6	14.7
40	133.6	0.307	64.9	4.8	6.37	2.594	16.608	15.395	27.4	12.0	22.5	7.1	3.16	0.31	19.7	7.7	14.8
41	134.4	0.311	64.8	4.8	6.37	2.671	16.738	15.508	27.5	12.0	22.7	7.2	3.16	0.31	19.7	7.8	14.9
42	136.3	0.315	64.8	4.8	6.38	2.738	17.035	15.786	27.8	12.0	23.0	7.2	3.19	0.30	19.9	7.9	15.1
43	138.5	0.320	64.8	4.8	6.38	2.815	17.388	16.115	28.1	12.0	23.3	7.2	3.23	0.30	20.0	8.1	15.3
44	140.2	0.325	64.7	4.7	6.39	2.892	17.666	16.372	28.4	12.0	23.6	7.3	3.26	0.29	20.2	8.2	15.4
45	141.5	0.329	64.7	4.7	6.39	2.959	17.870	16.559	28.5	12.0	23.8	7.3	3.27	0.28	20.3	8.3	15.6
46	142.7	0.333	64.7	4.6	6.40	3.036	18.074	16.743	28.7	12.0	24.1	7.3	3.28	0.28	20.4	8.4	15.7
47	144.1	0.338	64.7	4.7	6.40	3.113	18.297	16.945	28.9	12.0	24.3	7.3	3.32	0.28	20.5	8.5	15.8
48	145.0	0.342	64.6	4.6	6.41	3.190	18.446	17.074	29.1	12.0	24.4	7.4	3.32	0.27	20.5	8.5	15.9
49	146.2	0.347	64.6	4.6	6.41	3.267	18.631	17.240	29.2	12.0	24.6	7.4	3.33	0.27	20.6	8.6	16.0
50	147.3	0.352	64.6	4.6	6.42	3.344	18.817	17.405	29.4	12.0	24.8	7.4	3.34	0.26	20.7	8.7	16.1
51	148.3	0.357	64.5	4.5	6.42	3.430	18.965	17.532	29.5	12.0	25.0	7.5	3.35	0.26	20.8	8.8	16.2
52	149.5	0.361	64.5	4.5	6.43	3.507	19.169	17.714	29.7	12.0	25.2	7.5	3.36	0.25	20.8	8.9	16.3
53	150.9	0.365	64.5	4.4	6.43	3.574	19.392	17.916	29.9	12.0	25.5	7.5	3.37	0.25	20.9	9.0	16.5
54	152.6	0.369	64.4	4.4	6.44	3.632	19.670	18.173	30.2	12.0	25.8	7.6	3.40	0.24	21.1	9.1	16.7
55	154.7	0.373	64.4	4.4	6.44	3.709	20.004	18.480	30.5	12.0	26.1	7.6	3.44	0.24	21.2	9.2	16.8
56	155.4	0.377	64.4	4.3	6.45	3.767	20.116	18.575	30.6	12.0	26.2	7.6	3.43	0.23	21.3	9.3	16.9
57	148.1	0.380	64.2	4.1	6.45	3.824	18.947	17.439	29.4	12.0	25.3	7.8	3.22	0.24	20.7	8.7	16.6
58	157.5	0.384	64.3	4.3	6.45	3.891	20.450	18.871	30.9	12.0	26.6	7.7	3.44	0.23	21.4	9.4	17.2
59	159.2	0.388	64.2	4.2	6.46	3.959	20.728	19.125	31.1	12.0	26.9	7.8	3.47	0.22	21.5	9.6	17.3

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	160.5	0.392	64.2	4.2	6.46	4.026	20.932	19.307	31.3	12.0	27.1	7.8	3.47	0.22	21.6	9.7	17.5
61	162.0	0.396	64.2	4.1	6.47	4.093	21.173	19.524	31.5	12.0	27.4	7.8	3.49	0.21	21.7	9.8	17.6
62	163.3	0.400	64.1	4.1	6.47	4.160	21.396	19.723	31.7	12.0	27.6	7.9	3.51	0.21	21.8	9.9	17.7
63	164.6	0.405	64.1	4.1	6.48	4.237	21.600	19.902	31.9	12.0	27.8	7.9	3.52	0.21	21.9	10.0	17.8
64	165.9	0.409	64.0	4.0	6.48	4.305	21.804	20.083	32.1	12.0	28.0	8.0	3.52	0.20	22.0	10.0	18.0
65	167.4	0.414	64.0	4.0	6.49	4.381	22.046	20.297	32.3	12.0	28.3	8.0	3.54	0.20	22.1	10.1	18.1
66	168.6	0.418	64.0	4.0	6.49	4.449	22.250	20.477	32.5	12.0	28.5	8.0	3.55	0.19	22.2	10.2	18.3
67	169.7	0.422	63.9	3.9	6.50	4.526	22.417	20.619	32.6	12.0	28.7	8.1	3.54	0.19	22.3	10.3	18.4
68	170.8	0.427	63.9	3.9	6.50	4.602	22.602	20.779	32.8	12.0	28.9	8.1	3.56	0.19	22.4	10.4	18.5
69	172.1	0.431	63.9	3.9	6.51	4.670	22.806	20.959	32.9	12.0	29.1	8.1	3.58	0.18	22.5	10.5	18.6
70	173.5	0.435	63.8	3.8	6.51	4.747	23.029	21.153	33.1	12.0	29.3	8.2	3.58	0.18	22.6	10.6	18.8
71	174.3	0.440	63.8	3.8	6.52	4.823	23.159	21.259	33.2	12.0	29.5	8.2	3.59	0.18	22.6	10.6	18.8
72	175.4	0.445	63.7	3.7	6.52	4.900	23.345	21.418	33.4	12.0	29.7	8.3	3.59	0.17	22.7	10.7	19.0
73	176.3	0.449	63.7	3.7	6.53	4.977	23.493	21.541	33.5	12.0	29.8	8.3	3.59	0.17	22.8	10.8	19.1
74	177.4	0.454	63.6	3.6	6.53	5.064	23.660	21.679	33.7	12.0	30.0	8.4	3.59	0.17	22.8	10.8	19.2
75	178.3	0.459	63.6	3.6	6.54	5.141	23.809	21.802	33.8	12.0	30.2	8.4	3.60	0.16	22.9	10.9	19.3
76	179.3	0.464	63.5	3.5	6.55	5.227	23.976	21.940	33.9	12.0	30.4	8.5	3.60	0.16	23.0	11.0	19.4
77	179.9	0.469	63.5	3.5	6.55	5.304	24.068	22.009	34.0	12.0	30.5	8.5	3.59	0.16	23.0	11.0	19.5
78	180.8	0.474	63.5	3.4	6.56	5.390	24.217	22.129	34.1	12.0	30.7	8.5	3.59	0.16	23.0	11.1	19.6
79	181.3	0.479	63.4	3.4	6.56	5.477	24.291	22.178	34.2	12.0	30.7	8.6	3.59	0.15	23.1	11.1	19.7
80	181.9	0.484	63.4	3.4	6.57	5.554	24.384	22.247	34.2	12.0	30.8	8.6	3.59	0.15	23.1	11.1	19.7
81	182.9	0.488	63.3	3.3	6.57	5.631	24.551	22.386	34.4	12.0	31.0	8.7	3.59	0.15	23.2	11.2	19.9
82	183.6	0.493	63.3	3.3	6.58	5.707	24.662	22.472	34.5	12.0	31.2	8.7	3.59	0.15	23.2	11.2	19.9
83	184.2	0.497	63.3	3.3	6.58	5.775	24.755	22.543	34.5	12.0	31.3	8.7	3.59	0.15	23.3	11.3	20.0
84	185.4	0.501	63.2	3.2	6.59	5.852	24.959	22.716	34.7	12.0	31.5	8.8	3.59	0.14	23.3	11.4	20.1
85	186.6	0.506	63.2	3.2	6.59	5.928	25.145	22.871	34.9	12.0	31.7	8.8	3.60	0.14	23.4	11.4	20.2
86	187.4	0.510	63.1	3.1	6.60	6.005	25.275	22.974	35.0	12.0	31.8	8.9	3.59	0.14	23.5	11.5	20.3
87	187.4	0.515	63.1	3.1	6.60	6.082	25.275	22.954	34.9	12.0	31.8	8.9	3.58	0.13	23.5	11.5	20.4
88	188.4	0.520	63.1	3.1	6.61	6.159	25.442	23.092	35.1	12.0	32.0	8.9	3.59	0.13	23.5	11.5	20.5
89	189.6	0.524	63.0	3.0	6.62	6.236	25.627	23.246	35.2	12.0	32.2	9.0	3.59	0.13	23.6	11.6	20.6
90	190.3	0.529	63.0	3.0	6.62	6.313	25.738	23.331	35.3	12.0	32.3	9.0	3.59	0.13	23.7	11.7	20.7
91	191.1	0.533	62.9	2.9	6.63	6.390	25.868	23.433	35.4	12.0	32.5	9.1	3.58	0.12	23.7	11.7	20.8
92	191.8	0.537	62.9	2.9	6.63	6.457	25.980	23.519	35.5	12.0	32.6	9.1	3.59	0.12	23.7	11.8	20.9
93	192.6	0.542	62.9	2.9	6.64	6.534	26.110	23.621	35.6	12.0	32.7	9.1	3.59	0.12	23.8	11.8	20.9
94	192.6	0.547	62.8	2.8	6.64	6.620	26.110	23.598	35.6	12.0	32.8	9.2	3.57	0.12	23.8	11.8	21.0
95	192.9	0.552	62.8	2.7	6.65	6.697	26.165	23.630	35.6	12.0	32.9	9.2	3.56	0.12	23.8	11.8	21.1
96	193.4	0.556	62.7	2.7	6.65	6.774	26.239	23.679	35.7	12.0	33.0	9.3	3.55	0.11	23.8	11.8	21.1
97	194.4	0.560	62.7	2.7	6.66	6.841	26.407	23.817	35.8	12.0	33.1	9.3	3.56	0.11	23.9	11.9	21.2
98	195.1	0.564	62.7	2.7	6.66	6.908	26.518	23.903	35.9	12.0	33.2	9.3	3.56	0.11	23.9	12.0	21.3
99	195.9	0.568	62.6	2.6	6.67	6.976	26.648	24.006	36.0	12.0	33.4	9.4	3.56	0.11	24.0	12.0	21.4
100	197.5	0.573	62.6	2.6	6.67	7.053	26.908	24.227	36.2	12.0	33.6	9.4	3.57	0.11	24.1	12.1	21.5

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	198.7	0.577	62.5	2.5	6.68	7.120	27.093	24.381	36.4	12.0	33.9	9.5	3.57	0.10	24.2	12.2	21.7
102	199.5	0.581	62.5	2.5	6.68	7.187	27.223	24.484	36.5	12.0	34.0	9.5	3.58	0.10	24.2	12.2	21.7
103	200.3	0.585	62.4	2.4	6.69	7.254	27.353	24.586	36.6	12.0	34.2	9.6	3.56	0.10	24.3	12.3	21.9
104	201.2	0.589	62.4	2.4	6.69	7.322	27.501	24.705	36.7	12.0	34.3	9.6	3.58	0.10	24.3	12.4	21.9
105	202.0	0.593	62.4	2.4	6.70	7.389	27.631	24.807	36.8	12.0	34.4	9.6	3.58	0.10	24.4	12.4	22.0
106	202.7	0.598	62.3	2.3	6.70	7.466	27.743	24.889	36.9	12.0	34.5	9.7	3.58	0.09	24.4	12.4	22.1
107	203.6	0.602	62.3	2.3	6.71	7.533	27.891	25.007	37.0	12.0	34.7	9.7	3.58	0.09	24.5	12.5	22.2
108	204.3	0.606	62.3	2.2	6.71	7.600	28.002	25.091	37.1	12.0	34.8	9.7	3.58	0.09	24.5	12.5	22.3
109	204.7	0.610	62.2	2.2	6.72	7.677	28.058	25.121	37.1	12.0	34.9	9.8	3.57	0.09	24.5	12.6	22.3
110	204.8	0.614	62.2	2.2	6.72	7.744	28.077	25.119	37.1	12.0	34.9	9.8	3.56	0.09	24.5	12.6	22.4
111	205.7	0.619	62.2	2.2	6.73	7.821	28.225	25.235	37.2	12.0	35.1	9.8	3.57	0.09	24.6	12.6	22.4
112	206.2	0.623	62.1	2.1	6.73	7.898	28.299	25.281	37.3	12.0	35.1	9.9	3.57	0.08	24.6	12.6	22.5
113	206.6	0.628	62.1	2.1	6.74	7.975	28.374	25.328	37.3	12.0	35.2	9.9	3.56	0.08	24.6	12.7	22.6
114	207.2	0.633	62.1	2.0	6.75	8.052	28.466	25.391	37.4	12.0	35.3	9.9	3.55	0.08	24.7	12.7	22.6
115	208.0	0.637	62.0	2.0	6.75	8.129	28.596	25.489	37.5	12.0	35.5	10.0	3.56	0.08	24.7	12.7	22.7
116	208.6	0.642	62.0	2.0	6.76	8.206	28.689	25.552	37.5	12.0	35.6	10.0	3.56	0.08	24.8	12.8	22.8
117	208.8	0.646	61.9	1.9	6.76	8.283	28.726	25.564	37.5	12.0	35.6	10.1	3.54	0.08	24.8	12.8	22.8
118	208.9	0.652	61.9	1.9	6.77	8.369	28.745	25.556	37.5	12.0	35.6	10.1	3.54	0.08	24.8	12.8	22.8
119	208.9	0.656	61.9	1.9	6.78	8.446	28.745	25.534	37.5	12.0	35.6	10.1	3.53	0.07	24.8	12.8	22.9
120	208.7	0.661	61.9	1.9	6.78	8.532	28.708	25.475	37.5	12.0	35.6	10.1	3.52	0.07	24.7	12.7	22.9
121	208.5	0.666	61.9	1.8	6.79	8.619	28.670	25.417	37.4	12.0	35.6	10.1	3.50	0.07	24.7	12.7	22.9
122	208.0	0.671	61.8	1.8	6.79	8.696	28.596	25.327	37.3	12.0	35.5	10.2	3.49	0.07	24.6	12.7	22.8
123	208.2	0.676	61.8	1.8	6.80	8.773	28.633	25.339	37.3	12.0	35.5	10.2	3.48	0.07	24.7	12.7	22.9
124	208.5	0.680	61.7	1.7	6.81	8.849	28.670	25.350	37.3	12.0	35.6	10.3	3.47	0.07	24.7	12.7	22.9
125	208.3	0.685	61.8	1.8	6.81	8.926	28.652	25.312	37.3	12.0	35.5	10.2	3.47	0.07	24.6	12.7	22.9
126	208.5	0.689	61.7	1.7	6.82	9.003	28.670	25.306	37.3	12.0	35.6	10.3	3.47	0.07	24.6	12.7	22.9
127	208.8	0.693	61.7	1.7	6.82	9.070	28.726	25.338	37.3	12.0	35.6	10.3	3.46	0.07	24.7	12.7	23.0
128	209.0	0.699	61.7	1.7	6.83	9.157	28.763	25.347	37.3	12.0	35.7	10.3	3.46	0.07	24.7	12.7	23.0
129	208.7	0.703	61.6	1.6	6.83	9.224	28.708	25.277	37.3	12.0	35.6	10.4	3.44	0.06	24.6	12.6	23.0
130	208.9	0.707	61.6	1.6	6.84	9.301	28.745	25.288	37.3	12.0	35.7	10.4	3.44	0.06	24.6	12.6	23.0
131	209.5	0.711	61.6	1.6	6.84	9.368	28.837	25.353	37.3	12.0	35.8	10.4	3.44	0.06	24.7	12.7	23.1
132	210.2	0.716	61.6	1.6	6.85	9.445	28.949	25.432	37.4	12.0	35.8	10.4	3.44	0.06	24.7	12.7	23.1
133	210.1	0.720	61.6	1.5	6.86	9.522	28.930	25.393	37.4	12.0	35.8	10.4	3.43	0.06	24.7	12.7	23.1
134	210.8	0.725	61.5	1.5	6.86	9.599	29.042	25.471	37.5	12.0	35.9	10.5	3.43	0.06	24.7	12.7	23.2
135	210.6	0.730	61.5	1.5	6.87	9.676	29.023	25.432	37.4	12.0	35.9	10.5	3.43	0.06	24.7	12.7	23.2
136	210.5	0.734	61.5	1.5	6.87	9.753	29.004	25.393	37.4	12.0	35.9	10.5	3.42	0.06	24.7	12.7	23.2
137	210.6	0.739	61.5	1.5	6.88	9.829	29.023	25.387	37.4	12.0	35.9	10.5	3.41	0.06	24.7	12.7	23.2
138	210.8	0.743	61.4	1.4	6.89	9.906	29.042	25.382	37.4	12.0	35.9	10.6	3.40	0.06	24.7	12.7	23.2
139	210.8	0.748	61.4	1.4	6.89	9.993	29.042	25.357	37.3	12.0	35.9	10.6	3.40	0.06	24.7	12.7	23.2
140	210.9	0.753	61.4	1.4	6.90	10.060	29.060	25.354	37.3	12.0	35.9	10.6	3.40	0.06	24.7	12.7	23.3
141	211.3	0.757	61.4	1.4	6.90	10.127	29.134	25.401	37.4	12.0	36.0	10.6	3.40	0.06	24.7	12.7	23.3

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	212.1	0.761	61.4	1.4	6.91	10.195	29.264	25.498	37.5	12.0	36.1	10.6	3.40	0.05	24.7	12.7	23.4
143	212.3	0.765	61.4	1.3	6.91	10.271	29.283	25.492	37.5	12.0	36.1	10.6	3.40	0.05	24.7	12.7	23.4
144	212.3	0.769	61.3	1.3	6.92	10.339	29.283	25.473	37.5	12.0	36.1	10.7	3.39	0.05	24.7	12.7	23.4
145	212.6	0.773	61.3	1.3	6.92	10.406	29.339	25.503	37.5	12.0	36.2	10.7	3.38	0.05	24.7	12.8	23.5
146	213.1	0.777	61.3	1.3	6.93	10.473	29.413	25.549	37.5	12.0	36.2	10.7	3.39	0.05	24.8	12.8	23.4
147	213.6	0.781	61.3	1.3	6.93	10.541	29.506	25.613	37.6	12.0	36.3	10.7	3.39	0.05	24.8	12.8	23.5
148	213.5	0.785	61.3	1.3	6.94	10.608	29.487	25.576	37.6	12.0	36.3	10.7	3.38	0.05	24.8	12.8	23.5
149	213.3	0.789	61.3	1.3	6.94	10.665	29.450	25.526	37.5	12.0	36.3	10.7	3.38	0.05	24.7	12.8	23.5
150	213.3	0.792	61.3	1.3	6.95	10.723	29.450	25.509	37.5	12.0	36.2	10.7	3.38	0.05	24.7	12.8	23.5
151	213.4	0.794	61.2	1.2	6.95	10.761	29.468	25.514	37.5	12.0	36.3	10.8	3.37	0.05	24.7	12.8	23.5
152	214.1	0.798	61.2	1.2	6.96	10.819	29.580	25.597	37.6	12.0	36.4	10.8	3.37	0.05	24.8	12.8	23.6
153	214.4	0.801	61.2	1.2	6.96	10.867	29.635	25.632	37.6	12.0	36.4	10.8	3.38	0.05	24.8	12.8	23.6
154	215.0	0.804	61.2	1.2	6.96	10.925	29.728	25.698	37.7	12.0	36.5	10.8	3.38	0.05	24.8	12.8	23.6
155	215.1	0.807	61.2	1.2	6.97	10.973	29.747	25.700	37.7	12.0	36.5	10.8	3.38	0.05	24.8	12.8	23.6
156	215.3	0.810	61.2	1.2	6.97	11.031	29.765	25.699	37.7	12.0	36.5	10.8	3.38	0.05	24.8	12.8	23.6
157	215.4	0.813	61.2	1.2	6.98	11.079	29.784	25.701	37.7	12.0	36.5	10.8	3.38	0.05	24.8	12.9	23.7
158	216.1	0.817	61.2	1.2	6.98	11.136	29.895	25.783	37.8	12.0	36.6	10.8	3.38	0.05	24.9	12.9	23.7
159	216.3	0.821	61.1	1.1	6.99	11.203	29.932	25.796	37.8	12.0	36.7	10.9	3.37	0.04	24.9	12.9	23.8
160	216.6	0.825	61.2	1.1	6.99	11.271	29.988	25.825	37.8	12.0	36.7	10.8	3.38	0.04	24.9	12.9	23.8
161	217.1	0.829	61.1	1.1	7.00	11.338	30.062	25.871	37.9	12.0	36.7	10.9	3.38	0.04	24.9	12.9	23.8
162	217.9	0.833	61.1	1.1	7.00	11.415	30.192	25.963	37.9	12.0	36.9	10.9	3.38	0.04	25.0	13.0	23.9
163	218.0	0.839	61.1	1.1	7.01	11.501	30.211	25.953	37.9	12.0	36.9	10.9	3.38	0.04	25.0	13.0	23.9
164	218.0	0.843	61.1	1.1	7.02	11.578	30.211	25.930	37.9	12.0	36.9	10.9	3.37	0.04	25.0	13.0	23.9
165	218.8	0.848	61.0	1.0	7.02	11.655	30.341	26.022	38.0	12.0	37.0	11.0	3.37	0.04	25.0	13.0	24.0
166	219.1	0.852	61.0	1.0	7.03	11.732	30.378	26.031	38.0	12.0	37.0	11.0	3.37	0.04	25.0	13.0	24.0
167	219.3	0.857	61.0	1.0	7.03	11.809	30.415	26.040	38.0	12.0	37.0	11.0	3.37	0.04	25.0	13.0	24.0
168	219.5	0.861	61.0	1.0	7.04	11.886	30.452	26.050	38.0	12.0	37.1	11.0	3.36	0.04	25.0	13.0	24.0
169	220.1	0.866	61.0	1.0	7.05	11.963	30.545	26.108	38.1	12.0	37.1	11.0	3.37	0.04	25.0	13.1	24.1
170	219.7	0.871	60.9	0.9	7.05	12.039	30.489	26.035	38.0	12.0	37.1	11.1	3.36	0.04	25.0	13.0	24.1
171	220.1	0.875	60.9	0.9	7.06	12.116	30.545	26.061	38.0	12.0	37.1	11.1	3.36	0.04	25.0	13.0	24.1
172	220.1	0.880	60.9	0.9	7.06	12.193	30.545	26.038	38.0	12.0	37.1	11.1	3.35	0.03	25.0	13.0	24.1
173	220.8	0.884	60.9	0.9	7.07	12.270	30.656	26.112	38.1	12.0	37.2	11.1	3.35	0.03	25.0	13.1	24.2
174	221.1	0.888	60.9	0.9	7.08	12.337	30.712	26.140	38.1	12.0	37.2	11.1	3.35	0.03	25.1	13.1	24.2
175	220.2	0.892	60.9	0.9	7.08	12.405	30.563	25.989	38.0	12.0	37.1	11.1	3.34	0.03	25.0	13.0	24.1
176	221.0	0.896	60.9	0.9	7.09	12.462	30.693	26.085	38.1	12.0	37.2	11.1	3.35	0.03	25.0	13.0	24.2
177	221.5	0.900	60.9	0.8	7.09	12.529	30.767	26.130	38.1	12.0	37.3	11.1	3.35	0.03	25.1	13.1	24.2
178	221.5	0.903	60.9	0.8	7.10	12.587	30.767	26.112	38.1	12.0	37.3	11.1	3.34	0.03	25.0	13.1	24.2
179	221.7	0.907	60.8	0.8	7.10	12.654	30.805	26.124	38.1	12.0	37.3	11.2	3.34	0.03	25.0	13.1	24.2
180	222.3	0.911	60.8	0.8	7.11	12.712	30.897	26.187	38.2	12.0	37.4	11.2	3.34	0.03	25.1	13.1	24.3
181	221.8	0.915	60.8	0.8	7.11	12.779	30.823	26.101	38.1	12.0	37.3	11.2	3.33	0.03	25.0	13.1	24.2
182	221.6	0.918	60.8	0.8	7.12	12.827	30.786	26.054	38.0	12.0	37.3	11.2	3.33	0.03	25.0	13.0	24.2

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	221.8	0.921	60.8	0.8	7.12	12.885	30.823	26.069	38.1	12.0	37.3	11.2	3.33	0.03	25.0	13.0	24.2
184	221.6	0.924	60.8	0.8	7.12	12.933	30.786	26.022	38.0	12.0	37.2	11.2	3.32	0.03	25.0	13.0	24.2
185	221.9	0.927	60.8	0.8	7.13	12.981	30.842	26.055	38.0	12.0	37.3	11.2	3.32	0.03	25.0	13.0	24.3
186	223.3	0.931	60.8	0.8	7.13	13.048	31.064	26.228	38.2	12.0	37.5	11.2	3.34	0.03	25.1	13.1	24.3
187	223.1	0.935	60.7	0.7	7.14	13.125	31.027	26.172	38.2	12.0	37.5	11.3	3.32	0.03	25.1	13.1	24.4
188	223.7	0.939	60.7	0.7	7.15	13.192	31.120	26.232	38.2	12.0	37.5	11.3	3.32	0.03	25.1	13.1	24.4
189	224.0	0.944	60.7	0.7	7.15	13.260	31.176	26.259	38.2	12.0	37.6	11.3	3.32	0.03	25.1	13.1	24.4
190	224.1	0.948	60.7	0.7	7.16	13.337	31.194	26.251	38.2	12.0	37.6	11.3	3.32	0.03	25.1	13.1	24.4
191	224.6	0.952	60.7	0.6	7.16	13.404	31.268	26.294	38.3	12.0	37.6	11.3	3.32	0.02	25.1	13.1	24.5
192	224.8	0.957	60.7	0.6	7.17	13.481	31.306	26.303	38.3	12.0	37.6	11.3	3.32	0.02	25.1	13.2	24.5
193	225.2	0.961	60.7	0.6	7.18	13.548	31.361	26.330	38.3	12.0	37.7	11.3	3.32	0.02	25.2	13.2	24.5
194	224.9	0.965	60.6	0.6	7.18	13.625	31.324	26.273	38.3	12.0	37.6	11.4	3.31	0.02	25.1	13.1	24.5
195	224.9	0.969	60.6	0.6	7.19	13.692	31.324	26.252	38.2	12.0	37.6	11.4	3.31	0.02	25.1	13.1	24.5
196	225.3	0.974	60.7	0.6	7.19	13.769	31.380	26.276	38.3	12.0	37.6	11.3	3.32	0.02	25.1	13.1	24.5
197	225.3	0.978	60.7	0.6	7.20	13.846	31.380	26.252	38.2	12.0	37.6	11.3	3.31	0.02	25.1	13.1	24.5
198	225.0	0.983	60.6	0.6	7.21	13.913	31.343	26.199	38.2	12.0	37.6	11.4	3.30	0.02	25.1	13.1	24.5
199	225.5	0.987	60.6	0.6	7.21	13.990	31.417	26.239	38.2	12.0	37.6	11.4	3.31	0.02	25.1	13.1	24.5
200	226.0	0.992	60.6	0.6	7.22	14.067	31.491	26.278	38.3	12.0	37.7	11.4	3.31	0.02	25.1	13.1	24.5
201	226.6	0.996	60.6	0.6	7.22	14.134	31.602	26.353	38.3	12.0	37.8	11.4	3.31	0.02	25.2	13.2	24.6
202	226.5	1.000	60.6	0.6	7.23	14.211	31.584	26.313	38.3	12.0	37.7	11.4	3.30	0.02	25.1	13.2	24.6
203	226.9	1.005	60.6	0.6	7.24	14.288	31.640	26.336	38.3	12.0	37.7	11.4	3.31	0.02	25.2	13.2	24.6
204	227.3	1.009	60.6	0.6	7.24	14.365	31.714	26.375	38.4	12.0	37.8	11.4	3.31	0.02	25.2	13.2	24.6
205	227.7	1.014	60.6	0.6	7.25	14.442	31.769	26.399	38.4	12.0	37.8	11.4	3.31	0.02	25.2	13.2	24.6
206	227.8	1.019	60.6	0.6	7.26	14.528	31.788	26.387	38.4	12.0	37.8	11.4	3.31	0.02	25.2	13.2	24.6
207	228.4	1.024	60.5	0.5	7.26	14.605	31.881	26.442	38.4	12.0	37.9	11.5	3.31	0.02	25.2	13.2	24.7
208	228.8	1.028	60.5	0.5	7.27	14.682	31.955	26.481	38.5	12.0	37.9	11.5	3.31	0.02	25.2	13.2	24.7
209	228.6	1.034	60.5	0.5	7.28	14.768	31.918	26.421	38.4	12.0	37.9	11.5	3.30	0.02	25.2	13.2	24.7
210	229.2	1.038	60.5	0.5	7.28	14.845	32.011	26.476	38.5	12.0	37.9	11.5	3.31	0.02	25.2	13.2	24.7
211	229.5	1.043	60.5	0.5	7.29	14.922	32.066	26.499	38.5	12.0	38.0	11.5	3.31	0.02	25.2	13.2	24.7
212	230.4	1.047	60.5	0.5	7.30	14.999	32.215	26.600	38.6	12.0	38.1	11.5	3.32	0.02	25.3	13.3	24.8
213	230.7	1.052	60.5	0.5	7.30	15.076	32.252	26.607	38.6	12.0	38.1	11.5	3.31	0.02	25.3	13.3	24.8
214	230.7	1.056	60.5	0.5	7.31	15.153	32.252	26.582	38.6	12.0	38.1	11.5	3.31	0.02	25.3	13.3	24.8
215	231.1	1.061	60.5	0.4	7.32	15.229	32.326	26.620	38.6	12.0	38.2	11.5	3.31	0.02	25.3	13.3	24.9
216	231.5	1.066	60.4	0.4	7.32	15.306	32.382	26.643	38.6	12.0	38.2	11.6	3.30	0.02	25.3	13.3	24.9
217	231.4	1.070	60.4	0.4	7.33	15.383	32.363	26.602	38.6	12.0	38.2	11.6	3.30	0.02	25.3	13.3	24.9
218	231.9	1.075	60.4	0.4	7.34	15.470	32.456	26.652	38.6	12.0	38.2	11.6	3.30	0.02	25.3	13.3	24.9
219	232.1	1.079	60.4	0.4	7.34	15.537	32.475	26.646	38.6	12.0	38.3	11.6	3.30	0.01	25.3	13.3	24.9
220	232.4	1.084	60.4	0.4	7.35	15.614	32.530	26.668	38.7	12.0	38.3	11.6	3.30	0.01	25.3	13.3	24.9
221	232.9	1.089	60.4	0.4	7.36	15.691	32.605	26.706	38.7	12.0	38.3	11.6	3.30	0.01	25.3	13.4	25.0
222	232.5	1.093	60.3	0.3	7.36	15.768	32.549	26.634	38.6	12.0	38.3	11.7	3.28	0.01	25.3	13.3	25.0
223	233.0	1.098	60.3	0.3	7.37	15.844	32.623	26.671	38.7	12.0	38.4	11.7	3.28	0.01	25.3	13.3	25.0

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	232.9	1.102	60.3	0.3	7.38	15.921	32.605	26.631	38.6	12.0	38.3	11.7	3.28	0.01	25.3	13.3	25.0
225	232.7	1.106	60.3	0.3	7.38	15.989	32.586	26.593	38.6	12.0	38.3	11.7	3.27	0.01	25.3	13.3	25.0
226	232.7	1.111	60.3	0.3	7.39	16.065	32.586	26.568	38.6	12.0	38.3	11.7	3.27	0.01	25.3	13.3	25.0
227	232.2	1.116	60.3	0.3	7.40	16.142	32.493	26.465	38.5	12.0	38.2	11.7	3.26	0.01	25.2	13.2	25.0
228	232.3	1.120	60.3	0.3	7.40	16.210	32.512	26.459	38.4	12.0	38.2	11.7	3.26	0.01	25.2	13.2	25.0
229	232.4	1.124	60.2	0.2	7.41	16.277	32.530	26.453	38.4	12.0	38.2	11.8	3.25	0.01	25.2	13.2	25.0
230	232.6	1.128	60.2	0.2	7.41	16.344	32.567	26.462	38.4	12.0	38.2	11.8	3.25	0.01	25.2	13.2	25.0
231	233.3	1.132	60.2	0.2	7.42	16.411	32.679	26.533	38.5	12.0	38.3	11.8	3.25	0.01	25.3	13.3	25.0
232	233.8	1.136	60.2	0.2	7.43	16.488	32.753	26.570	38.6	12.0	38.4	11.8	3.26	0.01	25.3	13.3	25.1
233	234.2	1.140	60.2	0.2	7.43	16.555	32.827	26.610	38.6	12.0	38.4	11.8	3.25	0.01	25.3	13.3	25.1
234	234.7	1.144	60.2	0.1	7.44	16.623	32.901	26.650	38.6	12.0	38.5	11.8	3.25	0.01	25.3	13.3	25.2
235	235.2	1.149	60.2	0.1	7.45	16.700	32.976	26.686	38.7	12.0	38.5	11.8	3.25	0.01	25.3	13.3	25.2
236	235.2	1.153	60.1	0.1	7.45	16.767	32.976	26.664	38.6	12.0	38.5	11.9	3.25	0.00	25.3	13.3	25.2
237	235.1	1.157	60.1	0.1	7.46	16.834	32.957	26.626	38.6	12.0	38.5	11.9	3.24	0.00	25.3	13.3	25.2
238	234.7	1.161	60.1	0.1	7.47	16.911	32.901	26.555	38.5	12.0	38.5	11.9	3.23	0.00	25.3	13.3	25.2
239	235.2	1.166	60.1	0.1	7.47	16.988	32.976	26.591	38.6	12.0	38.5	11.9	3.23	0.00	25.3	13.3	25.2
240	234.8	1.170	60.1	0.1	7.48	17.055	32.920	26.523	38.5	12.0	38.4	11.9	3.22	0.00	25.2	13.3	25.2
241	234.6	1.175	60.1	0.1	7.49	17.132	32.883	26.467	38.5	12.0	38.4	11.9	3.22	0.00	25.2	13.2	25.2
242	235.2	1.179	60.0	0.0	7.49	17.209	32.976	26.518	38.5	12.0	38.5	12.0	3.22	0.00	25.2	13.3	25.2
243	235.6	1.183	60.0	0.0	7.50	17.276	33.050	26.557	38.5	12.0	38.5	12.0	3.22	0.00	25.3	13.3	25.2
244	235.6	1.188	60.0	0.0	7.51	17.353	33.050	26.532	38.5	12.0	38.5	12.0	3.21	0.00	25.3	13.3	25.3
245	236.0	1.192	60.0	0.0	7.51	17.430	33.106	26.552	38.5	12.0	38.6	12.0	3.21	0.00	25.3	13.3	25.3
246	236.3	1.197	60.0	0.0	7.52	17.507	33.161	26.573	38.6	12.0	38.6	12.0	3.21	0.00	25.3	13.3	25.3
247	236.7	1.202	60.0	0.0	7.53	17.593	33.217	26.590	38.6	12.0	38.6	12.0	3.21	0.00	25.3	13.3	25.3
248	236.8	1.207	60.0	-0.1	7.53	17.670	33.235	26.580	38.6	12.0	38.6	12.0	3.21	0.00	25.3	13.3	25.3
249	236.8	1.211	60.0	-0.1	7.54	17.747	33.235	26.554	38.5	12.0	38.6	12.0	3.20	0.00	25.3	13.3	25.3
250	236.9	1.216	60.0	-0.1	7.55	17.824	33.254	26.544	38.5	12.0	38.6	12.0	3.20	0.00	25.3	13.3	25.3
251	237.5	1.221	59.9	-0.1	7.56	17.901	33.347	26.595	38.6	12.0	38.7	12.1	3.20	0.00	25.3	13.3	25.4
252	237.2	1.226	59.9	-0.1	7.56	17.987	33.310	26.535	38.5	12.0	38.6	12.1	3.20	0.00	25.3	13.3	25.3
253	237.8	1.230	59.9	-0.1	7.57	18.064	33.402	26.586	38.6	12.0	38.7	12.1	3.20	0.00	25.3	13.3	25.4
254	237.8	1.235	59.9	-0.1	7.58	18.150	33.402	26.557	38.5	12.0	38.7	12.1	3.19	0.00	25.3	13.3	25.4
255	238.5	1.240	59.9	-0.1	7.59	18.227	33.514	26.622	38.6	12.0	38.7	12.1	3.20	0.00	25.3	13.3	25.4
256	238.2	1.245	59.9	-0.1	7.59	18.304	33.458	26.551	38.5	12.0	38.7	12.1	3.19	-0.01	25.3	13.3	25.4
257	238.8	1.249	59.9	-0.1	7.60	18.381	33.569	26.616	38.6	12.0	38.7	12.1	3.19	-0.01	25.3	13.3	25.4
258	239.3	1.254	59.8	-0.2	7.61	18.458	33.644	26.651	38.6	12.0	38.8	12.2	3.19	-0.01	25.3	13.3	25.5
259	239.5	1.258	59.8	-0.2	7.61	18.535	33.681	26.655	38.6	12.0	38.8	12.2	3.19	-0.01	25.3	13.3	25.5
260	239.5	1.263	59.8	-0.2	7.62	18.612	33.681	26.629	38.6	12.0	38.8	12.2	3.19	-0.01	25.3	13.3	25.5
261	239.5	1.268	59.8	-0.2	7.63	18.688	33.681	26.604	38.6	12.0	38.8	12.2	3.18	-0.01	25.3	13.3	25.5
262	240.0	1.272	59.8	-0.2	7.64	18.765	33.755	26.638	38.6	12.0	38.8	12.2	3.19	-0.01	25.3	13.3	25.5
263	240.0	1.277	59.8	-0.2	7.64	18.842	33.755	26.612	38.6	12.0	38.8	12.2	3.18	-0.01	25.3	13.3	25.5
264	240.1	1.281	59.8	-0.2	7.65	18.919	33.774	26.601	38.6	12.0	38.8	12.2	3.18	-0.01	25.3	13.3	25.5

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
265	240.5	1.285	59.8	-0.3	7.66	18.986	33.829	26.624	38.6	12.0	38.9	12.2	3.17	-0.01	25.3	13.3	25.6
266	240.3	1.290	59.8	-0.3	7.66	19.063	33.811	26.582	38.6	12.0	38.8	12.2	3.17	-0.01	25.3	13.3	25.5
267	240.3	1.295	59.8	-0.3	7.67	19.150	33.811	26.553	38.5	12.0	38.8	12.2	3.17	-0.01	25.3	13.3	25.5
268	240.3	1.299	59.7	-0.3	7.68	19.217	33.811	26.530	38.5	12.0	38.8	12.3	3.16	-0.01	25.3	13.3	25.5
269	240.6	1.304	59.7	-0.3	7.69	19.294	33.848	26.534	38.5	12.0	38.8	12.3	3.16	-0.01	25.3	13.3	25.5
270	240.8	1.308	59.7	-0.3	7.69	19.361	33.885	26.542	38.5	12.0	38.8	12.3	3.16	-0.01	25.3	13.3	25.5
271	240.5	1.312	59.7	-0.3	7.70	19.438	33.829	26.471	38.5	12.0	38.7	12.3	3.16	-0.01	25.2	13.2	25.5
272	240.7	1.316	59.7	-0.3	7.71	19.505	33.866	26.478	38.5	12.0	38.8	12.3	3.15	-0.01	25.2	13.2	25.5
273	241.2	1.320	59.7	-0.4	7.71	19.572	33.941	26.515	38.5	12.0	38.9	12.3	3.15	-0.01	25.2	13.3	25.6
274	242.0	1.324	59.7	-0.3	7.72	19.640	34.071	26.596	38.6	12.0	38.9	12.3	3.16	-0.01	25.3	13.3	25.6
275	242.3	1.328	59.7	-0.4	7.73	19.707	34.126	26.618	38.6	12.0	39.0	12.3	3.16	-0.01	25.3	13.3	25.6
276	242.6	1.332	59.7	-0.4	7.73	19.774	34.182	26.640	38.6	12.0	39.0	12.3	3.16	-0.01	25.3	13.3	25.7
277	242.9	1.337	59.7	-0.4	7.74	19.851	34.219	26.643	38.6	12.0	39.0	12.3	3.16	-0.01	25.3	13.3	25.7
278	243.1	1.341	59.6	-0.4	7.75	19.918	34.256	26.650	38.6	12.0	39.0	12.4	3.16	-0.01	25.3	13.3	25.7
279	243.2	1.345	59.6	-0.4	7.75	19.986	34.275	26.642	38.6	12.0	39.0	12.4	3.15	-0.01	25.3	13.3	25.7
280	243.2	1.346	59.6	-0.4	7.75	19.995	34.275	26.639	38.6	12.0	39.0	12.4	3.15	-0.01	25.3	13.3	25.7

Specimen B Shear Data

CU Triaxial Test

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File Location
T-5785.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5785
Sample Location: Guilford County (Sta. 403+45)
Sample Description: Tannish colored silt
Remarks: 25° shear plane

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.7060001
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.856	2.794	
Height (in)	6.121	5.929	
Weight (grams)	1241.00		1298.00
Moisture (%)	19.21		24.69
Dry Density (pcf)	101.12	109.07	
Saturation (%)	77.52	100.00	
Void Ratio	0.666	0.549	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 85.300
Effective Confining Stress (psi): 24.0
Corrected Peak Deviator Stress (psi): 56.857 at reading number: 76

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	51.7	0.227	61.3	0.0	6.13	0.000	0.000	0.000	24.0	24.0	24.0	24.0	1.00	0.00	24.0	0.0	24.0
1	84.5	0.232	62.4	1.1	6.14	0.087	5.346	5.307	29.3	24.0	28.3	22.9	1.23	0.20	26.7	2.7	25.6
2	97.9	0.238	63.7	2.4	6.14	0.173	7.533	7.452	31.5	24.0	29.0	21.6	1.35	0.32	27.7	3.7	25.3
3	107.9	0.243	64.7	3.4	6.15	0.260	9.159	9.033	33.0	24.0	29.6	20.6	1.44	0.38	28.5	4.5	25.1
4	115.3	0.247	65.5	4.2	6.15	0.337	10.374	10.206	34.2	24.0	30.0	19.8	1.52	0.41	29.1	5.1	24.9
5	122.5	0.252	66.2	4.9	6.16	0.414	11.552	11.341	35.3	24.0	30.4	19.1	1.59	0.43	29.7	5.7	24.8
6	128.6	0.256	66.8	5.5	6.16	0.491	12.542	12.287	36.3	24.0	30.8	18.5	1.66	0.45	30.1	6.1	24.7
7	134.6	0.261	67.3	6.0	6.17	0.568	13.514	13.214	37.2	24.0	31.3	18.0	1.73	0.45	30.6	6.6	24.7
8	139.7	0.265	67.7	6.4	6.17	0.645	14.355	14.009	38.0	24.0	31.7	17.6	1.79	0.45	31.0	7.0	24.6
9	145.0	0.270	68.1	6.8	6.18	0.722	15.215	14.821	38.8	24.0	32.0	17.2	1.86	0.46	31.4	7.4	24.6
10	149.5	0.275	68.4	7.1	6.18	0.799	15.944	15.502	39.5	24.0	32.4	16.9	1.92	0.46	31.8	7.8	24.6
11	154.3	0.279	68.7	7.4	6.19	0.876	16.729	16.238	40.2	24.0	32.8	16.6	1.98	0.46	32.1	8.1	24.7
12	159.0	0.284	69.0	7.7	6.19	0.953	17.496	16.954	41.0	24.0	33.3	16.3	2.04	0.45	32.5	8.5	24.8
13	163.6	0.288	69.2	7.9	6.20	1.030	18.243	17.650	41.6	24.0	33.7	16.1	2.10	0.45	32.8	8.8	24.9
14	167.9	0.293	69.4	8.1	6.20	1.117	18.954	18.302	42.3	24.0	34.2	15.9	2.15	0.44	33.2	9.2	25.1
15	172.4	0.298	69.5	8.2	6.21	1.194	19.683	18.978	43.0	24.0	34.8	15.8	2.20	0.43	33.5	9.5	25.3
16	176.8	0.303	69.7	8.4	6.21	1.271	20.393	19.633	43.6	24.0	35.2	15.6	2.26	0.43	33.8	9.8	25.4
17	181.6	0.307	69.9	8.6	6.22	1.348	21.178	20.362	44.4	24.0	35.8	15.4	2.32	0.42	34.2	10.2	25.6
18	186.2	0.312	70.0	8.7	6.22	1.425	21.926	21.052	45.1	24.0	36.3	15.3	2.38	0.41	34.5	10.5	25.8

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	191.2	0.316	70.1	8.8	6.23	1.502	22.748	21.815	45.8	24.0	37.0	15.2	2.44	0.40	34.9	10.9	26.1
20	196.3	0.320	70.2	8.9	6.23	1.570	23.571	22.583	46.6	24.0	37.7	15.1	2.50	0.40	35.3	11.3	26.4
21	201.1	0.325	70.3	9.0	6.24	1.647	24.356	23.306	47.3	24.0	38.3	15.0	2.55	0.38	35.7	11.7	26.7
22	205.8	0.329	70.3	9.0	6.24	1.724	25.122	24.010	48.0	24.0	39.0	15.0	2.60	0.38	36.0	12.0	27.0
23	210.5	0.334	70.4	9.1	6.25	1.801	25.888	24.713	48.7	24.0	39.6	14.9	2.66	0.37	36.4	12.4	27.3
24	215.3	0.338	70.4	9.1	6.25	1.868	26.674	25.440	49.4	24.0	40.3	14.9	2.71	0.36	36.7	12.7	27.6
25	220.2	0.343	70.5	9.2	6.25	1.945	27.477	26.177	50.2	24.0	41.0	14.8	2.77	0.35	37.1	13.1	27.9
26	225.4	0.347	70.5	9.2	6.26	2.022	28.318	26.958	51.0	24.0	41.8	14.8	2.82	0.34	37.5	13.5	28.3
27	230.3	0.351	70.5	9.2	6.26	2.090	29.122	27.726	51.7	24.0	42.6	14.8	2.87	0.33	37.9	13.9	28.7
28	235.8	0.356	70.5	9.2	6.27	2.167	30.019	28.582	52.6	24.0	43.4	14.8	2.93	0.32	38.3	14.3	29.1
29	241.3	0.360	70.4	9.1	6.27	2.244	30.917	29.436	53.4	24.0	44.3	14.9	2.97	0.31	38.7	14.7	29.6
30	246.5	0.365	70.4	9.1	6.28	2.321	31.758	30.233	54.2	24.0	45.1	14.9	3.03	0.30	39.1	15.1	30.0
31	251.8	0.369	70.4	9.1	6.28	2.388	32.636	31.070	55.1	24.0	46.0	14.9	3.08	0.29	39.5	15.5	30.4
32	257.2	0.373	70.4	9.1	6.29	2.465	33.515	31.901	55.9	24.0	46.8	14.9	3.13	0.28	40.0	16.0	30.9
33	262.3	0.377	70.3	9.0	6.29	2.533	34.337	32.680	56.7	24.0	47.7	15.0	3.17	0.27	40.3	16.3	31.4
34	268.0	0.382	70.2	8.9	6.30	2.610	35.272	33.564	57.6	24.0	48.6	15.1	3.23	0.27	40.8	16.8	31.9
35	272.9	0.387	70.2	8.9	6.30	2.687	36.076	34.319	58.3	24.0	49.5	15.1	3.27	0.26	41.2	17.2	32.3
36	278.2	0.391	70.0	8.7	6.31	2.754	36.935	35.131	59.1	24.0	50.4	15.3	3.30	0.25	41.6	17.6	32.8
37	283.7	0.395	69.9	8.6	6.31	2.831	37.833	35.974	60.0	24.0	51.3	15.4	3.34	0.24	42.0	18.0	33.3
38	289.2	0.400	69.9	8.6	6.32	2.908	38.730	36.816	60.8	24.0	52.2	15.4	3.39	0.23	42.4	18.4	33.8
39	294.5	0.404	69.8	8.5	6.32	2.976	39.590	37.624	61.6	24.0	53.1	15.5	3.43	0.23	42.8	18.8	34.3
40	299.8	0.408	69.7	8.4	6.33	3.053	40.450	38.427	62.4	24.0	54.1	15.6	3.46	0.22	43.2	19.2	34.8
41	305.0	0.413	69.5	8.2	6.33	3.130	41.309	39.229	63.2	24.0	55.0	15.8	3.49	0.21	43.6	19.6	35.4
42	310.2	0.417	69.4	8.1	6.34	3.207	42.150	40.012	64.0	24.0	55.9	15.9	3.52	0.20	44.0	20.0	35.9
43	315.6	0.421	69.3	8.0	6.34	3.274	43.029	40.833	64.8	24.0	56.9	16.0	3.55	0.20	44.4	20.4	36.5
44	320.6	0.426	69.1	7.8	6.35	3.351	43.851	41.595	65.6	24.0	57.7	16.2	3.57	0.19	44.8	20.8	37.0
45	326.1	0.430	69.0	7.7	6.35	3.428	44.749	42.427	66.4	24.0	58.7	16.3	3.61	0.18	45.2	21.2	37.5
46	331.1	0.434	68.9	7.6	6.35	3.496	45.552	43.173	67.2	24.0	59.6	16.4	3.63	0.18	45.6	21.6	38.0
47	336.0	0.439	68.7	7.4	6.36	3.573	46.356	43.913	67.9	24.0	60.5	16.6	3.65	0.17	46.0	22.0	38.5
48	340.7	0.444	68.6	7.3	6.37	3.650	47.123	44.615	68.6	24.0	61.3	16.7	3.67	0.16	46.3	22.3	39.0
49	345.7	0.449	68.4	7.1	6.37	3.736	47.945	45.366	69.4	24.0	62.2	16.9	3.69	0.16	46.7	22.7	39.6
50	350.5	0.453	68.2	6.9	6.38	3.804	48.730	46.089	70.1	24.0	63.2	17.1	3.70	0.15	47.0	23.0	40.1
51	355.0	0.457	68.0	6.7	6.38	3.881	49.459	46.752	70.8	24.0	64.0	17.3	3.71	0.14	47.4	23.4	40.7
52	359.7	0.462	67.9	6.6	6.39	3.968	50.225	47.445	71.4	24.0	64.8	17.4	3.73	0.14	47.7	23.7	41.1
53	364.1	0.466	67.7	6.4	6.39	4.035	50.936	48.093	72.1	24.0	65.7	17.6	3.74	0.13	48.0	24.0	41.6
54	368.4	0.471	67.5	6.2	6.40	4.112	51.646	48.735	72.7	24.0	66.5	17.8	3.74	0.13	48.4	24.4	42.1
55	372.8	0.476	67.4	6.1	6.40	4.189	52.356	49.376	73.4	24.0	67.3	17.9	3.75	0.12	48.7	24.7	42.6
56	376.9	0.481	67.2	5.9	6.41	4.276	53.029	49.975	74.0	24.0	68.1	18.1	3.76	0.12	49.0	25.0	43.1
57	380.9	0.485	67.0	5.7	6.41	4.343	53.683	50.565	74.6	24.0	68.9	18.3	3.76	0.11	49.3	25.3	43.6
58	385.1	0.489	66.8	5.5	6.42	4.420	54.356	51.166	75.2	24.0	69.7	18.5	3.76	0.11	49.6	25.6	44.1
59	388.7	0.494	66.7	5.4	6.42	4.497	54.955	51.696	75.7	24.0	70.3	18.6	3.77	0.10	49.8	25.8	44.5

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	392.0	0.499	66.5	5.2	6.43	4.584	55.497	52.165	76.2	24.0	71.0	18.8	3.77	0.10	50.1	26.1	44.9
61	395.5	0.503	66.3	5.0	6.43	4.651	56.057	52.663	76.7	24.0	71.7	19.0	3.77	0.09	50.3	26.3	45.3
62	398.7	0.508	66.1	4.8	6.44	4.728	56.581	53.118	77.1	24.0	72.3	19.2	3.77	0.09	50.6	26.6	45.7
63	402.0	0.512	65.9	4.6	6.44	4.805	57.123	53.591	77.6	24.0	73.0	19.4	3.77	0.09	50.8	26.8	46.2
64	405.0	0.517	65.7	4.4	6.45	4.882	57.609	54.009	78.0	24.0	73.6	19.6	3.76	0.08	51.0	27.0	46.6
65	407.6	0.521	65.5	4.2	6.45	4.959	58.039	54.373	78.4	24.0	74.2	19.8	3.74	0.08	51.2	27.2	47.0
66	410.6	0.526	65.4	4.1	6.46	5.036	58.525	54.790	78.8	24.0	74.7	19.9	3.75	0.07	51.4	27.4	47.3
67	413.5	0.530	65.2	3.9	6.46	5.113	58.992	55.188	79.2	24.0	75.3	20.1	3.75	0.07	51.6	27.6	47.7
68	415.3	0.535	65.0	3.7	6.47	5.191	59.291	55.426	79.4	24.0	75.7	20.3	3.73	0.07	51.7	27.7	48.0
69	417.7	0.540	64.8	3.5	6.47	5.268	59.684	55.752	79.8	24.0	76.2	20.5	3.73	0.06	51.9	27.9	48.3
70	420.0	0.544	64.6	3.3	6.48	5.345	60.057	56.060	80.1	24.0	76.7	20.7	3.71	0.06	52.0	28.0	48.7
71	421.8	0.549	64.4	3.1	6.48	5.422	60.357	56.297	80.3	24.0	77.2	20.9	3.70	0.06	52.1	28.1	49.0
72	423.3	0.553	64.2	2.9	6.49	5.499	60.600	56.480	80.5	24.0	77.5	21.1	3.68	0.05	52.2	28.2	49.3
73	424.6	0.558	64.1	2.8	6.49	5.576	60.805	56.627	80.6	24.0	77.8	21.2	3.67	0.05	52.3	28.3	49.5
74	425.6	0.562	63.9	2.6	6.50	5.653	60.973	56.739	80.7	24.0	78.1	21.4	3.65	0.05	52.4	28.4	49.8
75	426.4	0.567	63.8	2.5	6.51	5.730	61.104	56.816	80.8	24.0	78.4	21.5	3.64	0.04	52.4	28.4	49.9
76	427.0	0.572	63.6	2.3	6.51	5.807	61.198	56.857	80.9	24.0	78.6	21.7	3.62	0.04	52.4	28.4	50.1
77	426.5	0.576	63.4	2.1	6.52	5.884	61.123	56.739	80.7	24.0	78.6	21.9	3.60	0.04	52.4	28.4	50.2
78	425.9	0.581	63.3	2.0	6.52	5.961	61.011	56.587	80.6	24.0	78.6	22.0	3.57	0.03	52.3	28.3	50.3
79	424.5	0.585	63.1	1.8	6.53	6.038	60.786	56.329	80.3	24.0	78.6	22.2	3.53	0.03	52.2	28.2	50.4
80	423.0	0.590	63.0	1.7	6.53	6.125	60.543	56.048	80.0	24.0	78.3	22.3	3.52	0.03	52.0	28.0	50.3
81	421.8	0.595	62.9	1.6	6.54	6.202	60.357	55.826	79.8	24.0	78.2	22.4	3.49	0.03	51.9	27.9	50.3
82	420.7	0.599	62.8	1.5	6.54	6.279	60.170	55.604	79.6	24.0	78.1	22.5	3.47	0.03	51.8	27.8	50.3
83	419.8	0.605	62.7	1.4	6.55	6.365	60.020	55.412	79.4	24.0	78.0	22.6	3.45	0.03	51.7	27.7	50.3
84	418.5	0.609	62.6	1.3	6.56	6.442	59.814	55.174	79.2	24.0	77.8	22.7	3.43	0.02	51.6	27.6	50.3
85	416.8	0.614	62.5	1.2	6.56	6.519	59.534	54.865	78.9	24.0	77.7	22.8	3.41	0.02	51.4	27.4	50.2
86	415.5	0.618	62.4	1.1	6.57	6.597	59.328	54.628	78.6	24.0	77.5	22.9	3.38	0.02	51.3	27.3	50.2
87	413.9	0.623	62.4	1.1	6.57	6.674	59.067	54.338	78.3	24.0	77.3	22.9	3.37	0.02	51.2	27.2	50.1
88	411.6	0.628	62.3	1.0	6.58	6.760	58.693	53.938	77.9	24.0	77.0	23.0	3.34	0.02	51.0	27.0	50.0
89	410.2	0.633	62.2	0.9	6.58	6.837	58.450	53.666	77.7	24.0	76.7	23.1	3.33	0.02	50.8	26.8	49.9
90	408.3	0.637	62.2	0.9	6.59	6.914	58.151	53.343	77.3	24.0	76.5	23.1	3.30	0.02	50.7	26.7	49.8
91	406.5	0.642	62.1	0.8	6.59	6.991	57.852	53.020	77.0	24.0	76.2	23.2	3.29	0.02	50.5	26.5	49.7
92	404.7	0.646	62.1	0.8	6.60	7.068	57.553	52.697	76.7	24.0	75.9	23.2	3.27	0.01	50.3	26.3	49.6
93	403.6	0.651	62.0	0.7	6.60	7.145	57.384	52.497	76.5	24.0	75.8	23.3	3.25	0.01	50.2	26.2	49.6
94	402.4	0.655	61.9	0.6	6.61	7.222	57.179	52.262	76.3	24.0	75.6	23.4	3.24	0.01	50.1	26.1	49.5
95	401.2	0.661	61.9	0.6	6.62	7.309	56.992	52.039	76.0	24.0	75.4	23.4	3.23	0.01	50.0	26.0	49.4
96	400.3	0.665	61.9	0.6	6.62	7.386	56.842	51.857	75.9	24.0	75.2	23.4	3.22	0.01	49.9	25.9	49.3
97	399.4	0.670	61.9	0.6	6.63	7.463	56.693	51.674	75.7	24.0	75.1	23.4	3.21	0.01	49.8	25.8	49.2
98	398.3	0.674	61.9	0.6	6.63	7.540	56.525	51.475	75.5	24.0	74.9	23.4	3.20	0.01	49.7	25.7	49.2
99	397.8	0.679	61.8	0.5	6.64	7.617	56.431	51.345	75.3	24.0	74.8	23.5	3.19	0.01	49.7	25.7	49.1
100	396.3	0.683	61.7	0.4	6.64	7.694	56.188	51.078	75.1	24.0	74.6	23.6	3.17	0.01	49.5	25.5	49.1

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	389.4	0.688	61.9	0.6	6.65	7.771	55.067	50.000	74.0	24.0	73.4	23.4	3.13	0.01	49.0	25.0	48.4
102	389.6	0.693	61.8	0.5	6.66	7.848	55.104	49.992	74.0	24.0	73.5	23.5	3.13	0.01	49.0	25.0	48.5
103	388.9	0.697	61.7	0.4	6.66	7.925	54.992	49.846	73.8	24.0	73.4	23.6	3.12	0.01	48.9	24.9	48.5
104	388.8	0.702	61.7	0.4	6.67	8.012	54.973	49.781	73.8	24.0	73.3	23.6	3.11	0.01	48.9	24.9	48.4
105	389.5	0.707	61.7	0.4	6.67	8.089	55.085	49.842	73.8	24.0	73.4	23.6	3.12	0.01	48.9	24.9	48.5
106	389.4	0.711	61.7	0.4	6.68	8.166	55.067	49.783	73.8	24.0	73.4	23.6	3.11	0.01	48.9	24.9	48.5
107	389.1	0.716	61.7	0.4	6.68	8.243	55.011	49.689	73.7	24.0	73.3	23.6	3.10	0.01	48.8	24.8	48.5
108	389.3	0.721	61.6	0.3	6.69	8.320	55.048	49.681	73.7	24.0	73.4	23.7	3.10	0.01	48.8	24.8	48.5
109	388.5	0.725	61.7	0.4	6.69	8.397	54.917	49.518	73.5	24.0	73.1	23.6	3.10	0.01	48.8	24.8	48.4
110	388.5	0.730	61.7	0.4	6.70	8.474	54.917	49.476	73.5	24.0	73.1	23.6	3.09	0.01	48.7	24.7	48.4
111	388.4	0.735	61.7	0.4	6.71	8.561	54.898	49.411	73.4	24.0	73.0	23.6	3.09	0.01	48.7	24.7	48.3
112	387.2	0.739	61.6	0.3	6.71	8.638	54.712	49.198	73.2	24.0	72.9	23.7	3.08	0.01	48.6	24.6	48.3
113	387.2	0.744	61.6	0.3	6.72	8.715	54.712	49.156	73.2	24.0	72.8	23.7	3.08	0.01	48.6	24.6	48.2
114	387.0	0.749	61.6	0.3	6.72	8.792	54.674	49.080	73.1	24.0	72.8	23.7	3.07	0.01	48.5	24.5	48.3
115	386.3	0.753	61.5	0.2	6.73	8.869	54.562	48.935	72.9	24.0	72.7	23.8	3.06	0.01	48.5	24.5	48.2
116	386.1	0.758	61.6	0.3	6.74	8.956	54.525	48.854	72.9	24.0	72.6	23.7	3.06	0.01	48.4	24.4	48.1
117	385.9	0.763	61.5	0.2	6.74	9.033	54.487	48.778	72.8	24.0	72.5	23.8	3.05	0.01	48.4	24.4	48.1
118	381.5	0.767	61.6	0.3	6.75	9.100	53.777	48.096	72.1	24.0	71.8	23.7	3.03	0.01	48.0	24.0	47.8
119	381.8	0.772	61.5	0.2	6.75	9.187	53.833	48.100	72.1	24.0	71.9	23.8	3.03	0.01	48.1	24.1	47.8
120	382.8	0.776	61.5	0.2	6.76	9.264	53.983	48.194	72.2	24.0	72.0	23.8	3.03	0.00	48.1	24.1	47.9
121	383.2	0.781	61.5	0.2	6.76	9.341	54.057	48.220	72.2	24.0	72.1	23.8	3.02	0.00	48.1	24.1	47.9
122	382.9	0.786	61.4	0.1	6.77	9.418	54.001	48.128	72.1	24.0	72.0	23.9	3.02	0.00	48.1	24.1	47.9
123	382.3	0.790	61.5	0.2	6.78	9.495	53.908	48.002	72.0	24.0	71.8	23.8	3.01	0.00	48.0	24.0	47.8
124	382.2	0.795	61.5	0.2	6.78	9.572	53.889	47.943	71.9	24.0	71.8	23.8	3.01	0.00	48.0	24.0	47.8
125	381.8	0.799	61.4	0.1	6.79	9.649	53.833	47.851	71.9	24.0	71.7	23.9	3.00	0.00	47.9	23.9	47.8
126	381.8	0.804	61.4	0.1	6.79	9.736	53.833	47.805	71.8	24.0	71.7	23.9	3.00	0.00	47.9	23.9	47.8
127	381.7	0.809	61.4	0.1	6.80	9.813	53.814	47.746	71.7	24.0	71.6	23.9	3.00	0.00	47.9	23.9	47.7
128	382.9	0.814	61.4	0.1	6.81	9.890	54.001	47.873	71.9	24.0	71.8	23.9	3.00	0.00	47.9	23.9	47.8
129	382.8	0.818	61.4	0.1	6.81	9.967	53.983	47.815	71.8	24.0	71.7	23.9	3.00	0.00	47.9	23.9	47.8
130	380.0	0.823	61.4	0.1	6.82	10.044	53.534	47.370	71.4	24.0	71.2	23.9	2.98	0.00	47.7	23.7	47.6
131	381.2	0.827	61.4	0.1	6.82	10.111	53.721	47.502	71.5	24.0	71.4	23.9	2.99	0.00	47.8	23.8	47.7
132	381.6	0.832	61.4	0.1	6.83	10.198	53.796	47.522	71.5	24.0	71.4	23.9	2.99	0.00	47.8	23.8	47.7
133	382.0	0.836	61.4	0.1	6.84	10.275	53.852	47.531	71.5	24.0	71.4	23.9	2.99	0.00	47.8	23.8	47.7
134	382.1	0.841	61.3	0.0	6.84	10.352	53.870	47.506	71.5	24.0	71.5	24.0	2.98	0.00	47.8	23.8	47.7
135	382.3	0.846	61.3	0.0	6.85	10.429	53.908	47.498	71.5	24.0	71.5	24.0	2.98	0.00	47.7	23.7	47.7
136	382.6	0.850	61.3	0.0	6.85	10.506	53.964	47.507	71.5	24.0	71.5	24.0	2.98	0.00	47.8	23.8	47.7
137	383.3	0.855	61.3	0.0	6.86	10.583	54.076	47.566	71.6	24.0	71.5	24.0	2.99	0.00	47.8	23.8	47.7
138	383.2	0.859	61.3	0.0	6.86	10.660	54.057	47.507	71.5	24.0	71.5	24.0	2.98	0.00	47.8	23.8	47.7
139	383.4	0.864	61.3	0.0	6.87	10.737	54.095	47.499	71.5	24.0	71.5	24.0	2.98	0.00	47.7	23.7	47.7
140	383.6	0.868	61.3	0.0	6.88	10.814	54.113	47.474	71.5	24.0	71.5	24.0	2.98	0.00	47.7	23.7	47.7
141	383.4	0.873	61.3	0.0	6.88	10.891	54.095	47.416	71.4	24.0	71.4	24.0	2.97	0.00	47.7	23.7	47.7

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	380.7	0.878	61.2	-0.1	6.89	10.968	53.646	46.975	71.0	24.0	71.0	24.1	2.95	0.00	47.5	23.5	47.6
143	381.7	0.883	61.3	0.0	6.89	11.055	53.814	47.078	71.1	24.0	71.1	24.0	2.96	0.00	47.5	23.5	47.6
144	382.6	0.887	61.3	0.0	6.90	11.123	53.964	47.174	71.2	24.0	71.2	24.0	2.96	0.00	47.6	23.6	47.6
145	383.2	0.891	61.2	-0.1	6.91	11.200	54.057	47.216	71.2	24.0	71.3	24.1	2.96	0.00	47.6	23.6	47.7
146	383.1	0.896	61.2	-0.1	6.91	11.286	54.039	47.152	71.2	24.0	71.2	24.1	2.96	0.00	47.6	23.6	47.7
147	382.9	0.901	61.2	-0.1	6.92	11.363	54.001	47.078	71.1	24.0	71.2	24.1	2.96	0.00	47.5	23.5	47.6
148	383.1	0.906	61.2	-0.1	6.92	11.440	54.039	47.069	71.1	24.0	71.2	24.1	2.95	0.00	47.5	23.5	47.6
149	382.6	0.910	61.1	-0.2	6.93	11.517	53.964	46.961	71.0	24.0	71.1	24.2	2.94	0.00	47.5	23.5	47.6
150	382.8	0.915	61.1	-0.2	6.94	11.594	53.983	46.936	70.9	24.0	71.1	24.2	2.94	0.00	47.5	23.5	47.6
151	383.0	0.919	61.1	-0.2	6.94	11.671	54.020	46.928	70.9	24.0	71.1	24.2	2.94	0.00	47.5	23.5	47.6
152	383.1	0.924	61.1	-0.2	6.95	11.749	54.039	46.903	70.9	24.0	71.1	24.2	2.94	0.00	47.5	23.5	47.6
153	381.4	0.929	61.1	-0.2	6.96	11.835	53.758	46.609	70.6	24.0	70.8	24.2	2.93	0.00	47.3	23.3	47.5
154	382.4	0.933	61.1	-0.2	6.96	11.912	53.926	46.715	70.7	24.0	70.9	24.2	2.93	0.00	47.4	23.4	47.6
155	382.5	0.938	61.1	-0.2	6.97	11.989	53.945	46.690	70.7	24.0	70.9	24.2	2.93	0.00	47.3	23.3	47.5
156	382.4	0.943	61.1	-0.2	6.97	12.066	53.926	46.632	70.6	24.0	70.9	24.2	2.92	-0.01	47.3	23.3	47.6
157	382.5	0.947	61.0	-0.3	6.98	12.143	53.945	46.607	70.6	24.0	70.9	24.3	2.92	-0.01	47.3	23.3	47.6
158	383.0	0.952	61.1	-0.2	6.99	12.220	54.020	46.631	70.6	24.0	70.9	24.2	2.92	-0.01	47.3	23.3	47.6
159	382.9	0.956	61.1	-0.2	6.99	12.297	54.001	46.573	70.6	24.0	70.8	24.2	2.92	-0.01	47.3	23.3	47.5
160	383.0	0.961	61.1	-0.2	7.00	12.374	54.020	46.548	70.5	24.0	70.8	24.2	2.92	-0.01	47.3	23.3	47.5
161	381.8	0.965	61.0	-0.3	7.00	12.451	53.833	46.343	70.3	24.0	70.6	24.3	2.91	-0.01	47.2	23.2	47.4
162	382.2	0.970	61.0	-0.3	7.01	12.529	53.889	46.350	70.4	24.0	70.6	24.3	2.91	-0.01	47.2	23.2	47.5
163	382.1	0.975	61.0	-0.3	7.02	12.606	53.870	46.292	70.3	24.0	70.6	24.3	2.90	-0.01	47.1	23.1	47.5
164	382.2	0.979	60.9	-0.4	7.02	12.683	53.889	46.267	70.3	24.0	70.6	24.4	2.90	-0.01	47.1	23.1	47.5
165	382.6	0.984	61.0	-0.3	7.03	12.760	53.964	46.291	70.3	24.0	70.6	24.3	2.90	-0.01	47.1	23.1	47.5
166	382.2	0.988	60.9	-0.4	7.04	12.837	53.889	46.184	70.2	24.0	70.5	24.4	2.90	-0.01	47.1	23.1	47.4
167	382.6	0.993	60.9	-0.4	7.04	12.914	53.964	46.208	70.2	24.0	70.6	24.4	2.90	-0.01	47.1	23.1	47.5
168	382.2	0.997	60.9	-0.4	7.05	12.991	53.889	46.101	70.1	24.0	70.5	24.4	2.89	-0.01	47.1	23.1	47.4
169	382.3	1.002	60.9	-0.4	7.05	13.068	53.908	46.076	70.1	24.0	70.5	24.4	2.89	-0.01	47.0	23.0	47.4
170	382.4	1.007	60.9	-0.4	7.06	13.145	53.926	46.051	70.1	24.0	70.5	24.4	2.88	-0.01	47.0	23.0	47.5
171	381.7	1.011	60.8	-0.5	7.07	13.222	53.814	45.912	69.9	24.0	70.4	24.5	2.88	-0.01	47.0	23.0	47.4
172	382.2	1.016	60.9	-0.4	7.07	13.309	53.889	45.930	69.9	24.0	70.4	24.4	2.88	-0.01	47.0	23.0	47.4
173	381.5	1.021	60.9	-0.4	7.08	13.386	53.777	45.791	69.8	24.0	70.2	24.4	2.87	-0.01	46.9	22.9	47.3
174	382.1	1.025	60.9	-0.4	7.09	13.463	53.870	45.831	69.8	24.0	70.3	24.4	2.88	-0.01	46.9	22.9	47.4
175	382.1	1.030	60.9	-0.4	7.09	13.540	53.870	45.789	69.8	24.0	70.2	24.4	2.87	-0.01	46.9	22.9	47.3
176	382.5	1.035	60.9	-0.4	7.10	13.617	53.945	45.812	69.8	24.0	70.2	24.4	2.87	-0.01	46.9	22.9	47.3
177	382.3	1.040	60.8	-0.5	7.11	13.703	53.908	45.733	69.7	24.0	70.2	24.5	2.87	-0.01	46.9	22.9	47.3
178	382.1	1.044	60.7	-0.6	7.11	13.780	53.870	45.660	69.7	24.0	70.2	24.6	2.86	-0.01	46.8	22.8	47.4
179	382.0	1.049	60.8	-0.5	7.12	13.857	53.852	45.602	69.6	24.0	70.1	24.5	2.86	-0.01	46.8	22.8	47.3
180	381.6	1.053	60.8	-0.5	7.13	13.935	53.796	45.512	69.5	24.0	70.0	24.5	2.86	-0.01	46.8	22.8	47.2
181	368.2	1.058	61.9	0.6	7.13	14.012	51.609	43.590	67.6	24.0	67.0	23.4	2.86	0.01	45.8	21.8	45.2
182	323.7	1.064	65.0	3.7	7.14	14.108	44.356	37.311	61.3	24.0	57.6	20.3	2.83	0.10	42.7	18.7	39.0

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	322.2	1.068	66.0	4.7	7.15	14.185	44.113	37.068	61.1	24.0	56.4	19.3	2.92	0.13	42.5	18.5	37.8
184	326.0	1.072	65.6	4.3	7.15	14.252	44.730	37.568	61.6	24.0	57.2	19.7	2.91	0.12	42.8	18.8	38.4
185	328.7	1.077	65.3	4.0	7.16	14.339	45.160	37.897	61.9	24.0	57.9	20.0	2.90	0.11	42.9	18.9	38.9
186	330.7	1.082	65.2	3.9	7.17	14.416	45.496	38.150	62.2	24.0	58.2	20.1	2.90	0.10	43.1	19.1	39.2
187	332.8	1.086	65.0	3.7	7.17	14.493	45.833	38.403	62.4	24.0	58.7	20.3	2.90	0.10	43.2	19.2	39.5
188	334.4	1.091	64.9	3.6	7.18	14.570	46.094	38.591	62.6	24.0	59.0	20.4	2.89	0.09	43.3	19.3	39.7
189	336.3	1.096	64.8	3.5	7.19	14.647	46.412	38.827	62.8	24.0	59.4	20.5	2.89	0.09	43.4	19.4	39.9
190	337.2	1.100	64.6	3.3	7.19	14.724	46.562	38.919	62.9	24.0	59.6	20.7	2.88	0.09	43.5	19.5	40.1
191	339.0	1.105	64.5	3.2	7.20	14.801	46.842	39.122	63.1	24.0	59.9	20.8	2.88	0.08	43.6	19.6	40.3
192	340.1	1.109	64.4	3.1	7.20	14.878	47.029	39.245	63.2	24.0	60.1	20.9	2.88	0.08	43.6	19.6	40.5
193	340.7	1.114	64.4	3.1	7.21	14.955	47.123	39.288	63.3	24.0	60.2	20.9	2.88	0.08	43.6	19.6	40.6
194	341.5	1.118	64.3	3.0	7.22	15.032	47.253	39.363	63.4	24.0	60.4	21.0	2.87	0.08	43.7	19.7	40.7
195	343.0	1.123	64.2	2.9	7.22	15.109	47.496	39.533	63.5	24.0	60.6	21.1	2.87	0.07	43.8	19.8	40.9
196	343.6	1.128	64.1	2.8	7.23	15.186	47.590	39.575	63.6	24.0	60.8	21.2	2.87	0.07	43.8	19.8	41.0
197	344.6	1.132	64.1	2.8	7.24	15.263	47.758	39.681	63.7	24.0	60.9	21.2	2.87	0.07	43.8	19.8	41.1
198	345.2	1.137	64.0	2.7	7.24	15.340	47.852	39.724	63.7	24.0	61.0	21.3	2.86	0.07	43.9	19.9	41.2
199	345.6	1.141	63.9	2.6	7.25	15.418	47.926	39.750	63.7	24.0	61.1	21.4	2.86	0.07	43.9	19.9	41.3
200	346.1	1.146	63.9	2.6	7.26	15.495	48.001	39.776	63.8	24.0	61.2	21.4	2.86	0.06	43.9	19.9	41.3
201	346.6	1.150	63.8	2.5	7.26	15.572	48.095	39.818	63.8	24.0	61.3	21.5	2.86	0.06	43.9	19.9	41.4
202	347.7	1.155	63.8	2.5	7.27	15.649	48.263	39.923	63.9	24.0	61.4	21.5	2.86	0.06	44.0	20.0	41.5
203	348.0	1.160	63.8	2.5	7.28	15.726	48.319	39.933	63.9	24.0	61.5	21.5	2.85	0.06	44.0	20.0	41.5
204	349.3	1.164	63.7	2.4	7.28	15.803	48.524	40.069	64.1	24.0	61.7	21.6	2.86	0.06	44.0	20.0	41.6
205	349.9	1.169	63.6	2.3	7.29	15.880	48.618	40.110	64.1	24.0	61.8	21.7	2.85	0.06	44.1	20.1	41.7
206	350.7	1.173	63.6	2.3	7.30	15.957	48.749	40.183	64.2	24.0	61.9	21.7	2.85	0.06	44.1	20.1	41.8
207	351.3	1.178	63.6	2.3	7.30	16.034	48.861	40.239	64.2	24.0	62.0	21.7	2.85	0.06	44.1	20.1	41.9
208	351.7	1.182	63.6	2.3	7.31	16.111	48.917	40.249	64.2	24.0	62.0	21.7	2.85	0.06	44.1	20.1	41.9
209	352.5	1.187	63.5	2.2	7.32	16.188	49.048	40.321	64.3	24.0	62.1	21.8	2.85	0.05	44.2	20.2	41.9
210	353.1	1.192	63.5	2.2	7.32	16.265	49.141	40.361	64.4	24.0	62.2	21.8	2.85	0.05	44.2	20.2	42.0
211	353.6	1.197	63.4	2.1	7.33	16.352	49.235	40.397	64.4	24.0	62.3	21.9	2.85	0.05	44.2	20.2	42.1
212	354.1	1.201	63.4	2.1	7.34	16.429	49.310	40.421	64.4	24.0	62.3	21.9	2.85	0.05	44.2	20.2	42.1
213	354.8	1.206	63.3	2.0	7.35	16.506	49.422	40.477	64.5	24.0	62.5	22.0	2.84	0.05	44.2	20.2	42.2
214	355.2	1.210	63.3	2.0	7.35	16.583	49.496	40.501	64.5	24.0	62.5	22.0	2.84	0.05	44.3	20.3	42.3
215	356.0	1.215	63.3	2.0	7.36	16.660	49.627	40.572	64.6	24.0	62.6	22.0	2.84	0.05	44.3	20.3	42.3
216	356.4	1.220	63.2	1.9	7.37	16.737	49.683	40.581	64.6	24.0	62.6	22.1	2.84	0.05	44.3	20.3	42.4
217	356.7	1.225	63.2	1.9	7.37	16.823	49.739	40.584	64.6	24.0	62.7	22.1	2.84	0.05	44.3	20.3	42.4
218	356.9	1.229	63.2	1.9	7.38	16.901	49.758	40.561	64.6	24.0	62.7	22.1	2.84	0.05	44.3	20.3	42.4
219	357.9	1.234	63.1	1.8	7.39	16.978	49.926	40.663	64.7	24.0	62.8	22.2	2.83	0.04	44.3	20.3	42.5
220	358.8	1.238	63.1	1.8	7.39	17.055	50.076	40.748	64.7	24.0	63.0	22.2	2.83	0.04	44.4	20.4	42.6
221	359.3	1.243	63.0	1.7	7.40	17.132	50.151	40.772	64.8	24.0	63.0	22.3	2.83	0.04	44.4	20.4	42.7
222	359.9	1.248	63.0	1.7	7.41	17.209	50.263	40.826	64.8	24.0	63.1	22.3	2.83	0.04	44.4	20.4	42.7
223	359.7	1.252	63.0	1.7	7.41	17.286	50.225	40.756	64.8	24.0	63.1	22.3	2.83	0.04	44.4	20.4	42.7

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	361.0	1.257	63.0	1.7	7.42	17.363	50.431	40.888	64.9	24.0	63.2	22.3	2.83	0.04	44.4	20.4	42.7
225	361.6	1.261	63.0	1.7	7.43	17.440	50.525	40.926	64.9	24.0	63.3	22.3	2.83	0.04	44.5	20.5	42.8
226	361.8	1.266	62.9	1.6	7.44	17.517	50.562	40.918	64.9	24.0	63.3	22.4	2.83	0.04	44.5	20.5	42.8
227	362.1	1.270	62.9	1.6	7.44	17.594	50.618	40.925	64.9	24.0	63.4	22.4	2.82	0.04	44.5	20.5	42.9
228	362.4	1.274	62.8	1.5	7.45	17.661	50.655	40.922	64.9	24.0	63.4	22.5	2.82	0.04	44.5	20.5	43.0
229	363.0	1.279	62.8	1.5	7.46	17.748	50.768	40.970	65.0	24.0	63.4	22.5	2.82	0.04	44.5	20.5	43.0
230	362.9	1.283	62.8	1.5	7.46	17.815	50.749	40.920	64.9	24.0	63.4	22.5	2.82	0.04	44.5	20.5	43.0
231	364.0	1.289	62.8	1.5	7.47	17.902	50.917	41.015	65.0	24.0	63.6	22.5	2.82	0.04	44.5	20.5	43.1
232	364.5	1.293	62.8	1.5	7.48	17.979	51.010	41.052	65.1	24.0	63.6	22.5	2.82	0.04	44.5	20.5	43.1
233	365.0	1.298	62.7	1.4	7.48	18.056	51.085	41.074	65.1	24.0	63.7	22.6	2.82	0.03	44.5	20.5	43.1
234	366.1	1.302	62.7	1.4	7.49	18.133	51.272	41.188	65.2	24.0	63.8	22.6	2.82	0.03	44.6	20.6	43.2
235	367.1	1.306	62.6	1.3	7.50	18.201	51.422	41.275	65.3	24.0	64.0	22.7	2.82	0.03	44.6	20.6	43.3
236	368.2	1.311	62.6	1.3	7.50	18.278	51.609	41.389	65.4	24.0	64.1	22.7	2.83	0.03	44.7	20.7	43.4
237	369.7	1.316	62.6	1.3	7.51	18.364	51.852	41.542	65.5	24.0	64.2	22.7	2.83	0.03	44.8	20.8	43.4
238	370.5	1.321	62.6	1.3	7.52	18.441	51.982	41.609	65.6	24.0	64.3	22.7	2.83	0.03	44.8	20.8	43.5
239	371.2	1.325	62.6	1.3	7.53	18.518	52.095	41.660	65.7	24.0	64.4	22.7	2.83	0.03	44.8	20.8	43.6
240	371.3	1.330	62.5	1.2	7.53	18.595	52.113	41.635	65.6	24.0	64.4	22.8	2.83	0.03	44.8	20.8	43.6
241	371.3	1.334	62.5	1.2	7.54	18.672	52.113	41.595	65.6	24.0	64.4	22.8	2.82	0.03	44.8	20.8	43.6
242	372.3	1.339	62.4	1.1	7.55	18.749	52.282	41.692	65.7	24.0	64.6	22.9	2.82	0.03	44.8	20.8	43.8
243	373.1	1.343	62.4	1.1	7.56	18.827	52.412	41.758	65.8	24.0	64.6	22.9	2.83	0.03	44.9	20.9	43.7
244	374.0	1.348	62.4	1.1	7.56	18.904	52.562	41.839	65.8	24.0	64.7	22.9	2.83	0.03	44.9	20.9	43.8
245	374.5	1.353	62.4	1.1	7.57	18.990	52.637	41.854	65.9	24.0	64.8	22.9	2.83	0.03	44.9	20.9	43.8
246	373.9	1.358	62.4	1.1	7.58	19.067	52.543	41.737	65.7	24.0	64.7	22.9	2.82	0.03	44.9	20.9	43.8
247	374.8	1.362	62.3	1.0	7.58	19.144	52.693	41.818	65.8	24.0	64.8	23.0	2.82	0.02	44.9	20.9	43.9
248	376.1	1.367	62.3	1.0	7.59	19.221	52.898	41.943	65.9	24.0	65.0	23.0	2.82	0.02	45.0	21.0	44.0
249	376.2	1.371	62.2	0.9	7.60	19.298	52.917	41.918	65.9	24.0	65.0	23.1	2.81	0.02	45.0	21.0	44.1
250	377.3	1.376	62.2	0.9	7.61	19.375	53.085	42.013	66.0	24.0	65.1	23.1	2.82	0.02	45.0	21.0	44.1
251	376.9	1.381	62.2	0.9	7.61	19.452	53.029	41.926	65.9	24.0	65.0	23.1	2.81	0.02	45.0	21.0	44.1
252	378.2	1.385	62.2	0.9	7.62	19.529	53.235	42.051	66.1	24.0	65.2	23.1	2.82	0.02	45.0	21.0	44.2
253	378.1	1.390	62.2	0.9	7.63	19.607	53.216	41.995	66.0	24.0	65.1	23.1	2.81	0.02	45.0	21.0	44.1
254	377.7	1.394	62.1	0.8	7.64	19.684	53.160	41.909	65.9	24.0	65.1	23.2	2.81	0.02	45.0	21.0	44.1
255	378.5	1.399	62.1	0.8	7.64	19.761	53.291	41.973	66.0	24.0	65.2	23.2	2.81	0.02	45.0	21.0	44.2
256	379.0	1.403	62.0	0.7	7.65	19.838	53.366	41.992	66.0	24.0	65.3	23.3	2.80	0.02	45.0	21.0	44.3
257	379.7	1.407	62.1	0.8	7.66	19.905	53.478	42.046	66.0	24.0	65.3	23.2	2.81	0.02	45.0	21.0	44.3
258	380.5	1.412	62.0	0.7	7.66	19.982	53.609	42.109	66.1	24.0	65.4	23.3	2.81	0.02	45.1	21.1	44.3
259	380.5	1.413	62.1	0.8	7.67	19.992	53.609	42.104	66.1	24.0	65.3	23.2	2.81	0.02	45.1	21.1	44.3

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)

Failure Sample Photographs

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. U-2412B

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project 39406.1.1 **County** GUILFORD **Owner**

Date: Sampled 3/13/13 **Received** 11/14/13 **Reported** 11/18/13

Sampled from ROADWAY **By** N ROBERSON

Submitted by M HURT 1995 **Standard Specifications**

788367 TO 788367
11/26/13

TEST RESULTS

Proj. Sample No.		ST-21#1					
Lab. Sample No.		788367					
Retained #4 Sieve	%	-					
Passing #10 Sieve	%	100					
Passing #40 Sieve	%	100					
Passing #200 Sieve	%	88					

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	0.8					
Fine Sand Ret - #270	%	22.4					
Silt 0.05 - 0.005 mm	%	64.7					
Clay < 0.005 mm	%	12.1					
T-#		T-5786					
Specific Gravity		2.792					

L. L.		42					
P. I.		NP					
AASHTO Classification		A-5(4)					
Station		403+45					
Offset		3 RT					
Alignment		L					
Location							
Depth (Ft)		24.60					
	to	26.00					
Final Moisture Content	%	23.22					

cc: N ROBERSON
SURIYATI BS

Soils Engineer

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	19.42	23.20	**Plastic Limits:**	0	
Dry Density (pcf):	105.47	110.35	**Plasticity Index (%):**	0	
Saturation (%):	81.54	109.44			
Void Ratio:	0.6738	0.5997	**Specific Gravity:**	2.827	Measured

Soil Description: Tannish colored clayey silt

Project Number: 39406.1.1 **Depth:** 24.6 - 26.0 ft

Sample Number: ST-21 **Boring Number:**

Project: U-2412B

Client: T-5786

Location: Guilford County (Sta. 403+45)

Remarks: Solid height is 0.59947 inches ; Blows/ft = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	19.42	23.20	**Plastic Limits:**	0	
Dry Density (pcf):	105.47	110.35	**Plasticity Index (%):**	0	
Saturation (%):	81.54	109.44			
Void Ratio:	0.6738	0.5997	**Specific Gravity:**	2.827	Measured

Soil Description: Tannish colored clayey silt

Project Number: 39406.1.1 **Depth:** 24.6 - 26.0 ft

Sample Number: ST-21 **Boring Number:**

Project: U-2412B

Client: T-5786

Location: Guilford County (Sta. 403+45)

Remarks: Solid height is 0.59947 inches ; Blows/ft = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	19.42	23.20	**Plastic Limits:**	0	
Dry Density (pcf):	105.47	110.35	**Plasticity Index (%):**	0	
Saturation (%):	81.54	109.44			
Void Ratio:	0.6738	0.5997	**Specific Gravity:**	2.827	Measured

Soil Description: Tannish colored clayey silt

Project Number: 39406.1.1 **Depth:** 24.6 - 26.0 ft

Sample Number: ST-21 **Boring Number:**

Project: U-2412B

Client: T-5786

Location: Guilford County (Sta. 403+45)

Remarks: Solid height is 0.59947 inches ; Blows/ft = NA

Consolidation Test Results
Summary

Project: U-2412B
Location: Guilford County (Sta. 403+45)
Job Number: T-5786

Project Number: 39406.1.1

Sample Number: ST-21
Boring Number:
Depth: 24.6 - 26.0 ft
Sample Type: Undisturbed

Soil Description:
Tannish colored clayey silt
Remarks:
Solid height is 0.59947 inches ; Blows/ft = NA

Test Number:
Test Date:

Index	Load Sequence (tsf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	1.0005	0.4027	0.00	0.6738	0.000		0.000	
1	0.063	0.0021	0.9984	0.4006	0.21	0.6702	0.203		3809.016	
2	0.125	0.0045	0.9960	0.3982	0.45	0.6662	0.207		3715.499	
3	0.250	0.0084	0.9921	0.3943	0.84	0.6597	0.127		5997.025	
4	0.500	0.0147	0.9858	0.3880	1.47	0.6492	0.069		10914.081	
5	1.000	0.0226	0.9779	0.3801	2.26	0.6360	0.055		13405.362	
6	2.000	0.0336	0.9669	0.3691	3.36	0.6176	0.048		15102.762	
7	4.000	0.0454	0.9551	0.3573	4.54	0.5978	0.046		15412.070	
8	2.000	0.0420	0.9585	0.3607	4.20	0.6035	0.000		0.000	
9	1.000	0.0396	0.9609	0.3631	3.96	0.6075	0.000		0.000	
10	0.500	0.0367	0.9638	0.3660	3.67	0.6124	0.000		0.000	
11	1.000	0.0394	0.9611	0.3633	3.94	0.6078	0.000		0.000	
12	2.000	0.0422	0.9583	0.3605	4.22	0.6032	0.000		0.000	
13	4.000	0.0465	0.9540	0.3562	4.65	0.5960	0.000		0.000	
14	8.000	0.0601	0.9404	0.3426	6.01	0.5732	0.052		13261.857	
15	16.000	0.0784	0.9221	0.3243	7.84	0.5426	0.184		3581.589	
16	4.000	0.0746	0.9259	0.3281	7.46	0.5490	0.000		0.000	
17	0.016	0.0443	0.9562	0.3584	4.43	0.5997	0.000		0.000	

Tested By:

Checked By:

Consolidation Test
Consolidation Specimen Information

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County (Sta. 403+45)
Job Number: T-5786 **Test Date:**

Sample Number: ST-21 **Soil Description:**
Boring Number: Tannish colored clayey silt
Depth: 24.6 - 26.0 ft **Remarks:**
Sample Type: Undisturbed Solid height is 0.59947 inches ; Blows/ft = NA

Test Number:
Liquid Limit: 0.0000 **Initial Void Ratio:** 0.6738 **Initial Height (in):** 1.0005
Plastic Limit: 0.0000 **Plasticity Index (%):** 0.0000 **Initial Diameter (in):** 2.4996
Specific Gravity: 2.8270 Measured **Weight of Ring (g):** 111.1100

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	162.32	167.45
Dry Soil + Container (g)	135.92	135.92
Weight of Container (g)	0.00	0.00
Moisture Content (%)	19.42	23.20
Void Ratio	0.6738	0.5997
Saturation (%)	81.54	109.44
Dry Density (pcf)	105.47	110.35

Tested By: **Checked By:**

ncdot

Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date

Tested By:

Effective Stress at Maximum Deviator Stress Criterion

Deviator Stress Vs. Axial Strain

Initial	Specimen A	B	C	D
Water Content (%)	20.1	20.1	20.1	
Dry Density (pcf)	107.9	109.7	109.7	
Saturation (%)	91.32	95.54	95.47	
Void Ratio	0.611	0.584	0.585	
Diameter (in)	2.857	2.891	2.982	
Height (in)	6.100	5.855	5.505	
Specific Gravity	2.79	2.79	2.79	
Liquid Limit	0	0	0	
Plastic Limit	0	0	0	
After Consolidation	**A**	**B**	**C**	**D**
B-Value	0.00	0.00	0.00	
Water Content (%)	20.5	20.7	20.7	
Dry Density (pcf)	109.58	110.81	110.76	
Saturation (%)	100.00	100.00	100.00	
Void Ratio	0.510	0.493	0.494	
Effective Stress (psi)	6.0	12.0	24.0	
Back Press. (psi)	59.7	59.8	59.9	
Rate of Strain	0.009	0.009	0.009	

Maximium Deviator Stress Criterion		After Shear	A	B	C	D
C (psi)	0.0	σ'1 at Failure (psi)	16.32	30.62	38.70	
C' (psi)	0.0	σ'3 at Failure (psi)	4.51	11.86	22.67	
Ø (deg)	0.0					
Ø' (deg)	0.0					

Project:	U-2412B	N/A	N/A	N/A	N/A
Location:	Guilford County (Sta. 403+45)				
Project Number:	39406.1.1				
Boring Number:					
Sample Number:	ST-21				
Depth:	24.6 - 26.0 ft				
Sample Type:	Undisturbed	Failure Photographs			
Description:	Tannish colored clayey silt				
Test Type	Consolidated Undrained				
Remarks	Multi-Stage				

ncdot

Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date:

Tested By:

Deviator Stress vs. Axial Strain

Principal Stress Ratio vs. Axial Strain

Change in Pore Pressure vs. Axial Strain
Change in Pore Pressure (psi)
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
-6.0
0.000
5.000
10.000
15.000
20.000
25.000
Axial Strain (%)
Specimen A
Specimen B
Specimen C
Specimen D

Mohr Stress Circles at Maximum Deviator Stress Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at Maximum Principal Stress Ratio Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at 15% Axial Strain Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)
Q (psi)
P' (psi)
0.0
10.0
20.0
30.0
40.0
Specimen A
Specimen B
Specimen C
Specimen D
Tangent Line

Stress Paths (Total)
(C' = 0.0 Ø' = 0.0)
Q (psi)
P (psi)
0.0
10.0
20.0
30.0
40.0

Specimen A Shear Data

CU Triaxial Test

ncdot

File Location
T-5786.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5786
Sample Location: Guilford County (Sta. 403+45)
Sample Description: Tannish colored clayey silt
Remarks: 25° shear plane with slicken side

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.7920001
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.857	2.843	
Height (in)	6.100	6.063	
Weight (grams)	1330.00		1364.00
Moisture (%)	20.14		23.22
Dry Density (pcf)	107.87	109.58	
Saturation (%)	91.32	100.00	
Void Ratio	0.611	0.510	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 65.700
Effective Confining Stress (psi): 6.0
Corrected Peak Deviator Stress (psi): 11.808 at reading number: 26

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	35.0	0.086	59.7	0.0	6.35	0.000	0.000	0.000	6.0	6.0	6.0	6.0	1.00	0.00	6.0	0.0	6.0
1	57.1	0.091	60.4	0.7	6.35	0.085	3.485	3.450	9.4	6.0	8.7	5.3	1.65	0.20	7.7	1.7	7.0
2	61.9	0.096	60.8	1.0	6.36	0.170	4.244	4.171	10.1	6.0	9.1	4.9	1.85	0.25	8.0	2.1	7.0
3	64.9	0.101	61.0	1.3	6.36	0.245	4.713	4.607	10.6	6.0	9.3	4.7	1.99	0.28	8.3	2.3	7.0
4	67.9	0.106	61.1	1.4	6.37	0.320	5.183	5.042	11.0	6.0	9.6	4.6	2.11	0.28	8.5	2.5	7.1
5	70.6	0.111	61.2	1.4	6.37	0.405	5.616	5.437	11.4	6.0	10.0	4.5	2.20	0.27	8.7	2.7	7.2
6	73.1	0.115	61.4	1.6	6.38	0.480	6.014	5.799	11.8	6.0	10.1	4.3	2.34	0.28	8.9	2.9	7.2
7	75.7	0.120	61.5	1.7	6.38	0.556	6.411	6.160	12.1	6.0	10.4	4.2	2.46	0.28	9.0	3.1	7.3
8	78.2	0.124	61.5	1.8	6.39	0.631	6.808	6.521	12.5	6.0	10.7	4.2	2.56	0.27	9.2	3.3	7.5
9	80.6	0.129	61.5	1.8	6.39	0.706	7.187	6.863	12.8	6.0	11.0	4.2	2.65	0.26	9.4	3.4	7.6
10	82.9	0.134	61.6	1.8	6.40	0.791	7.549	7.183	13.1	6.0	11.3	4.1	2.75	0.26	9.6	3.6	7.7
11	85.3	0.139	61.6	1.8	6.40	0.866	7.928	7.524	13.5	6.0	11.6	4.1	2.83	0.25	9.7	3.8	7.9
12	87.5	0.143	61.6	1.8	6.41	0.942	8.271	7.829	13.8	6.0	11.9	4.1	2.90	0.24	9.9	3.9	8.0
13	90.3	0.148	61.5	1.7	6.41	1.026	8.722	8.236	14.2	6.0	12.5	4.2	2.95	0.21	10.1	4.1	8.4
14	92.5	0.153	61.7	1.9	6.42	1.102	9.065	8.539	14.5	6.0	12.6	4.0	3.12	0.23	10.2	4.3	8.3
15	94.8	0.158	61.6	1.9	6.42	1.177	9.427	8.860	14.8	6.0	12.9	4.1	3.18	0.21	10.4	4.4	8.5
16	96.9	0.163	61.6	1.8	6.43	1.262	9.752	9.140	15.1	6.0	13.3	4.1	3.22	0.20	10.5	4.6	8.7
17	99.3	0.167	61.6	1.8	6.43	1.337	10.131	9.478	15.4	6.0	13.6	4.1	3.30	0.19	10.7	4.7	8.9
18	101.7	0.172	61.5	1.8	6.44	1.413	10.510	9.815	15.8	6.0	14.0	4.2	3.36	0.18	10.9	4.9	9.1

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	104.0	0.176	61.5	1.7	6.44	1.488	10.871	10.134	16.1	6.0	14.4	4.2	3.39	0.17	11.0	5.1	9.3
20	105.8	0.182	61.4	1.6	6.45	1.573	11.160	10.376	16.3	6.0	14.7	4.3	3.41	0.16	11.1	5.2	9.5
21	108.3	0.186	61.4	1.7	6.45	1.648	11.558	10.729	16.7	6.0	15.0	4.3	3.51	0.16	11.3	5.4	9.6
22	110.0	0.191	61.4	1.6	6.46	1.723	11.828	10.958	16.9	6.0	15.3	4.3	3.54	0.15	11.4	5.5	9.8
23	112.2	0.195	61.3	1.6	6.46	1.799	12.172	11.257	17.2	6.0	15.7	4.4	3.56	0.14	11.6	5.6	10.0
24	114.3	0.200	61.3	1.5	6.47	1.883	12.497	11.533	17.5	6.0	16.0	4.4	3.60	0.13	11.7	5.8	10.2
25	116.1	0.205	61.2	1.4	6.47	1.959	12.786	11.777	17.7	6.0	16.3	4.5	3.61	0.12	11.8	5.9	10.4
26	116.4	0.206	61.2	1.4	6.48	1.968	12.822	11.808	17.8	6.0	16.3	4.5	3.62	0.12	11.9	5.9	10.4

Specimen B Shear Data

CU Triaxial Test

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File Location
T-5786.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5786
Sample Location: Guilford County (Sta. 403+45)
Sample Description:
Remarks: Same as Specimen A

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.7920001
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.891	2.879	
Height (in)	5.855	5.848	
Weight (grams)	1330.00		1364.00
Moisture (%)	20.14		23.22
Dry Density (pcf)	109.72	110.81	
Saturation (%)	95.54	100.00	
Void Ratio	0.584	0.493	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 71.800
Effective Confining Stress (psi): 12.0
Corrected Peak Deviator Stress (psi): 18.764 at reading number: 28

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	101.0	0.215	59.8	0.0	6.51	0.000	0.000	0.000	12.0	12.0	12.0	12.0	1.00	0.00	12.0	0.0	12.0
1	138.7	0.219	61.2	1.4	6.51	0.068	5.795	5.765	17.7	12.0	16.4	10.6	1.54	0.24	14.9	2.9	13.5
2	150.4	0.224	61.5	1.7	6.52	0.156	7.592	7.520	19.5	12.0	17.8	10.3	1.73	0.23	15.7	3.8	14.0
3	157.8	0.229	61.7	1.9	6.52	0.234	8.737	8.627	20.6	12.0	18.7	10.1	1.85	0.22	16.3	4.3	14.4
4	164.0	0.234	61.7	1.9	6.53	0.312	9.688	9.538	21.5	12.0	19.6	10.1	1.95	0.20	16.7	4.8	14.9
5	169.7	0.238	61.9	2.0	6.53	0.391	10.551	10.360	22.3	12.0	20.3	9.9	2.04	0.20	17.2	5.2	15.1
6	174.5	0.243	61.9	2.0	6.54	0.478	11.291	11.054	23.0	12.0	21.0	9.9	2.11	0.19	17.5	5.5	15.5
7	178.6	0.247	61.8	2.0	6.54	0.547	11.925	11.651	23.6	12.0	21.6	10.0	2.17	0.17	17.8	5.8	15.8
8	182.7	0.252	61.8	2.0	6.55	0.635	12.559	12.237	24.2	12.0	22.2	10.0	2.22	0.16	18.1	6.1	16.1
9	186.3	0.257	61.7	1.9	6.55	0.713	13.105	12.739	24.7	12.0	22.8	10.1	2.27	0.15	18.4	6.4	16.4
10	189.8	0.261	61.7	1.8	6.56	0.791	13.651	13.241	25.2	12.0	23.4	10.1	2.31	0.14	18.6	6.6	16.8
11	193.3	0.266	61.5	1.7	6.57	0.869	14.179	13.724	25.7	12.0	24.0	10.3	2.34	0.13	18.8	6.9	17.1
12	196.4	0.271	61.4	1.6	6.57	0.947	14.655	14.154	26.1	12.0	24.6	10.4	2.36	0.11	19.1	7.1	17.5
13	199.3	0.275	61.5	1.6	6.58	1.025	15.113	14.566	26.5	12.0	24.9	10.3	2.41	0.11	19.3	7.3	17.6
14	202.4	0.280	61.3	1.5	6.58	1.103	15.589	14.995	27.0	12.0	25.4	10.5	2.43	0.10	19.5	7.5	18.0
15	205.4	0.284	61.3	1.4	6.59	1.181	16.047	15.406	27.4	12.0	25.9	10.5	2.46	0.09	19.7	7.7	18.2
16	207.9	0.289	61.2	1.4	6.59	1.259	16.434	15.746	27.7	12.0	26.4	10.6	2.48	0.09	19.9	7.9	18.5
17	210.4	0.293	61.1	1.2	6.60	1.338	16.804	16.068	28.0	12.0	26.8	10.7	2.50	0.08	20.0	8.0	18.8
18	212.9	0.298	60.9	1.1	6.60	1.416	17.191	16.407	28.4	12.0	27.3	10.9	2.51	0.07	20.2	8.2	19.1

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	215.5	0.303	60.8	1.0	6.61	1.494	17.597	16.763	28.7	12.0	27.8	11.0	2.52	0.06	20.4	8.4	19.4
20	217.7	0.308	60.8	1.0	6.61	1.582	17.931	17.043	29.0	12.0	28.1	11.0	2.55	0.06	20.5	8.5	19.5
21	220.1	0.312	60.7	0.9	6.62	1.660	18.301	17.363	29.3	12.0	28.5	11.1	2.56	0.05	20.7	8.7	19.8
22	221.8	0.317	60.5	0.7	6.62	1.738	18.565	17.579	29.6	12.0	28.8	11.3	2.56	0.04	20.8	8.8	20.0
23	223.8	0.321	60.5	0.6	6.63	1.816	18.865	17.828	29.8	12.0	29.2	11.3	2.57	0.04	20.9	8.9	20.3
24	225.5	0.326	60.3	0.5	6.63	1.894	19.129	18.043	30.0	12.0	29.5	11.5	2.57	0.03	21.0	9.0	20.5
25	227.4	0.331	60.2	0.4	6.64	1.982	19.428	18.286	30.3	12.0	29.9	11.6	2.58	0.02	21.1	9.1	20.7
26	229.6	0.336	60.1	0.2	6.64	2.060	19.763	18.592	30.6	12.0	30.3	11.7	2.58	0.01	21.3	9.3	21.0
27	230.6	0.340	59.9	0.0	6.65	2.138	19.922	18.731	30.7	12.0	30.7	11.9	2.57	0.00	21.3	9.4	21.3
28	230.9	0.341	59.9	0.1	6.65	2.148	19.957	18.764	30.7	12.0	30.6	11.9	2.58	0.01	21.4	9.4	21.2

Specimen C Shear Data

CU Triaxial Test

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File Location
T-5786.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5786
Sample Location: Guilford County (Sta. 403+45)
Sample Description:
Remarks: Same as Specimen A

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.7920001
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.982	2.970	
Height (in)	5.505	5.496	
Weight (grams)	1330.00		1364.00
Moisture (%)	20.14		23.22
Dry Density (pcf)	109.69	110.76	
Saturation (%)	95.47	100.00	
Void Ratio	0.585	0.494	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 83.900
Effective Confining Stress (psi): 24.0
Corrected Peak Deviator Stress (psi): 16.023 at reading number: 13

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	236.6	0.353	59.9	0.0	6.93	0.000	0.000	0.000	24.0	24.0	24.0	24.0	1.00	0.00	24.0	0.0	24.0
1	284.1	0.356	61.1	1.2	6.93	0.052	6.850	6.827	30.8	24.0	29.6	22.8	1.30	0.18	27.4	3.4	26.2
2	301.5	0.360	61.6	1.7	6.94	0.114	9.365	9.312	33.3	24.0	31.6	22.3	1.42	0.18	28.6	4.7	26.9
3	313.2	0.364	61.9	2.0	6.94	0.197	11.053	10.958	34.9	24.0	32.9	22.0	1.50	0.18	29.4	5.5	27.5
4	321.5	0.368	62.0	2.1	6.95	0.270	12.261	12.128	36.1	24.0	34.0	21.9	1.55	0.17	30.0	6.1	27.9
5	328.1	0.373	62.0	2.1	6.95	0.353	13.204	13.026	37.0	24.0	34.9	21.9	1.60	0.16	30.5	6.5	28.4
6	333.4	0.377	62.0	2.0	6.96	0.436	13.965	13.743	37.7	24.0	35.7	21.9	1.63	0.15	30.8	6.9	28.8
7	337.5	0.382	61.9	1.9	6.96	0.519	14.561	14.293	38.3	24.0	36.3	22.0	1.65	0.13	31.1	7.1	29.2
8	341.1	0.386	61.9	1.9	6.97	0.592	15.090	14.782	38.7	24.0	36.8	22.0	1.67	0.13	31.4	7.4	29.4
9	344.2	0.391	61.7	1.8	6.98	0.675	15.537	15.182	39.1	24.0	37.3	22.2	1.69	0.12	31.6	7.6	29.7
10	346.6	0.395	61.6	1.7	6.98	0.758	15.884	15.483	39.4	24.0	37.8	22.3	1.70	0.11	31.7	7.7	30.0
11	348.7	0.400	61.5	1.6	6.99	0.841	16.182	15.734	39.7	24.0	38.1	22.4	1.70	0.10	31.8	7.9	30.3
12	350.3	0.404	61.4	1.4	6.99	0.925	16.414	15.920	39.9	24.0	38.4	22.5	1.71	0.09	31.9	8.0	30.5
13	351.3	0.409	61.2	1.3	7.00	1.008	16.563	16.023	40.0	24.0	38.7	22.7	1.71	0.08	32.0	8.0	30.7
14	351.6	0.413	61.1	1.1	7.00	1.091	16.596	16.011	40.0	24.0	38.8	22.8	1.70	0.07	32.0	8.0	30.8
15	350.5	0.418	61.0	1.0	7.01	1.184	16.447	15.814	39.8	24.0	38.7	22.9	1.69	0.07	31.9	7.9	30.8
16	341.0	0.423	60.8	0.9	7.02	1.267	15.074	14.413	38.4	24.0	37.5	23.1	1.62	0.06	31.2	7.2	30.3
17	327.6	0.428	60.6	0.6	7.02	1.361	13.138	12.455	36.4	24.0	35.8	23.3	1.53	0.05	30.2	6.2	29.5
18	322.0	0.433	60.5	0.6	7.03	1.454	12.327	11.609	35.6	24.0	35.0	23.4	1.50	0.05	29.8	5.8	29.2

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	318.5	0.438	60.4	0.4	7.04	1.538	11.814	11.063	35.0	24.0	34.6	23.5	1.47	0.04	29.5	5.5	29.0
20	316.5	0.442	60.3	0.3	7.04	1.621	11.533	10.746	34.7	24.0	34.4	23.6	1.45	0.03	29.3	5.4	29.0
21	314.7	0.447	60.1	0.2	7.05	1.704	11.268	10.445	34.4	24.0	34.2	23.8	1.44	0.02	29.2	5.2	29.0
22	312.8	0.452	60.0	0.0	7.05	1.797	11.003	10.140	34.1	24.0	34.1	23.9	1.42	0.00	29.0	5.1	29.0
23	311.5	0.457	60.0	0.1	7.06	1.880	10.805	9.905	33.9	24.0	33.8	23.9	1.41	0.01	28.9	5.0	28.8
24	310.3	0.461	59.9	0.0	7.07	1.963	10.639	9.703	33.7	24.0	33.7	24.0	1.40	0.00	28.8	4.9	28.8
25	309.2	0.466	59.9	-0.1	7.07	2.057	10.474	9.518	33.5	24.0	33.6	24.0	1.40	-0.01	28.7	4.8	28.8
26	307.7	0.470	59.8	-0.2	7.08	2.130	10.259	9.299	33.3	24.0	33.4	24.1	1.39	-0.02	28.6	4.6	28.8
27	306.9	0.476	59.7	-0.2	7.09	2.223	10.143	9.177	33.1	24.0	33.4	24.2	1.38	-0.03	28.5	4.6	28.8
28	305.6	0.480	59.6	-0.3	7.09	2.306	9.961	8.990	33.0	24.0	33.3	24.3	1.37	-0.04	28.5	4.5	28.8
29	304.9	0.485	59.5	-0.4	7.10	2.389	9.862	8.885	32.8	24.0	33.3	24.4	1.36	-0.05	28.4	4.4	28.8
30	304.2	0.489	59.5	-0.4	7.10	2.473	9.762	8.780	32.7	24.0	33.1	24.4	1.36	-0.05	28.4	4.4	28.8
31	303.3	0.494	59.5	-0.4	7.11	2.566	9.630	8.642	32.6	24.0	33.0	24.4	1.35	-0.05	28.3	4.3	28.7
32	302.6	0.499	59.4	-0.6	7.12	2.649	9.531	8.537	32.5	24.0	33.1	24.5	1.35	-0.07	28.2	4.3	28.8
33	302.1	0.504	59.3	-0.6	7.12	2.732	9.448	8.449	32.4	24.0	33.0	24.6	1.34	-0.07	28.2	4.2	28.8
34	301.5	0.508	59.3	-0.6	7.13	2.815	9.365	8.361	32.3	24.0	33.0	24.6	1.34	-0.08	28.1	4.2	28.8
35	301.3	0.513	59.2	-0.7	7.14	2.909	9.332	8.320	32.3	24.0	33.0	24.7	1.34	-0.09	28.1	4.2	28.8
36	300.9	0.518	59.1	-0.8	7.14	2.992	9.282	8.264	32.2	24.0	33.1	24.8	1.33	-0.10	28.1	4.1	28.9
37	300.6	0.522	59.1	-0.8	7.15	3.075	9.233	8.208	32.2	24.0	33.0	24.8	1.33	-0.10	28.1	4.1	28.9
38	300.5	0.527	59.1	-0.8	7.15	3.158	9.216	8.184	32.1	24.0	33.0	24.8	1.33	-0.10	28.1	4.1	28.9
39	300.6	0.532	59.0	-1.0	7.16	3.241	9.233	8.193	32.2	24.0	33.1	24.9	1.33	-0.12	28.1	4.1	29.0
40	300.2	0.536	58.9	-1.0	7.17	3.324	9.183	8.137	32.1	24.0	33.1	25.0	1.33	-0.12	28.0	4.1	29.0
41	300.1	0.541	58.9	-1.0	7.17	3.408	9.167	8.114	32.1	24.0	33.1	25.0	1.32	-0.13	28.0	4.1	29.1
42	299.7	0.546	58.9	-1.1	7.18	3.501	9.100	8.041	32.0	24.0	33.1	25.0	1.32	-0.13	28.0	4.0	29.1
43	299.8	0.550	58.8	-1.2	7.19	3.584	9.117	8.049	32.0	24.0	33.2	25.1	1.32	-0.14	28.0	4.0	29.2
44	299.4	0.555	58.6	-1.3	7.19	3.667	9.067	7.994	32.0	24.0	33.3	25.3	1.32	-0.17	28.0	4.0	29.3
45	299.1	0.560	58.7	-1.2	7.20	3.750	9.018	7.939	31.9	24.0	33.1	25.2	1.32	-0.15	27.9	4.0	29.1
46	298.4	0.564	58.7	-1.3	7.20	3.833	8.918	7.836	31.8	24.0	33.1	25.2	1.31	-0.16	27.9	3.9	29.2
47	297.9	0.569	58.6	-1.4	7.21	3.917	8.852	7.765	31.7	24.0	33.1	25.3	1.31	-0.18	27.8	3.9	29.2
48	297.6	0.573	58.5	-1.4	7.22	4.000	8.803	7.710	31.7	24.0	33.1	25.4	1.30	-0.18	27.8	3.9	29.2
49	297.5	0.578	58.5	-1.4	7.22	4.083	8.786	7.687	31.6	24.0	33.1	25.4	1.30	-0.19	27.8	3.8	29.2
50	297.4	0.583	58.4	-1.5	7.23	4.176	8.770	7.663	31.6	24.0	33.1	25.5	1.30	-0.20	27.8	3.8	29.3
51	296.9	0.587	58.3	-1.6	7.24	4.259	8.703	7.592	31.6	24.0	33.2	25.6	1.30	-0.21	27.8	3.8	29.4
52	297.2	0.592	58.3	-1.6	7.24	4.343	8.753	7.632	31.6	24.0	33.2	25.6	1.30	-0.21	27.8	3.8	29.4
53	296.8	0.597	58.3	-1.6	7.25	4.426	8.687	7.562	31.5	24.0	33.1	25.6	1.30	-0.21	27.7	3.8	29.3
54	296.7	0.601	58.3	-1.7	7.26	4.509	8.670	7.539	31.5	24.0	33.2	25.6	1.29	-0.22	27.7	3.8	29.4
55	296.8	0.606	58.2	-1.7	7.26	4.602	8.687	7.546	31.5	24.0	33.2	25.7	1.29	-0.23	27.7	3.8	29.5
56	296.4	0.611	58.2	-1.8	7.27	4.685	8.637	7.492	31.5	24.0	33.2	25.7	1.29	-0.24	27.7	3.7	29.5
57	296.0	0.615	58.1	-1.8	7.27	4.768	8.571	7.422	31.4	24.0	33.2	25.8	1.29	-0.24	27.7	3.7	29.5
58	295.5	0.620	58.0	-1.9	7.28	4.852	8.505	7.351	31.3	24.0	33.2	25.9	1.28	-0.26	27.6	3.7	29.6
59	295.8	0.625	57.9	-2.0	7.29	4.945	8.538	7.375	31.3	24.0	33.3	26.0	1.28	-0.27	27.6	3.7	29.7

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	295.6	0.629	58.0	-1.9	7.29	5.018	8.521	7.353	31.3	24.0	33.2	25.9	1.28	-0.26	27.6	3.7	29.6
61	295.0	0.634	57.9	-2.0	7.30	5.111	8.422	7.251	31.2	24.0	33.2	26.0	1.28	-0.28	27.6	3.6	29.6
62	294.8	0.639	57.9	-2.0	7.31	5.194	8.406	7.228	31.2	24.0	33.2	26.0	1.28	-0.28	27.6	3.6	29.6
63	294.6	0.643	57.9	-2.1	7.31	5.278	8.372	7.190	31.2	24.0	33.2	26.0	1.28	-0.29	27.6	3.6	29.6
64	295.0	0.648	57.8	-2.1	7.32	5.361	8.422	7.230	31.2	24.0	33.3	26.1	1.28	-0.29	27.6	3.6	29.7
65	295.5	0.653	57.7	-2.2	7.33	5.454	8.505	7.300	31.3	24.0	33.5	26.2	1.28	-0.30	27.6	3.7	29.8
66	297.0	0.657	57.6	-2.3	7.33	5.527	8.720	7.497	31.5	24.0	33.7	26.3	1.29	-0.31	27.7	3.7	30.0
67	297.2	0.662	57.7	-2.2	7.34	5.620	8.753	7.520	31.5	24.0	33.7	26.2	1.29	-0.30	27.7	3.8	30.0
68	297.2	0.667	57.6	-2.3	7.35	5.703	8.753	7.513	31.5	24.0	33.8	26.3	1.29	-0.30	27.7	3.8	30.0
69	297.1	0.671	57.6	-2.3	7.35	5.787	8.736	7.490	31.5	24.0	33.8	26.3	1.28	-0.31	27.7	3.7	30.0
70	297.0	0.676	57.6	-2.4	7.36	5.870	8.720	7.467	31.4	24.0	33.8	26.3	1.28	-0.32	27.7	3.7	30.1
71	297.2	0.681	57.5	-2.4	7.37	5.953	8.753	7.491	31.5	24.0	33.9	26.4	1.28	-0.32	27.7	3.7	30.1
72	296.9	0.685	57.5	-2.5	7.37	6.036	8.703	7.437	31.4	24.0	33.8	26.4	1.28	-0.33	27.7	3.7	30.1
73	296.6	0.690	57.4	-2.5	7.38	6.119	8.654	7.383	31.3	24.0	33.9	26.5	1.28	-0.34	27.7	3.7	30.2
74	296.3	0.694	57.4	-2.6	7.39	6.202	8.621	7.345	31.3	24.0	33.9	26.5	1.28	-0.35	27.6	3.7	30.2
75	296.4	0.699	57.4	-2.5	7.39	6.285	8.637	7.354	31.3	24.0	33.8	26.5	1.28	-0.34	27.6	3.7	30.2
76	296.1	0.704	57.3	-2.6	7.40	6.379	8.588	7.299	31.3	24.0	33.9	26.6	1.27	-0.36	27.6	3.6	30.2
77	296.4	0.708	57.3	-2.6	7.41	6.451	8.637	7.339	31.3	24.0	33.9	26.6	1.28	-0.36	27.6	3.7	30.2
78	296.2	0.713	57.3	-2.7	7.41	6.535	8.604	7.301	31.3	24.0	33.9	26.6	1.27	-0.36	27.6	3.7	30.3
79	296.0	0.718	57.2	-2.7	7.42	6.628	8.571	7.262	31.2	24.0	33.9	26.7	1.27	-0.37	27.6	3.6	30.3
80	295.5	0.722	57.2	-2.7	7.43	6.711	8.505	7.193	31.2	24.0	33.9	26.7	1.27	-0.38	27.6	3.6	30.3
81	295.5	0.727	57.1	-2.9	7.43	6.794	8.505	7.186	31.1	24.0	34.0	26.8	1.27	-0.40	27.6	3.6	30.4
82	295.4	0.731	57.2	-2.7	7.44	6.877	8.488	7.164	31.1	24.0	33.9	26.7	1.27	-0.38	27.5	3.6	30.3
83	295.4	0.736	57.2	-2.8	7.45	6.961	8.488	7.157	31.1	24.0	33.9	26.7	1.27	-0.39	27.5	3.6	30.3
84	295.4	0.741	57.1	-2.8	7.45	7.044	8.488	7.150	31.1	24.0	33.9	26.8	1.27	-0.39	27.5	3.6	30.3
85	295.0	0.745	57.1	-2.9	7.46	7.127	8.422	7.081	31.0	24.0	33.9	26.8	1.26	-0.40	27.5	3.5	30.4
86	295.0	0.750	57.1	-2.9	7.47	7.220	8.422	7.073	31.0	24.0	33.9	26.8	1.26	-0.40	27.5	3.5	30.3
87	294.6	0.755	57.0	-2.9	7.47	7.303	8.372	7.020	31.0	24.0	33.9	26.9	1.26	-0.42	27.5	3.5	30.4
88	294.5	0.759	56.9	-3.0	7.48	7.386	8.356	6.998	31.0	24.0	34.0	27.0	1.26	-0.43	27.5	3.5	30.5
89	294.5	0.764	57.0	-2.9	7.49	7.470	8.356	6.991	31.0	24.0	33.9	26.9	1.26	-0.42	27.5	3.5	30.4
90	294.0	0.768	57.0	-3.0	7.49	7.553	8.290	6.923	30.9	24.0	33.9	26.9	1.26	-0.43	27.4	3.5	30.4
91	293.8	0.774	56.9	-3.0	7.50	7.646	8.257	6.885	30.8	24.0	33.9	27.0	1.26	-0.44	27.4	3.4	30.4
92	294.3	0.778	56.9	-3.0	7.51	7.729	8.323	6.939	30.9	24.0	33.9	27.0	1.26	-0.43	27.4	3.5	30.4
93	294.4	0.783	56.9	-3.1	7.52	7.812	8.339	6.947	30.9	24.0	34.0	27.0	1.26	-0.44	27.4	3.5	30.5
94	293.8	0.787	56.8	-3.1	7.52	7.896	8.257	6.864	30.8	24.0	33.9	27.1	1.25	-0.45	27.4	3.4	30.5
95	293.7	0.792	56.8	-3.1	7.53	7.979	8.240	6.842	30.8	24.0	33.9	27.1	1.25	-0.46	27.4	3.4	30.5
96	293.5	0.797	56.8	-3.1	7.54	8.072	8.207	6.804	30.8	24.0	33.9	27.1	1.25	-0.46	27.4	3.4	30.5
97	293.5	0.802	56.8	-3.1	7.54	8.155	8.207	6.797	30.8	24.0	33.9	27.1	1.25	-0.46	27.4	3.4	30.5
98	293.2	0.806	56.8	-3.1	7.55	8.228	8.174	6.761	30.7	24.0	33.9	27.1	1.25	-0.46	27.3	3.4	30.5
99	292.7	0.811	56.8	-3.2	7.56	8.321	8.091	6.677	30.6	24.0	33.8	27.1	1.25	-0.48	27.3	3.3	30.5
100	292.1	0.815	56.8	-3.2	7.56	8.405	8.008	6.595	30.6	24.0	33.7	27.1	1.24	-0.48	27.3	3.3	30.4

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	292.0	0.820	56.7	-3.2	7.57	8.488	7.992	6.573	30.5	24.0	33.7	27.2	1.24	-0.49	27.2	3.3	30.5
102	291.6	0.824	56.7	-3.3	7.58	8.571	7.942	6.521	30.5	24.0	33.7	27.2	1.24	-0.50	27.2	3.3	30.5
103	291.6	0.829	56.6	-3.3	7.58	8.654	7.942	6.514	30.5	24.0	33.8	27.3	1.24	-0.51	27.2	3.3	30.6
104	291.4	0.834	56.7	-3.3	7.59	8.737	7.909	6.477	30.4	24.0	33.7	27.2	1.24	-0.50	27.2	3.2	30.5
105	291.5	0.838	56.7	-3.3	7.60	8.820	7.926	6.486	30.4	24.0	33.7	27.2	1.24	-0.50	27.2	3.2	30.5
106	290.8	0.843	56.6	-3.3	7.61	8.903	7.826	6.389	30.3	24.0	33.6	27.3	1.23	-0.52	27.2	3.2	30.4
107	291.3	0.847	56.6	-3.3	7.61	8.986	7.893	6.443	30.4	24.0	33.7	27.3	1.24	-0.51	27.2	3.2	30.5
108	291.3	0.852	56.6	-3.3	7.62	9.080	7.893	6.435	30.4	24.0	33.7	27.3	1.24	-0.52	27.2	3.2	30.5
109	291.3	0.856	56.6	-3.3	7.63	9.153	7.893	6.429	30.4	24.0	33.7	27.3	1.24	-0.52	27.2	3.2	30.5
110	291.2	0.862	56.5	-3.4	7.63	9.246	7.876	6.407	30.4	24.0	33.8	27.4	1.23	-0.53	27.2	3.2	30.6
111	290.6	0.866	56.6	-3.4	7.64	9.329	7.793	6.326	30.3	24.0	33.7	27.3	1.23	-0.53	27.1	3.2	30.5
112	290.4	0.871	56.6	-3.4	7.65	9.412	7.760	6.289	30.2	24.0	33.6	27.3	1.23	-0.54	27.1	3.1	30.5
113	290.4	0.875	56.5	-3.4	7.65	9.495	7.760	6.283	30.2	24.0	33.7	27.4	1.23	-0.54	27.1	3.1	30.5
114	290.4	0.880	56.5	-3.4	7.66	9.579	7.760	6.276	30.2	24.0	33.7	27.4	1.23	-0.54	27.1	3.1	30.5
115	290.3	0.884	56.5	-3.4	7.67	9.662	7.744	6.255	30.2	24.0	33.6	27.4	1.23	-0.55	27.1	3.1	30.5
116	289.9	0.889	56.5	-3.4	7.68	9.745	7.694	5.889	29.8	24.0	33.3	27.4	1.22	-0.58	26.9	2.9	30.3
117	290.4	0.894	56.5	-3.5	7.68	9.838	7.760	5.938	29.9	24.0	33.4	27.4	1.22	-0.58	26.9	3.0	30.4
118	290.7	0.898	56.4	-3.5	7.69	9.911	7.810	5.975	29.9	24.0	33.5	27.5	1.22	-0.59	26.9	3.0	30.5
119	291.5	0.903	56.5	-3.5	7.70	9.994	7.926	6.070	30.0	24.0	33.5	27.4	1.22	-0.57	27.0	3.0	30.5
120	292.7	0.908	56.5	-3.5	7.71	10.088	8.091	6.534	30.5	24.0	33.9	27.4	1.24	-0.53	27.2	3.3	30.7
121	293.0	0.912	56.4	-3.5	7.71	10.171	8.141	6.243	30.2	24.0	33.7	27.5	1.23	-0.56	27.1	3.1	30.6
122	292.8	0.917	56.4	-3.5	7.72	10.254	8.108	6.204	30.2	24.0	33.7	27.5	1.23	-0.56	27.1	3.1	30.6
123	292.9	0.921	56.4	-3.5	7.73	10.337	8.124	6.210	30.2	24.0	33.7	27.5	1.23	-0.56	27.1	3.1	30.6
124	293.0	0.926	56.4	-3.5	7.73	10.420	8.141	6.215	30.2	24.0	33.7	27.5	1.23	-0.57	27.1	3.1	30.6
125	292.5	0.931	56.3	-3.6	7.74	10.503	8.075	6.146	30.1	24.0	33.7	27.6	1.22	-0.59	27.0	3.1	30.6
126	291.9	0.935	56.4	-3.5	7.75	10.586	7.975	6.048	30.0	24.0	33.5	27.5	1.22	-0.58	27.0	3.0	30.5
127	292.4	0.940	56.4	-3.5	7.76	10.669	8.058	6.113	30.1	24.0	33.6	27.5	1.22	-0.58	27.0	3.1	30.6
128	292.4	0.944	56.4	-3.6	7.76	10.752	8.058	6.103	30.1	24.0	33.6	27.5	1.22	-0.59	27.0	3.1	30.6
129	292.2	0.949	56.4	-3.6	7.77	10.836	8.025	6.064	30.0	24.0	33.6	27.5	1.22	-0.59	27.0	3.0	30.6
130	291.9	0.953	56.3	-3.6	7.78	10.919	7.975	6.011	30.0	24.0	33.6	27.6	1.22	-0.60	27.0	3.0	30.6
131	292.0	0.958	56.3	-3.6	7.78	11.002	7.992	6.016	30.0	24.0	33.6	27.6	1.22	-0.60	27.0	3.0	30.6
132	292.2	0.963	56.3	-3.7	7.79	11.085	8.025	6.036	30.0	24.0	33.7	27.6	1.22	-0.61	27.0	3.0	30.6
133	292.1	0.967	56.2	-3.8	7.80	11.168	8.008	6.012	30.0	24.0	33.7	27.7	1.22	-0.63	27.0	3.0	30.7
134	292.2	0.972	56.3	-3.7	7.81	11.251	8.025	6.018	30.0	24.0	33.6	27.6	1.22	-0.61	27.0	3.0	30.6
135	292.5	0.976	56.3	-3.7	7.81	11.334	8.075	6.052	30.0	24.0	33.7	27.6	1.22	-0.60	27.0	3.0	30.6
136	292.4	0.981	56.2	-3.7	7.82	11.417	8.058	6.028	30.0	24.0	33.7	27.7	1.22	-0.61	27.0	3.0	30.7
137	292.5	0.985	56.2	-3.7	7.83	11.500	8.075	6.034	30.0	24.0	33.7	27.7	1.22	-0.61	27.0	3.0	30.7
138	292.2	0.990	56.2	-3.7	7.84	11.584	8.025	5.980	29.9	24.0	33.6	27.7	1.22	-0.62	27.0	3.0	30.6
139	292.3	0.995	56.2	-3.7	7.84	11.667	8.041	5.985	29.9	24.0	33.7	27.7	1.22	-0.62	27.0	3.0	30.7
140	292.4	1.000	56.1	-3.8	7.85	11.760	8.058	5.990	29.9	24.0	33.8	27.8	1.22	-0.64	27.0	3.0	30.8
141	292.2	1.004	56.2	-3.8	7.86	11.833	8.025	5.952	29.9	24.0	33.7	27.7	1.21	-0.63	26.9	3.0	30.7

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	292.3	1.009	56.2	-3.7	7.87	11.926	8.041	5.956	29.9	24.0	33.7	27.7	1.22	-0.63	26.9	3.0	30.7
143	292.2	1.013	56.2	-3.8	7.87	12.009	8.025	5.932	29.9	24.0	33.7	27.7	1.21	-0.64	26.9	3.0	30.7
144	292.3	1.018	56.2	-3.8	7.88	12.093	8.041	5.937	29.9	24.0	33.7	27.7	1.21	-0.64	26.9	3.0	30.7
145	292.1	1.023	56.1	-3.8	7.89	12.176	8.008	5.899	29.9	24.0	33.7	27.8	1.21	-0.65	26.9	2.9	30.7
146	292.2	1.027	56.1	-3.8	7.90	12.259	8.025	5.904	29.9	24.0	33.7	27.8	1.21	-0.65	26.9	3.0	30.7
147	292.4	1.032	56.1	-3.9	7.90	12.352	8.058	5.923	29.9	24.0	33.7	27.8	1.21	-0.65	26.9	3.0	30.8
148	292.3	1.037	56.0	-3.9	7.91	12.435	8.041	5.899	29.9	24.0	33.8	27.9	1.21	-0.67	26.9	2.9	30.8
149	292.9	1.041	56.1	-3.8	7.92	12.519	8.124	5.962	29.9	24.0	33.7	27.8	1.21	-0.64	26.9	3.0	30.8
150	293.2	1.046	56.1	-3.9	7.93	12.602	8.174	5.996	30.0	24.0	33.8	27.8	1.22	-0.64	27.0	3.0	30.8
151	293.0	1.051	56.0	-3.9	7.93	12.685	8.141	5.957	29.9	24.0	33.8	27.9	1.21	-0.65	26.9	3.0	30.8
152	292.5	1.055	56.0	-3.9	7.94	12.768	8.075	5.890	29.9	24.0	33.7	27.9	1.21	-0.66	26.9	2.9	30.8
153	293.0	1.060	56.0	-3.9	7.95	12.851	8.141	5.938	29.9	24.0	33.8	27.9	1.21	-0.66	26.9	3.0	30.8
154	292.7	1.064	56.0	-3.9	7.96	12.934	8.091	5.886	29.8	24.0	33.8	27.9	1.21	-0.67	26.9	2.9	30.8
155	292.4	1.069	55.9	-4.0	7.97	13.028	8.058	5.846	29.8	24.0	33.8	28.0	1.21	-0.69	26.9	2.9	30.9
156	292.5	1.074	56.0	-3.9	7.97	13.111	8.075	5.851	29.8	24.0	33.7	27.9	1.21	-0.67	26.9	2.9	30.8
157	292.4	1.079	56.0	-3.9	7.98	13.194	8.058	5.828	29.8	24.0	33.7	27.9	1.21	-0.68	26.9	2.9	30.8
158	292.3	1.084	56.0	-4.0	7.99	13.287	8.041	5.803	29.8	24.0	33.7	27.9	1.21	-0.69	26.9	2.9	30.8
159	292.5	1.088	56.0	-4.0	8.00	13.370	8.075	5.822	29.8	24.0	33.8	27.9	1.21	-0.68	26.9	2.9	30.8
160	292.7	1.093	55.9	-4.0	8.00	13.454	8.091	5.827	29.8	24.0	33.8	28.0	1.21	-0.69	26.9	2.9	30.9
161	293.3	1.097	55.9	-4.0	8.01	13.537	8.190	5.903	29.9	24.0	33.9	28.0	1.21	-0.68	26.9	3.0	30.9
162	293.5	1.102	55.9	-4.1	8.02	13.620	8.207	5.908	29.9	24.0	33.9	28.0	1.21	-0.69	26.9	3.0	31.0
163	293.6	1.106	55.8	-4.1	8.03	13.703	8.223	5.913	29.9	24.0	34.0	28.1	1.21	-0.69	26.9	3.0	31.0
164	294.3	1.111	55.9	-4.0	8.04	13.786	8.323	5.989	29.9	24.0	34.0	28.0	1.21	-0.67	27.0	3.0	31.0
165	293.8	1.116	55.9	-4.1	8.04	13.869	8.257	5.922	29.9	24.0	33.9	28.0	1.21	-0.69	26.9	3.0	31.0
166	293.5	1.120	55.8	-4.1	8.05	13.952	8.207	5.870	29.8	24.0	33.9	28.1	1.21	-0.70	26.9	2.9	31.0
167	294.0	1.125	55.8	-4.1	8.06	14.035	8.290	5.932	29.9	24.0	34.0	28.1	1.21	-0.69	26.9	3.0	31.0
168	293.9	1.129	55.8	-4.1	8.07	14.118	8.273	5.908	29.9	24.0	34.0	28.1	1.21	-0.69	26.9	3.0	31.0
169	293.8	1.134	55.8	-4.2	8.07	14.202	8.257	5.884	29.8	24.0	34.0	28.1	1.21	-0.71	26.9	2.9	31.1
170	293.6	1.138	55.7	-4.3	8.08	14.285	8.223	5.846	29.8	24.0	34.1	28.2	1.21	-0.73	26.9	2.9	31.1
171	293.9	1.143	55.8	-4.1	8.09	14.368	8.273	5.879	29.8	24.0	34.0	28.1	1.21	-0.70	26.9	2.9	31.0
172	294.3	1.148	55.8	-4.2	8.10	14.451	8.323	5.912	29.9	24.0	34.1	28.1	1.21	-0.71	26.9	3.0	31.1
173	295.1	1.152	55.7	-4.2	8.11	14.534	8.439	6.002	30.0	24.0	34.2	28.2	1.21	-0.70	27.0	3.0	31.2
174	296.0	1.156	55.7	-4.2	8.11	14.607	8.571	6.106	30.1	24.0	34.3	28.2	1.22	-0.69	27.0	3.1	31.2
175	296.7	1.161	55.7	-4.2	8.12	14.690	8.670	6.181	30.1	24.0	34.4	28.2	1.22	-0.68	27.1	3.1	31.3
176	297.2	1.165	55.7	-4.3	8.13	14.773	8.753	6.242	30.2	24.0	34.5	28.2	1.22	-0.68	27.1	3.1	31.3
177	297.6	1.170	55.6	-4.3	8.14	14.856	8.803	6.274	30.2	24.0	34.5	28.3	1.22	-0.69	27.1	3.1	31.4
178	297.7	1.174	55.6	-4.3	8.14	14.939	8.819	6.278	30.2	24.0	34.5	28.3	1.22	-0.68	27.1	3.1	31.4
179	297.9	1.179	55.7	-4.3	8.15	15.022	8.852	6.296	30.3	24.0	34.5	28.2	1.22	-0.68	27.1	3.1	31.4
180	297.5	1.184	55.6	-4.3	8.16	15.105	8.786	6.230	30.2	24.0	34.5	28.3	1.22	-0.69	27.1	3.1	31.4
181	297.5	1.189	55.6	-4.3	8.17	15.199	8.786	6.219	30.2	24.0	34.5	28.3	1.22	-0.69	27.1	3.1	31.4
182	297.5	1.193	55.6	-4.3	8.18	15.272	8.786	6.210	30.2	24.0	34.5	28.3	1.22	-0.69	27.1	3.1	31.4

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	297.9	1.197	55.6	-4.3	8.18	15.355	8.852	6.256	30.2	24.0	34.6	28.3	1.22	-0.69	27.1	3.1	31.4
184	297.9	1.202	55.6	-4.4	8.19	15.448	8.852	6.245	30.2	24.0	34.6	28.3	1.22	-0.70	27.1	3.1	31.5
185	298.4	1.207	55.5	-4.4	8.20	15.531	8.918	6.291	30.3	24.0	34.7	28.4	1.22	-0.70	27.1	3.1	31.5
186	298.0	1.212	55.6	-4.3	8.21	15.625	8.869	6.237	30.2	24.0	34.5	28.3	1.22	-0.70	27.1	3.1	31.4
187	298.3	1.217	55.6	-4.4	8.22	15.708	8.902	6.255	30.2	24.0	34.6	28.3	1.22	-0.70	27.1	3.1	31.5
188	298.7	1.221	55.6	-4.4	8.23	15.791	8.968	6.301	30.3	24.0	34.6	28.3	1.22	-0.69	27.1	3.2	31.5
189	298.7	1.226	55.6	-4.4	8.24	15.874	8.968	6.291	30.3	24.0	34.6	28.3	1.22	-0.70	27.1	3.1	31.5
190	298.6	1.230	55.6	-4.4	8.24	15.957	8.952	6.267	30.2	24.0	34.6	28.3	1.22	-0.70	27.1	3.1	31.5
191	299.1	1.235	55.5	-4.5	8.25	16.040	9.018	6.312	30.3	24.0	34.7	28.4	1.22	-0.71	27.1	3.2	31.6
192	298.7	1.240	55.4	-4.5	8.26	16.123	8.968	6.260	30.2	24.0	34.7	28.5	1.22	-0.72	27.1	3.1	31.6
193	299.8	1.244	55.5	-4.4	8.27	16.207	9.117	6.375	30.3	24.0	34.8	28.4	1.22	-0.69	27.1	3.2	31.6
194	299.8	1.249	55.5	-4.4	8.28	16.290	9.117	6.365	30.3	24.0	34.7	28.4	1.22	-0.69	27.1	3.2	31.6
195	299.7	1.253	55.5	-4.5	8.28	16.373	9.100	6.340	30.3	24.0	34.8	28.4	1.22	-0.70	27.1	3.2	31.6
196	299.3	1.258	55.5	-4.5	8.29	16.466	9.051	6.288	30.2	24.0	34.7	28.4	1.22	-0.71	27.1	3.1	31.6
197	299.8	1.262	55.5	-4.5	8.30	16.539	9.117	6.334	30.3	24.0	34.8	28.4	1.22	-0.70	27.1	3.2	31.6
198	299.1	1.267	55.4	-4.5	8.31	16.622	9.018	6.241	30.2	24.0	34.7	28.5	1.22	-0.72	27.1	3.1	31.6
199	299.4	1.271	55.4	-4.5	8.32	16.705	9.067	6.272	30.2	24.0	34.8	28.5	1.22	-0.72	27.1	3.1	31.6
200	300.0	1.276	55.4	-4.5	8.33	16.788	9.150	6.331	30.3	24.0	34.8	28.5	1.22	-0.71	27.1	3.2	31.6
201	300.2	1.281	55.4	-4.5	8.34	16.882	9.183	6.346	30.3	24.0	34.8	28.5	1.22	-0.71	27.1	3.2	31.6
202	300.6	1.285	55.4	-4.5	8.34	16.955	9.233	6.379	30.3	24.0	34.8	28.5	1.22	-0.71	27.1	3.2	31.6
203	300.8	1.290	55.4	-4.5	8.35	17.048	9.266	6.394	30.4	24.0	34.9	28.5	1.22	-0.70	27.2	3.2	31.7
204	300.1	1.294	55.4	-4.5	8.36	17.121	9.167	6.303	30.3	24.0	34.8	28.5	1.22	-0.71	27.1	3.2	31.6
205	300.3	1.299	55.4	-4.5	8.37	17.204	9.200	6.320	30.3	24.0	34.8	28.5	1.22	-0.71	27.1	3.2	31.6
206	300.5	1.303	55.4	-4.5	8.38	17.287	9.216	6.324	30.3	24.0	34.8	28.5	1.22	-0.72	27.1	3.2	31.7
207	300.5	1.308	55.3	-4.6	8.38	17.370	9.216	6.313	30.3	24.0	34.9	28.6	1.22	-0.73	27.1	3.2	31.7
208	300.1	1.313	55.4	-4.5	8.39	17.453	9.167	6.262	30.2	24.0	34.7	28.5	1.22	-0.72	27.1	3.1	31.6
209	299.5	1.317	55.4	-4.5	8.40	17.536	9.084	6.183	30.1	24.0	34.6	28.5	1.22	-0.73	27.1	3.1	31.6
210	299.8	1.322	55.4	-4.5	8.41	17.619	9.117	6.200	30.2	24.0	34.7	28.5	1.22	-0.73	27.1	3.1	31.6
211	299.3	1.327	55.4	-4.5	8.42	17.713	9.051	6.134	30.1	24.0	34.6	28.5	1.22	-0.73	27.0	3.1	31.5
212	300.0	1.331	55.5	-4.5	8.43	17.796	9.150	6.206	30.2	24.0	34.6	28.4	1.22	-0.72	27.1	3.1	31.5
213	300.0	1.336	55.5	-4.5	8.44	17.879	9.150	6.195	30.2	24.0	34.6	28.4	1.22	-0.72	27.1	3.1	31.5
214	300.1	1.341	55.4	-4.5	8.44	17.962	9.167	6.199	30.2	24.0	34.7	28.5	1.22	-0.73	27.1	3.1	31.6
215	300.6	1.346	55.4	-4.5	8.45	18.056	9.233	6.241	30.2	24.0	34.7	28.5	1.22	-0.73	27.1	3.1	31.6
216	300.7	1.350	55.5	-4.4	8.46	18.139	9.249	6.245	30.2	24.0	34.6	28.4	1.22	-0.71	27.1	3.1	31.5
217	300.5	1.355	55.5	-4.4	8.47	18.222	9.216	6.207	30.2	24.0	34.6	28.4	1.22	-0.71	27.1	3.1	31.5
218	300.7	1.359	55.5	-4.4	8.48	18.305	9.249	6.224	30.2	24.0	34.6	28.4	1.22	-0.71	27.1	3.1	31.5
219	301.1	1.364	55.5	-4.4	8.49	18.388	9.316	6.267	30.2	24.0	34.6	28.4	1.22	-0.71	27.1	3.1	31.5
220	300.3	1.369	55.5	-4.4	8.50	18.471	9.200	6.163	30.1	24.0	34.5	28.4	1.22	-0.72	27.0	3.1	31.5
221	299.8	1.373	55.6	-4.4	8.51	18.554	9.117	6.085	30.0	24.0	34.4	28.3	1.21	-0.72	27.0	3.0	31.4
222	298.8	1.378	55.6	-4.4	8.52	18.638	8.985	5.967	29.9	24.0	34.3	28.3	1.21	-0.73	26.9	3.0	31.3
223	298.3	1.383	55.6	-4.3	8.52	18.731	8.902	5.888	29.8	24.0	34.1	28.3	1.21	-0.73	26.9	2.9	31.2

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	298.4	1.387	55.7	-4.2	8.53	18.804	8.918	5.893	29.9	24.0	34.1	28.2	1.21	-0.72	26.9	2.9	31.1
225	298.4	1.392	55.7	-4.2	8.54	18.897	8.918	5.882	29.8	24.0	34.1	28.2	1.21	-0.72	26.9	2.9	31.1
226	299.5	1.396	55.7	-4.3	8.55	18.970	9.084	6.007	30.0	24.0	34.2	28.2	1.21	-0.71	27.0	3.0	31.2
227	300.5	1.401	55.7	-4.3	8.56	19.053	9.216	6.104	30.1	24.0	34.3	28.2	1.22	-0.70	27.0	3.1	31.3
228	301.7	1.405	55.7	-4.3	8.57	19.136	9.398	6.241	30.2	24.0	34.5	28.2	1.22	-0.68	27.1	3.1	31.3
229	301.9	1.410	55.6	-4.3	8.58	19.219	9.431	6.257	30.2	24.0	34.5	28.3	1.22	-0.69	27.1	3.1	31.4
230	302.3	1.414	55.6	-4.4	8.58	19.292	9.481	6.288	30.2	24.0	34.6	28.3	1.22	-0.70	27.1	3.1	31.5
231	303.2	1.418	55.6	-4.3	8.59	19.375	9.613	6.384	30.3	24.0	34.6	28.3	1.23	-0.67	27.2	3.2	31.5
232	303.5	1.423	55.6	-4.3	8.60	19.458	9.663	6.413	30.4	24.0	34.7	28.3	1.23	-0.68	27.2	3.2	31.5
233	303.5	1.427	55.6	-4.3	8.61	19.541	9.663	6.402	30.4	24.0	34.7	28.3	1.23	-0.68	27.2	3.2	31.5
234	303.5	1.432	55.6	-4.4	8.62	19.625	9.663	6.392	30.4	24.0	34.7	28.3	1.23	-0.69	27.2	3.2	31.5
235	304.0	1.436	55.6	-4.4	8.63	19.697	9.729	6.435	30.4	24.0	34.8	28.3	1.23	-0.68	27.2	3.2	31.6
236	304.0	1.440	55.5	-4.4	8.64	19.780	9.729	6.425	30.4	24.0	34.8	28.4	1.23	-0.69	27.2	3.2	31.6
237	304.2	1.445	55.4	-4.5	8.65	19.863	9.762	6.440	30.4	24.0	34.9	28.5	1.23	-0.70	27.2	3.2	31.7
238	304.1	1.450	55.6	-4.4	8.65	19.947	9.746	6.416	30.4	24.0	34.8	28.3	1.23	-0.68	27.2	3.2	31.5
239	304.5	1.453	55.5	-4.4	8.66	20.009	9.795	6.448	30.4	24.0	34.8	28.4	1.23	-0.69	27.2	3.2	31.6

Failure Sample Photograph

T-5786

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. U-2412B

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project 39406.1.1 **County** GUILFORD **Owner**

Date: Sampled 3/1/13 **Received** 11/22/13 **Reported** 11/26/13

Sampled from RDWY **By** N. ROBERSON

Submitted by M HURT 1995 **Standard Specifications**

788456 TO 788456
12/4/13

TEST RESULTS

Proj. Sample No.		ST-22 #1					
Lab. Sample No.		788456					
Retained #4 Sieve	%	-					
Passing #10 Sieve	%	100					
Passing #40 Sieve	%	97					
Passing #200 Sieve	%	74					

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	7.5					
Fine Sand Ret - #270	%	27.8					
Silt 0.05 - 0.005 mm	%	58.7					
Clay < 0.005 mm	%	6.0					
T-#		T-5787					
Gravity	%	2.917					

L. L.		40					
P. I.		9					
AASHTO Classification		A-4(7)					
Station		403+45					
Offset		3 FT RT					
Alignment		L					
Location							
Depth (Ft)		29.6 FT					
	to	31.0 FT					
Final Moisture Content		26.12					

cc: N. ROBERSON
SURIYATI BS
GREG BODENHEIMER

Soils Engineer

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	15.91	18.72	**Plastic Limits:**	0	
Dry Density (pcf):	113.94	119.14	**Plasticity Index (%):**	0	
Saturation (%):	78.67	104.97			
Void Ratio:	0.5817	0.5126	**Specific Gravity:**	2.893	Measured

Soil Description:	Tannish colored silt		
Project Number:	39406.1.1	**Depth:** 29.6 - 31.0 ft	**Remarks:**
Sample Number:	ST-22	**Boring Number:**	Solid Height is 0.63247 inches; Blows/ft = NA
Project:	U-2412B		
Client:	T-5787A		
Location:	Guilford County		

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	15.91	18.72	**Plastic Limits:**	0	
Dry Density (pcf):	113.94	119.14	**Plasticity Index (%):**	0	
Saturation (%):	78.67	104.97			
Void Ratio:	0.5817	0.5126	**Specific Gravity:**	2.893	Measured

Soil Description:	Tannish colored silt		
Project Number:	39406.1.1	**Depth:** 29.6 - 31.0 ft	**Remarks:**
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Project:	U-2412B		
Client:	T-5787A		
Location:	Guilford County		

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	15.91	18.72	**Plastic Limits:**	0	
Dry Density (pcf):	113.94	119.14	**Plasticity Index (%):**	0	
Saturation (%):	78.67	104.97			
Void Ratio:	0.5817	0.5126	**Specific Gravity:**	2.893	Measured

Soil Description: Tannish colored silt

Project Number: 39406.1.1 **Depth:** 29.6 - 31.0 ft

Sample Number: ST-22 **Boring Number:**

Project: U-2412B

Client: T-5787A

Location: Guilford County

Remarks: Solid Height is 0.63247 inches; Blows/ft = NA

Consolidation Test Results
Summary

Project: U-2412B
Location: Guilford County
Job Number: T-5787A

Project Number: 39406.1.1

Sample Number: ST-22
Boring Number:
Depth: 29.6 - 31.0 ft
Sample Type: Undisturbed

Soil Description:
Tannish colored silt
Remarks:
Solid Height is 0.63247 inches; Blows/ft = NA

Test Number:
Test Date:

Index	Load Sequence (tsf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	0.9999	0.3677	0.00	0.5817	0.000		0.000	
1	0.063	0.0028	0.9971	0.3649	0.28	0.5773	0.160		4808.241	
2	0.125	0.0045	0.9954	0.3632	0.45	0.5746	0.294		2607.814	
3	0.250	0.0087	0.9912	0.3590	0.87	0.5680	0.141		5407.121	
4	0.500	0.0127	0.9872	0.3550	1.27	0.5616	0.098		7718.706	
5	1.000	0.0203	0.9796	0.3474	2.03	0.5496	0.063		11880.815	
6	2.000	0.0306	0.9693	0.3371	3.06	0.5333	0.098		7441.331	
7	4.000	0.0427	0.9572	0.3250	4.27	0.5142	0.156		4544.745	
8	2.000	0.0407	0.9592	0.3270	4.07	0.5173	0.000		0.000	
9	1.000	0.0369	0.9630	0.3308	3.69	0.5234	0.000		0.000	
10	0.500	0.0346	0.9653	0.3331	3.46	0.5270	0.000		0.000	
11	1.000	0.0362	0.9637	0.3315	3.62	0.5245	0.000		0.000	
12	2.000	0.0388	0.9611	0.3289	3.88	0.5203	0.000		0.000	
13	4.000	0.0441	0.9558	0.3236	4.41	0.5120	0.000		0.000	
14	8.000	0.0568	0.9431	0.3109	5.68	0.4919	0.069		9945.763	
15	16.000	0.0762	0.9237	0.2915	7.62	0.4612	0.348		1897.192	
16	4.000	0.0712	0.9287	0.2965	7.12	0.4691	0.000		0.000	
17	0.016	0.0437	0.9562	0.3240	4.37	0.5126	0.000		0.000	

Tested By:

Checked By:

Consolidation Test
Consolidation Specimen Information

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County
Job Number: T-5787A **Test Date:**

Sample Number: ST-22 **Soil Description:**
Boring Number: Tannish colored silt
Depth: 29.6 - 31.0 ft **Remarks:**
Sample Type: Undisturbed Solid Height is 0.63247 inches; Blows/ft = NA

Test Number:
Liquid Limit: 0.0000 **Initial Void Ratio:** 0.5817 **Initial Height (in):** 0.9999
Plastic Limit: 0.0000 **Plasticity Index (%):** 0.0000 **Initial Diameter (in):** 2.4999
Specific Gravity: 2.8930 Measured **Weight of Ring (g):** 111.0800

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	170.14	174.25
Dry Soil + Container (g)	146.78	146.78
Weight of Container (g)	0.00	0.00
Moisture Content (%)	15.91	18.72
Void Ratio	0.5817	0.5126
Saturation (%)	78.67	104.97
Dry Density (pcf)	113.94	119.14

Tested By: **Checked By:**

ncdot

Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date

Tested By:

Effective Stress at Maximum Deviator Stress Criterion

Deviator Stress Vs. Axial Strain

Initial	Specimen A	B	C	D
Water Content (%)	23.9	23.9	23.9	
Dry Density (pcf)	104.1	105.0	105.3	
Saturation (%)	93.10	94.94	95.73	
Void Ratio	0.745	0.730	0.724	
Diameter (in)	2.842	2.880	2.943	
Height (in)	6.028	5.823	5.556	
Specific Gravity	2.92	2.92	2.92	
Liquid Limit	0	0	0	
Plastic Limit	0	0	0	
After Consolidation	**A**	**B**	**C**	**D**
B-Value	0.00	0.00	0.00	
Water Content (%)	24.3	24.3	24.6	
Dry Density (pcf)	104.94	105.73	106.51	
Saturation (%)	100.00	100.00	100.00	
Void Ratio	0.735	0.722	0.710	
Effective Stress (psi)	6.0	12.0	24.0	
Back Press. (psi)	50.5	50.7	50.8	
Rate of Strain	0.009	0.009	0.009	

Maximium Deviator Stress Criterion	
C (psi)	0.0
C' (psi)	0.0
Ø (deg)	0.0
Ø' (deg)	0.0

After Shear	A	B	C	D
σ'1 at Failure (psi)	31.50	28.49	45.72	
σ'3 at Failure (psi)	5.66	12.24	22.99	

Project:	U-2412B	N/A	N/A	N/A	N/A
Location:	Guilford County (Sta. 403+45)				
Project Number:	39406.1.1				
Boring Number:	0				
Sample Number:	ST-22				
Depth:	29.6 - 31.0 ft				
Sample Type:	Undisturbed	Failure Photographs			
Description:	Tannish red colored silt				
Test Type	Consolidated Undrained				
Remarks	Multi-Stage				

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Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date:

Tested By:

Deviator Stress vs. Axial Strain

Principal Stress Ratio vs. Axial Strain

Change in Pore Pressure vs. Axial Strain
Change in Pore Pressure (psi)
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
-6.0
0.000
5.000
10.000
15.000
20.000
25.000
Axial Strain (%)
Specimen A
Specimen B
Specimen C
Specimen D

Mohr Stress Circles at Maximum Deviator Stress Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at Maximum Principal Stress Ratio Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at 15% Axial Strain Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)
Q (psi)
P' (psi)
0.0
10.0
20.0
30.0
40.0
Specimen A
Specimen B
Specimen C
Specimen D
Tangent Line

Stress Paths (Total)
(C' = 0.0 Ø' = 0.0)
Q (psi)
P (psi)
0.0
10.0
20.0
30.0
40.0

Specimen A Shear Data

CU Triaxial Test

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File Location
T-5787.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5787
Sample Location: Guilford County (Sta. 403+45)
Sample Description: Tannish red colored silt
Remarks: 25° shear plane

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.9170001
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.842	2.835	
Height (in)	6.028	6.010	
Weight (grams)	1295.00		1318.00
Moisture (%)	23.92		26.12
Dry Density (pcf)	104.09	104.94	
Saturation (%)	93.10	100.00	
Void Ratio	0.745	0.735	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 56.500
Effective Confining Stress (psi): 6.0
Corrected Peak Deviator Stress (psi): 25.843 at reading number: 27

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	51.2	0.075	50.5	0.0	6.31	0.000	0.000	0.000	6.0	6.0	6.0	6.0	1.00	0.00	6.0	0.0	6.0
1	70.1	0.078	51.4	0.9	6.32	0.061	2.990	2.965	8.9	6.0	8.1	5.1	1.58	0.30	7.5	1.5	6.6
2	77.9	0.083	51.7	1.1	6.32	0.138	4.238	4.179	10.2	6.0	9.0	4.8	1.86	0.27	8.1	2.1	6.9
3	84.1	0.087	51.9	1.4	6.33	0.207	5.210	5.119	11.1	6.0	9.7	4.6	2.11	0.27	8.5	2.6	7.2
4	89.5	0.092	52.0	1.5	6.33	0.283	6.073	5.945	11.9	6.0	10.4	4.5	2.33	0.25	9.0	3.0	7.5
5	95.1	0.096	52.1	1.6	6.33	0.352	6.953	6.792	12.8	6.0	11.2	4.4	2.55	0.24	9.4	3.4	7.8
6	101.1	0.100	52.2	1.7	6.34	0.429	7.907	7.707	13.7	6.0	12.0	4.3	2.80	0.22	9.8	3.9	8.1
7	106.7	0.104	52.2	1.7	6.34	0.498	8.788	8.551	14.5	6.0	12.8	4.3	3.01	0.20	10.3	4.3	8.5
8	112.7	0.109	52.2	1.7	6.35	0.567	9.742	9.467	15.4	6.0	13.7	4.3	3.23	0.18	10.7	4.7	9.0
9	118.9	0.113	52.3	1.8	6.35	0.643	10.733	10.414	16.4	6.0	14.6	4.2	3.48	0.17	11.2	5.2	9.4
10	124.4	0.117	52.3	1.8	6.36	0.712	11.595	11.236	17.2	6.0	15.4	4.2	3.70	0.16	11.6	5.6	9.8
11	130.9	0.121	52.3	1.8	6.36	0.781	12.622	12.221	18.2	6.0	16.4	4.2	3.94	0.15	12.1	6.1	10.3
12	136.8	0.126	52.3	1.8	6.37	0.850	13.558	13.113	19.1	6.0	17.3	4.2	4.15	0.14	12.5	6.6	10.7
13	143.7	0.130	52.2	1.7	6.37	0.926	14.659	14.163	20.1	6.0	18.4	4.3	4.33	0.12	13.1	7.1	11.3
14	149.7	0.134	52.2	1.7	6.38	0.995	15.613	15.071	21.1	6.0	19.4	4.3	4.52	0.11	13.5	7.5	11.8
15	157.3	0.139	52.2	1.7	6.38	1.072	16.805	16.209	22.2	6.0	20.5	4.3	4.76	0.10	14.1	8.1	12.4
16	163.7	0.143	52.1	1.6	6.38	1.141	17.833	17.186	23.2	6.0	21.6	4.4	4.93	0.09	14.6	8.6	13.0
17	169.8	0.147	52.1	1.6	6.39	1.210	18.787	18.090	24.1	6.0	22.5	4.4	5.09	0.09	15.0	9.0	13.5
18	176.7	0.151	52.0	1.5	6.39	1.279	19.887	19.137	25.1	6.0	23.7	4.5	5.24	0.08	15.5	9.6	14.1

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	183.1	0.156	51.9	1.3	6.40	1.355	20.896	20.087	26.1	6.0	24.7	4.6	5.34	0.07	16.0	10.0	14.7
20	190.0	0.160	51.8	1.2	6.40	1.424	21.997	21.131	27.1	6.0	25.9	4.7	5.45	0.06	16.5	10.6	15.3
21	196.9	0.164	51.7	1.1	6.41	1.493	23.080	22.156	28.1	6.0	27.0	4.8	5.58	0.05	17.1	11.1	15.9
22	203.6	0.169	51.5	1.0	6.41	1.570	24.144	23.156	29.1	6.0	28.1	5.0	5.67	0.04	17.6	11.6	16.5
23	208.2	0.173	51.4	0.9	6.42	1.639	24.878	23.834	29.8	6.0	28.9	5.1	5.67	0.04	17.9	11.9	17.0
24	214.1	0.178	51.2	0.7	6.42	1.715	25.813	24.705	30.7	6.0	30.0	5.3	5.68	0.03	18.3	12.4	17.6
25	218.2	0.182	51.0	0.5	6.43	1.784	26.455	25.291	31.3	6.0	30.8	5.5	5.61	0.02	18.6	12.6	18.1
26	220.8	0.186	50.8	0.3	6.43	1.861	26.877	25.655	31.6	6.0	31.3	5.7	5.53	0.01	18.8	12.8	18.5
27	222.1	0.187	50.8	0.3	6.43	1.876	27.079	25.843	31.8	6.0	31.5	5.7	5.57	0.01	18.9	12.9	18.6

Specimen B Shear Data

CU Triaxial Test

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File Location
T-5787.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5787
Sample Location: Guilford County (Sta. 403+45)
Sample Description: Same as Specimen A
Remarks: Same as Specimen A

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.9170001
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.880	2.872	
Height (in)	5.823	5.812	
Weight (grams)	1295.00		1318.00
Moisture (%)	23.92		26.12
Dry Density (pcf)	104.96	105.73	
Saturation (%)	94.94	100.00	
Void Ratio	0.730	0.722	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 62.700
Effective Confining Stress (psi): 12.0
Corrected Peak Deviator Stress (psi): 16.256 at reading number: 13

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	217.0	0.198	50.7	0.0	6.48	0.000	0.000	0.000	12.0	12.0	12.0	12.0	1.00	0.00	12.0	0.0	12.0
1	261.7	0.202	51.7	1.1	6.48	0.071	6.899	6.867	18.9	12.0	17.8	11.0	1.63	0.15	15.5	3.4	14.4
2	275.7	0.207	51.9	1.3	6.49	0.150	9.062	8.991	21.0	12.0	19.8	10.8	1.83	0.14	16.5	4.5	15.3
3	285.4	0.211	52.0	1.3	6.49	0.222	10.564	10.455	22.5	12.0	21.2	10.7	1.97	0.12	17.3	5.2	16.0
4	293.8	0.215	51.9	1.3	6.50	0.301	11.851	11.700	23.7	12.0	22.5	10.8	2.09	0.11	17.9	5.8	16.6
5	300.2	0.220	51.8	1.1	6.50	0.380	12.834	12.639	24.7	12.0	23.6	10.9	2.16	0.09	18.4	6.3	17.2
6	306.5	0.225	51.6	1.0	6.51	0.459	13.817	13.577	25.6	12.0	24.6	11.1	2.23	0.07	18.8	6.8	17.9
7	310.9	0.229	51.5	0.8	6.51	0.530	14.496	14.216	26.2	12.0	25.4	11.2	2.27	0.06	19.1	7.1	18.3
8	314.9	0.233	51.4	0.7	6.52	0.610	15.104	14.778	26.8	12.0	26.1	11.3	2.30	0.05	19.4	7.4	18.7
9	318.6	0.238	51.2	0.5	6.52	0.689	15.676	15.304	27.3	12.0	26.8	11.5	2.33	0.03	19.7	7.7	19.2
10	321.5	0.243	51.0	0.4	6.53	0.768	16.123	15.705	27.7	12.0	27.4	11.7	2.34	0.02	19.9	7.9	19.5
11	323.4	0.247	50.8	0.1	6.53	0.847	16.426	15.963	28.0	12.0	27.9	11.9	2.34	0.01	20.0	8.0	19.9
12	325.2	0.251	50.6	-0.1	6.54	0.918	16.695	16.189	28.2	12.0	28.3	12.1	2.34	0.00	20.1	8.1	20.2
13	325.9	0.255	50.5	-0.2	6.54	0.990	16.802	16.256	28.3	12.0	28.5	12.2	2.33	-0.01	20.2	8.1	20.4

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)

Specimen C Shear Data

CU Triaxial Test

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File Location
T-5787.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5787
Sample Location: Guilford County (Sta. 403+45)
Sample Description: Same as Specimen A
Remarks: Same as Specimen A

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.9170001
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.943	2.928	
Height (in)	5.556	5.550	
Weight (grams)	1295.00		1318.00
Moisture (%)	23.92		26.12
Dry Density (pcf)	105.33	106.51	
Saturation (%)	95.73	100.00	
Void Ratio	0.724	0.710	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 74.800
Effective Confining Stress (psi): 24.0
Corrected Peak Deviator Stress (psi): 22.729 at reading number: 15

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	323.2	0.262	50.8	0.0	6.73	0.000	0.000	0.000	24.0	24.0	24.0	24.0	1.00	0.00	24.0	0.0	24.0
1	384.9	0.266	52.4	1.6	6.74	0.075	9.165	9.130	33.2	24.0	31.6	22.4	1.41	0.18	28.6	4.6	27.0
2	404.6	0.271	52.7	2.0	6.75	0.158	12.088	12.010	36.1	24.0	34.1	22.1	1.54	0.17	30.1	6.0	28.1
3	418.9	0.275	52.9	2.2	6.75	0.232	14.203	14.083	38.1	24.0	36.0	21.9	1.64	0.15	31.1	7.0	28.9
4	431.4	0.279	53.0	2.2	6.76	0.315	16.061	15.892	39.9	24.0	37.7	21.8	1.73	0.14	32.0	7.9	29.8
5	441.1	0.283	53.0	2.2	6.76	0.390	17.505	17.290	41.3	24.0	39.1	21.8	1.79	0.13	32.7	8.6	30.5
6	449.1	0.288	52.9	2.2	6.77	0.464	18.691	18.430	42.5	24.0	40.3	21.9	1.84	0.12	33.3	9.2	31.1
7	455.1	0.292	52.9	2.1	6.77	0.547	19.586	19.273	43.3	24.0	41.2	21.9	1.88	0.11	33.7	9.6	31.6
8	461.2	0.296	52.8	2.0	6.78	0.622	20.497	20.136	44.2	24.0	42.2	22.0	1.91	0.10	34.1	10.1	32.1
9	466.2	0.301	52.7	1.9	6.78	0.696	21.236	20.827	44.9	24.0	43.0	22.1	1.94	0.09	34.5	10.4	32.6
10	469.7	0.305	52.5	1.8	6.79	0.771	21.752	21.295	45.3	24.0	43.6	22.3	1.96	0.08	34.7	10.6	32.9
11	474.0	0.309	52.3	1.6	6.79	0.854	22.388	21.876	45.9	24.0	44.3	22.5	1.97	0.07	35.0	10.9	33.4
12	475.9	0.313	52.2	1.5	6.80	0.929	22.681	22.121	46.2	24.0	44.7	22.6	1.98	0.07	35.1	11.1	33.6
13	478.5	0.318	52.1	1.3	6.80	1.003	23.059	22.451	46.5	24.0	45.2	22.7	1.99	0.06	35.3	11.2	34.0
14	480.1	0.322	52.0	1.2	6.81	1.086	23.300	22.639	46.7	24.0	45.5	22.8	1.99	0.05	35.4	11.3	34.2
15	481.0	0.326	51.8	1.1	6.81	1.161	23.437	22.729	46.8	24.0	45.7	23.0	1.99	0.05	35.4	11.4	34.4
16	481.3	0.331	51.6	0.9	6.82	1.244	23.472	22.713	46.8	24.0	45.9	23.2	1.98	0.04	35.4	11.4	34.5
17	480.6	0.335	51.5	0.7	6.82	1.318	23.369	22.565	46.6	24.0	45.9	23.3	1.97	0.03	35.3	11.3	34.6
18	480.5	0.340	51.3	0.6	6.83	1.401	23.351	22.498	46.5	24.0	46.0	23.5	1.96	0.03	35.3	11.2	34.7

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	478.6	0.344	51.2	0.5	6.84	1.476	23.076	22.181	46.2	24.0	45.8	23.6	1.94	0.02	35.1	11.1	34.7
20	476.6	0.348	51.1	0.4	6.84	1.559	22.784	21.843	45.9	24.0	45.5	23.7	1.92	0.02	35.0	10.9	34.6
21	474.0	0.353	51.0	0.2	6.85	1.633	22.388	21.409	45.5	24.0	45.2	23.8	1.90	0.01	34.8	10.7	34.5
22	471.5	0.357	50.9	0.1	6.85	1.716	22.027	21.005	45.0	24.0	44.9	23.9	1.88	0.01	34.5	10.5	34.4
23	468.6	0.362	50.7	0.0	6.86	1.799	21.597	20.533	44.6	24.0	44.6	24.1	1.85	0.00	34.3	10.3	34.3
24	466.3	0.366	50.7	-0.1	6.86	1.882	21.254	20.147	44.2	24.0	44.3	24.1	1.83	0.00	34.1	10.1	34.2
25	463.9	0.371	50.6	-0.1	6.87	1.965	20.892	19.744	43.8	24.0	43.9	24.2	1.82	-0.01	33.9	9.9	34.1
26	461.9	0.375	50.5	-0.2	6.87	2.040	20.600	19.429	43.5	24.0	43.7	24.3	1.80	-0.01	33.8	9.7	34.0
27	459.8	0.380	50.5	-0.3	6.88	2.123	20.291	19.109	43.2	24.0	43.4	24.3	1.79	-0.02	33.6	9.6	33.9
28	459.5	0.384	50.4	-0.4	6.89	2.206	20.239	19.041	43.1	24.0	43.5	24.4	1.78	-0.02	33.6	9.5	33.9
29	457.2	0.389	50.3	-0.5	6.89	2.288	19.895	18.689	42.7	24.0	43.2	24.5	1.76	-0.03	33.4	9.3	33.9
30	456.1	0.393	50.2	-0.5	6.90	2.363	19.740	18.523	42.6	24.0	43.1	24.6	1.75	-0.03	33.3	9.3	33.8
31	454.8	0.398	50.2	-0.6	6.90	2.446	19.534	18.305	42.4	24.0	42.9	24.6	1.74	-0.03	33.2	9.2	33.8
32	454.1	0.402	50.1	-0.6	6.91	2.529	19.431	18.188	42.2	24.0	42.8	24.7	1.74	-0.03	33.1	9.1	33.8
33	453.5	0.406	50.1	-0.7	6.91	2.604	19.345	18.090	42.1	24.0	42.8	24.7	1.73	-0.04	33.1	9.0	33.8
34	452.0	0.411	50.0	-0.8	6.92	2.686	19.121	17.856	41.9	24.0	42.7	24.8	1.72	-0.04	33.0	8.9	33.8
35	451.4	0.416	49.9	-0.9	6.93	2.769	19.035	17.757	41.8	24.0	42.7	24.9	1.71	-0.05	32.9	8.9	33.8
36	449.9	0.420	49.8	-0.9	6.93	2.844	18.812	17.526	41.6	24.0	42.5	25.0	1.70	-0.05	32.8	8.8	33.7
37	448.7	0.425	49.8	-1.0	6.94	2.935	18.640	17.341	41.4	24.0	42.4	25.0	1.69	-0.06	32.7	8.7	33.7
38	447.9	0.429	49.8	-1.0	6.94	3.018	18.519	17.209	41.3	24.0	42.3	25.0	1.69	-0.06	32.7	8.6	33.6
39	446.9	0.434	49.7	-1.1	6.95	3.093	18.365	17.045	41.1	24.0	42.2	25.1	1.68	-0.06	32.6	8.5	33.7
40	446.5	0.438	49.6	-1.2	6.96	3.176	18.313	16.980	41.0	24.0	42.2	25.2	1.67	-0.07	32.5	8.5	33.7
41	445.8	0.443	49.6	-1.2	6.96	3.259	18.210	16.865	40.9	24.0	42.1	25.2	1.67	-0.07	32.5	8.4	33.7
42	444.7	0.447	49.5	-1.2	6.97	3.341	18.038	16.684	40.7	24.0	42.0	25.3	1.66	-0.07	32.4	8.3	33.6
43	443.5	0.452	49.5	-1.3	6.97	3.424	17.866	16.503	40.5	24.0	41.8	25.3	1.65	-0.08	32.3	8.3	33.6
44	442.5	0.457	49.5	-1.3	6.98	3.507	17.711	16.339	40.4	24.0	41.7	25.3	1.64	-0.08	32.2	8.2	33.5
45	441.8	0.461	49.4	-1.4	6.99	3.590	17.608	16.225	40.3	24.0	41.6	25.4	1.64	-0.08	32.2	8.1	33.5
46	440.9	0.466	49.3	-1.5	6.99	3.673	17.471	16.078	40.1	24.0	41.6	25.5	1.63	-0.09	32.1	8.0	33.5
47	440.4	0.470	49.3	-1.5	7.00	3.756	17.402	15.997	40.0	24.0	41.5	25.5	1.63	-0.09	32.0	8.0	33.5
48	440.2	0.475	49.3	-1.5	7.00	3.839	17.367	15.949	40.0	24.0	41.5	25.5	1.62	-0.09	32.0	8.0	33.5
49	439.9	0.480	49.2	-1.5	7.01	3.922	17.333	15.902	39.9	24.0	41.5	25.6	1.62	-0.10	32.0	8.0	33.5
50	439.3	0.484	49.2	-1.6	7.02	4.005	17.247	15.805	39.9	24.0	41.4	25.6	1.62	-0.10	31.9	7.9	33.5
51	439.6	0.489	49.1	-1.6	7.02	4.088	17.281	15.824	39.9	24.0	41.5	25.7	1.62	-0.10	32.0	7.9	33.6
52	439.0	0.493	49.1	-1.7	7.03	4.171	17.195	15.727	39.8	24.0	41.5	25.7	1.61	-0.11	31.9	7.9	33.6
53	438.7	0.498	49.0	-1.7	7.03	4.254	17.144	15.663	39.7	24.0	41.4	25.8	1.61	-0.11	31.9	7.8	33.6
54	438.3	0.503	49.0	-1.7	7.04	4.336	17.092	15.600	39.6	24.0	41.4	25.8	1.61	-0.11	31.8	7.8	33.6
55	438.4	0.507	49.0	-1.8	7.05	4.411	17.109	15.603	39.6	24.0	41.4	25.8	1.60	-0.11	31.8	7.8	33.6
56	437.8	0.511	48.9	-1.8	7.05	4.494	17.023	15.507	39.6	24.0	41.4	25.9	1.60	-0.12	31.8	7.8	33.6
57	437.6	0.515	48.8	-1.9	7.06	4.569	16.989	15.462	39.5	24.0	41.4	26.0	1.60	-0.12	31.8	7.7	33.7
58	438.2	0.520	48.8	-1.9	7.06	4.652	17.075	15.530	39.6	24.0	41.5	26.0	1.60	-0.12	31.8	7.8	33.7
59	438.2	0.525	48.8	-2.0	7.07	4.734	17.075	15.515	39.6	24.0	41.5	26.0	1.60	-0.13	31.8	7.8	33.8

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	438.9	0.529	48.8	-2.0	7.07	4.809	17.178	15.601	39.6	24.0	41.6	26.0	1.60	-0.13	31.8	7.8	33.8
61	438.7	0.533	48.8	-2.0	7.08	4.884	17.144	15.555	39.6	24.0	41.6	26.0	1.60	-0.13	31.8	7.8	33.8
62	439.6	0.538	48.7	-2.1	7.09	4.967	17.281	15.672	39.7	24.0	41.8	26.1	1.60	-0.13	31.9	7.8	34.0
63	439.8	0.542	48.6	-2.1	7.09	5.041	17.316	15.692	39.7	24.0	41.9	26.2	1.60	-0.14	31.9	7.8	34.0
64	440.6	0.546	48.6	-2.2	7.10	5.116	17.436	15.793	39.8	24.0	42.0	26.2	1.60	-0.14	31.9	7.9	34.1
65	441.1	0.550	48.6	-2.2	7.10	5.190	17.505	15.845	39.9	24.0	42.1	26.2	1.60	-0.14	32.0	7.9	34.1
66	441.9	0.555	48.6	-2.2	7.11	5.273	17.625	15.945	40.0	24.0	42.2	26.2	1.61	-0.14	32.0	8.0	34.2
67	441.7	0.559	48.5	-2.2	7.11	5.348	17.591	15.899	39.9	24.0	42.2	26.3	1.61	-0.14	32.0	7.9	34.2
68	443.5	0.563	48.5	-2.3	7.12	5.431	17.866	16.144	40.2	24.0	42.5	26.3	1.61	-0.14	32.1	8.1	34.4
69	444.6	0.567	48.4	-2.4	7.13	5.506	18.021	16.277	40.3	24.0	42.7	26.4	1.62	-0.15	32.2	8.1	34.6
70	444.6	0.572	48.4	-2.4	7.13	5.588	18.021	16.262	40.3	24.0	42.7	26.4	1.62	-0.15	32.2	8.1	34.6
71	445.6	0.577	48.4	-2.4	7.14	5.671	18.176	16.393	40.4	24.0	42.8	26.4	1.62	-0.15	32.2	8.2	34.6
72	445.9	0.581	48.4	-2.4	7.14	5.746	18.227	16.429	40.5	24.0	42.9	26.4	1.62	-0.15	32.3	8.2	34.7
73	446.4	0.585	48.3	-2.5	7.15	5.821	18.296	16.480	40.5	24.0	43.0	26.5	1.62	-0.15	32.3	8.2	34.7
74	445.9	0.590	48.2	-2.5	7.16	5.904	18.227	16.400	40.4	24.0	43.0	26.6	1.62	-0.15	32.2	8.2	34.8
75	445.8	0.594	48.2	-2.6	7.16	5.986	18.210	16.369	40.4	24.0	43.0	26.6	1.61	-0.16	32.2	8.2	34.8
76	445.9	0.599	48.2	-2.6	7.17	6.069	18.227	16.370	40.4	24.0	43.0	26.6	1.61	-0.16	32.2	8.2	34.8
77	445.9	0.603	48.1	-2.6	7.18	6.152	18.227	16.354	40.4	24.0	43.0	26.7	1.61	-0.16	32.2	8.2	34.8
78	445.5	0.608	48.1	-2.6	7.18	6.235	18.158	16.275	40.3	24.0	43.0	26.7	1.61	-0.16	32.2	8.1	34.8
79	445.5	0.613	48.1	-2.7	7.19	6.318	18.158	16.260	40.3	24.0	43.0	26.7	1.61	-0.17	32.2	8.1	34.9
80	445.1	0.617	48.0	-2.8	7.19	6.401	18.107	16.196	40.2	24.0	43.0	26.8	1.60	-0.17	32.1	8.1	34.9
81	444.9	0.622	48.0	-2.8	7.20	6.484	18.072	16.149	40.2	24.0	43.0	26.8	1.60	-0.17	32.1	8.1	34.9
82	444.4	0.626	47.9	-2.8	7.21	6.567	18.004	16.070	40.1	24.0	42.9	26.9	1.60	-0.18	32.1	8.0	34.9
83	443.9	0.631	47.9	-2.8	7.21	6.650	17.918	15.975	40.0	24.0	42.8	26.9	1.59	-0.18	32.0	8.0	34.8
84	444.2	0.636	47.9	-2.8	7.22	6.733	17.969	16.008	40.1	24.0	42.9	26.9	1.60	-0.18	32.0	8.0	34.9
85	444.3	0.640	47.9	-2.9	7.23	6.807	17.986	16.011	40.1	24.0	43.0	26.9	1.59	-0.18	32.1	8.0	35.0
86	443.9	0.644	47.8	-3.0	7.23	6.890	17.918	15.932	40.0	24.0	42.9	27.0	1.59	-0.19	32.0	8.0	35.0
87	443.3	0.649	47.8	-3.0	7.24	6.973	17.832	15.837	39.9	24.0	42.9	27.0	1.59	-0.19	32.0	7.9	35.0
88	443.5	0.653	47.8	-3.0	7.25	7.048	17.866	15.856	39.9	24.0	42.9	27.0	1.59	-0.19	32.0	7.9	35.0
89	434.9	0.657	47.8	-3.0	7.25	7.122	16.594	14.660	38.7	24.0	41.7	27.0	1.54	-0.20	31.4	7.3	34.4
90	435.3	0.662	47.7	-3.0	7.26	7.205	16.645	14.695	38.7	24.0	41.8	27.1	1.54	-0.21	31.4	7.3	34.4
91	436.2	0.666	47.7	-3.1	7.26	7.288	16.783	14.808	38.9	24.0	41.9	27.1	1.55	-0.21	31.4	7.4	34.5
92	437.1	0.671	47.6	-3.1	7.27	7.363	16.920	14.923	39.0	24.0	42.1	27.2	1.55	-0.21	31.5	7.5	34.6
93	437.4	0.675	47.6	-3.1	7.28	7.446	16.955	14.941	39.0	24.0	42.1	27.2	1.55	-0.21	31.5	7.5	34.7
94	436.8	0.679	47.6	-3.2	7.28	7.520	16.869	14.849	38.9	24.0	42.1	27.2	1.55	-0.21	31.5	7.4	34.6
95	437.0	0.684	47.6	-3.2	7.29	7.603	16.903	14.867	38.9	24.0	42.1	27.2	1.55	-0.21	31.5	7.4	34.7
96	437.1	0.688	47.6	-3.2	7.29	7.678	16.920	14.870	38.9	24.0	42.1	27.2	1.55	-0.21	31.5	7.4	34.7
97	437.5	0.693	47.5	-3.3	7.30	7.761	16.972	14.903	38.9	24.0	42.2	27.3	1.55	-0.22	31.5	7.5	34.7
98	437.4	0.697	47.4	-3.3	7.31	7.844	16.955	14.874	38.9	24.0	42.2	27.4	1.54	-0.22	31.5	7.4	34.8
99	437.5	0.701	47.5	-3.3	7.31	7.918	16.972	14.877	38.9	24.0	42.2	27.3	1.54	-0.22	31.5	7.4	34.8
100	437.5	0.706	47.5	-3.3	7.32	8.001	16.972	14.863	38.9	24.0	42.2	27.3	1.54	-0.22	31.5	7.4	34.8

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	431.1	0.711	47.4	-3.3	7.33	8.084	16.026	13.979	38.0	24.0	41.4	27.4	1.51	-0.24	31.0	7.0	34.4
102	431.7	0.715	47.4	-3.4	7.33	8.159	16.112	14.046	38.1	24.0	41.5	27.4	1.51	-0.24	31.1	7.0	34.4
103	432.7	0.719	47.4	-3.4	7.34	8.242	16.267	14.175	38.2	24.0	41.6	27.4	1.52	-0.24	31.1	7.1	34.5
104	432.4	0.724	47.3	-3.4	7.35	8.325	16.215	14.114	38.2	24.0	41.6	27.5	1.51	-0.24	31.1	7.1	34.5
105	434.3	0.728	47.3	-3.4	7.35	8.399	16.490	14.354	38.4	24.0	41.8	27.5	1.52	-0.24	31.2	7.2	34.7
106	434.1	0.732	47.4	-3.4	7.36	8.474	16.473	14.326	38.4	24.0	41.8	27.4	1.52	-0.24	31.2	7.2	34.6
107	434.4	0.737	47.3	-3.4	7.36	8.557	16.508	14.344	38.4	24.0	41.8	27.5	1.52	-0.24	31.2	7.2	34.6
108	434.5	0.741	47.3	-3.5	7.37	8.640	16.525	14.346	38.4	24.0	41.8	27.5	1.52	-0.24	31.2	7.2	34.7
109	432.7	0.746	47.2	-3.5	7.38	8.723	16.267	14.097	38.1	24.0	41.7	27.6	1.51	-0.25	31.1	7.0	34.6
110	433.0	0.750	47.2	-3.5	7.38	8.797	16.301	14.116	38.2	24.0	41.7	27.6	1.51	-0.25	31.1	7.1	34.6
111	433.9	0.755	47.2	-3.5	7.39	8.880	16.439	14.228	38.3	24.0	41.8	27.6	1.52	-0.25	31.2	7.1	34.7
112	434.3	0.759	47.2	-3.5	7.40	8.955	16.490	14.262	38.3	24.0	41.9	27.6	1.52	-0.25	31.2	7.1	34.7
113	431.5	0.763	47.2	-3.6	7.40	9.038	16.078	13.873	37.9	24.0	41.5	27.6	1.50	-0.26	31.0	6.9	34.6
114	431.8	0.768	47.2	-3.6	7.41	9.112	16.129	13.908	38.0	24.0	41.6	27.6	1.50	-0.26	31.0	7.0	34.6
115	432.9	0.772	47.1	-3.7	7.42	9.195	16.284	14.035	38.1	24.0	41.7	27.7	1.51	-0.26	31.1	7.0	34.7
116	433.0	0.776	47.1	-3.7	7.42	9.270	16.301	14.039	38.1	24.0	41.7	27.7	1.51	-0.26	31.1	7.0	34.7
117	433.2	0.781	47.1	-3.7	7.43	9.353	16.336	14.057	38.1	24.0	41.8	27.7	1.51	-0.26	31.1	7.0	34.7
118	432.9	0.785	47.1	-3.7	7.44	9.427	16.284	13.998	38.0	24.0	41.7	27.7	1.51	-0.26	31.0	7.0	34.7
119	431.5	0.790	47.1	-3.7	7.44	9.510	16.078	13.797	37.8	24.0	41.5	27.7	1.50	-0.27	30.9	6.9	34.6
120	431.4	0.794	47.0	-3.7	7.45	9.585	16.061	13.770	37.8	24.0	41.5	27.8	1.50	-0.27	30.9	6.9	34.7
121	431.8	0.798	47.0	-3.8	7.46	9.668	16.129	13.819	37.9	24.0	41.6	27.8	1.50	-0.27	31.0	6.9	34.7
122	432.4	0.803	47.0	-3.8	7.46	9.742	16.215	13.884	37.9	24.0	41.7	27.8	1.50	-0.27	31.0	6.9	34.7
123	432.2	0.807	47.0	-3.8	7.47	9.825	16.181	13.840	37.9	24.0	41.6	27.8	1.50	-0.27	31.0	6.9	34.7
124	431.4	0.812	47.0	-3.8	7.48	9.908	16.061	13.718	37.8	24.0	41.5	27.8	1.49	-0.28	30.9	6.9	34.7
125	433.0	0.816	47.0	-3.8	7.48	9.991	16.301	13.921	38.0	24.0	41.7	27.8	1.50	-0.27	31.0	7.0	34.8
126	431.2	0.821	46.9	-3.8	7.49	10.074	16.043	13.676	37.7	24.0	41.6	27.9	1.49	-0.28	30.9	6.8	34.7
127	431.9	0.825	46.9	-3.9	7.50	10.149	16.147	13.757	37.8	24.0	41.7	27.9	1.49	-0.28	30.9	6.9	34.8
128	432.4	0.830	46.9	-3.9	7.50	10.232	16.215	13.805	37.9	24.0	41.7	27.9	1.49	-0.28	30.9	6.9	34.8
129	432.1	0.834	46.9	-3.9	7.51	10.315	16.164	13.745	37.8	24.0	41.7	27.9	1.49	-0.28	30.9	6.9	34.8
130	430.2	0.839	46.9	-3.9	7.52	10.398	15.889	13.485	37.5	24.0	41.4	27.9	1.48	-0.29	30.8	6.7	34.7
131	430.8	0.844	46.8	-3.9	7.52	10.480	15.975	13.549	37.6	24.0	41.5	28.0	1.48	-0.29	30.8	6.8	34.7
132	430.8	0.848	46.8	-4.0	7.53	10.563	15.975	13.536	37.6	24.0	41.5	28.0	1.48	-0.29	30.8	6.8	34.8
133	430.9	0.853	46.8	-4.0	7.54	10.646	15.992	13.538	37.6	24.0	41.6	28.0	1.48	-0.29	30.8	6.8	34.8
134	431.2	0.857	46.8	-4.0	7.54	10.721	16.043	13.572	37.6	24.0	41.6	28.0	1.48	-0.29	30.8	6.8	34.8
135	430.1	0.861	46.8	-4.0	7.55	10.804	15.871	13.405	37.5	24.0	41.4	28.0	1.48	-0.30	30.7	6.7	34.7
136	431.2	0.867	46.8	-4.0	7.56	10.895	16.043	13.544	37.6	24.0	41.6	28.0	1.48	-0.29	30.8	6.8	34.8
137	431.6	0.871	46.7	-4.0	7.56	10.970	16.095	13.578	37.6	24.0	41.6	28.1	1.48	-0.30	30.8	6.8	34.8
138	431.2	0.875	46.7	-4.1	7.57	11.053	16.043	13.519	37.6	24.0	41.6	28.1	1.48	-0.30	30.8	6.8	34.9
139	429.7	0.880	46.7	-4.1	7.58	11.135	15.820	13.307	37.4	24.0	41.5	28.1	1.47	-0.31	30.7	6.7	34.8
140	430.4	0.884	46.7	-4.1	7.59	11.218	15.923	13.385	37.4	24.0	41.5	28.1	1.48	-0.30	30.7	6.7	34.8
141	431.1	0.889	46.7	-4.1	7.59	11.301	16.026	13.464	37.5	24.0	41.6	28.1	1.48	-0.30	30.8	6.7	34.9

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	431.0	0.893	46.7	-4.1	7.60	11.376	16.009	13.436	37.5	24.0	41.6	28.1	1.48	-0.30	30.8	6.7	34.8
143	431.2	0.898	46.7	-4.1	7.61	11.459	16.043	13.454	37.5	24.0	41.6	28.1	1.48	-0.30	30.8	6.7	34.9
144	431.0	0.902	46.6	-4.2	7.61	11.533	16.009	13.411	37.5	24.0	41.6	28.2	1.48	-0.31	30.8	6.7	34.9
145	429.4	0.906	46.6	-4.2	7.62	11.608	15.768	13.187	37.2	24.0	41.4	28.2	1.47	-0.32	30.6	6.6	34.8
146	430.2	0.911	46.6	-4.2	7.63	11.691	15.889	13.280	37.3	24.0	41.5	28.2	1.47	-0.32	30.7	6.6	34.9
147	430.9	0.915	46.6	-4.2	7.63	11.766	15.992	13.359	37.4	24.0	41.6	28.2	1.47	-0.31	30.7	6.7	34.9
148	430.5	0.919	46.6	-4.2	7.64	11.849	15.940	13.300	37.3	24.0	41.5	28.2	1.47	-0.32	30.7	6.7	34.9
149	431.9	0.924	46.5	-4.2	7.65	11.923	16.147	13.470	37.5	24.0	41.7	28.3	1.48	-0.31	30.8	6.7	35.0
150	430.7	0.928	46.4	-4.3	7.65	11.998	15.957	13.292	37.3	24.0	41.6	28.4	1.47	-0.32	30.7	6.6	35.0
151	431.9	0.932	46.5	-4.3	7.66	12.081	16.147	13.445	37.5	24.0	41.8	28.3	1.47	-0.32	30.8	6.7	35.0
152	431.7	0.936	46.5	-4.3	7.67	12.155	16.112	13.402	37.4	24.0	41.7	28.3	1.47	-0.32	30.7	6.7	35.0
153	430.9	0.941	46.5	-4.3	7.67	12.230	15.992	13.285	37.3	24.0	41.6	28.3	1.47	-0.32	30.7	6.6	35.0
154	432.5	0.945	46.4	-4.3	7.68	12.313	16.233	13.483	37.5	24.0	41.8	28.4	1.48	-0.32	30.8	6.7	35.1
155	430.5	0.949	46.4	-4.4	7.69	12.387	15.940	13.214	37.3	24.0	41.7	28.4	1.46	-0.33	30.7	6.6	35.0
156	431.9	0.954	46.4	-4.4	7.69	12.470	16.147	13.382	37.4	24.0	41.8	28.4	1.47	-0.33	30.7	6.7	35.1
157	432.5	0.958	46.4	-4.4	7.70	12.545	16.233	13.445	37.5	24.0	41.9	28.4	1.47	-0.32	30.8	6.7	35.1
158	432.3	0.963	46.4	-4.4	7.71	12.628	16.198	13.401	37.4	24.0	41.8	28.4	1.47	-0.33	30.7	6.7	35.1
159	431.7	0.967	46.4	-4.4	7.72	12.711	16.112	13.313	37.4	24.0	41.8	28.4	1.47	-0.33	30.7	6.7	35.1
160	432.4	0.971	46.3	-4.4	7.72	12.785	16.215	13.391	37.4	24.0	41.9	28.5	1.47	-0.33	30.7	6.7	35.2
161	430.4	0.976	46.2	-4.5	7.73	12.868	15.923	13.123	37.2	24.0	41.7	28.6	1.46	-0.34	30.6	6.6	35.1
162	431.6	0.981	46.3	-4.5	7.74	12.951	16.095	13.259	37.3	24.0	41.8	28.5	1.46	-0.34	30.7	6.6	35.2
163	432.6	0.985	46.3	-4.5	7.74	13.034	16.250	13.380	37.4	24.0	41.9	28.5	1.47	-0.34	30.7	6.7	35.2
164	432.6	0.989	46.3	-4.5	7.75	13.109	16.250	13.368	37.4	24.0	41.9	28.5	1.47	-0.34	30.7	6.7	35.2
165	433.6	0.994	46.3	-4.5	7.76	13.192	16.387	13.474	37.5	24.0	42.0	28.5	1.47	-0.33	30.8	6.7	35.2
166	433.4	0.999	46.2	-4.5	7.77	13.275	16.370	13.446	37.5	24.0	42.0	28.6	1.47	-0.34	30.8	6.7	35.3
167	431.5	1.003	46.2	-4.6	7.77	13.358	16.078	13.179	37.2	24.0	41.8	28.6	1.46	-0.35	30.6	6.6	35.2
168	432.4	1.008	46.2	-4.6	7.78	13.440	16.215	13.285	37.3	24.0	41.9	28.6	1.46	-0.34	30.7	6.6	35.3
169	433.2	1.012	46.2	-4.6	7.79	13.515	16.336	13.377	37.4	24.0	42.0	28.6	1.47	-0.34	30.7	6.7	35.3
170	432.6	1.017	46.2	-4.5	7.79	13.598	16.250	13.289	37.3	24.0	41.9	28.6	1.46	-0.34	30.7	6.6	35.2
171	432.7	1.021	46.2	-4.6	7.80	13.681	16.267	13.290	37.3	24.0	41.9	28.6	1.46	-0.34	30.7	6.6	35.3
172	432.7	1.026	46.2	-4.6	7.81	13.764	16.267	13.277	37.3	24.0	41.9	28.6	1.46	-0.35	30.7	6.6	35.3
173	431.5	1.030	46.1	-4.7	7.82	13.838	16.078	13.102	37.1	24.0	41.8	28.7	1.46	-0.36	30.6	6.6	35.3
174	432.2	1.035	46.1	-4.6	7.82	13.921	16.181	13.177	37.2	24.0	41.9	28.7	1.46	-0.35	30.6	6.6	35.3
175	433.1	1.039	46.1	-4.6	7.83	13.996	16.318	13.283	37.3	24.0	42.0	28.7	1.46	-0.35	30.7	6.6	35.3
176	433.1	1.043	46.2	-4.6	7.84	14.079	16.318	13.270	37.3	24.0	41.9	28.6	1.46	-0.35	30.7	6.6	35.3
177	432.7	1.048	46.1	-4.6	7.85	14.162	16.267	13.212	37.3	24.0	41.9	28.7	1.46	-0.35	30.7	6.6	35.3
178	432.6	1.052	46.1	-4.7	7.85	14.245	16.250	13.184	37.2	24.0	41.9	28.7	1.46	-0.35	30.6	6.6	35.3
179	431.2	1.057	46.1	-4.7	7.86	14.319	16.043	12.995	37.0	24.0	41.7	28.7	1.45	-0.36	30.5	6.5	35.2
180	432.2	1.061	46.1	-4.7	7.87	14.402	16.181	13.099	37.1	24.0	41.8	28.7	1.46	-0.36	30.6	6.5	35.3
181	433.4	1.065	46.1	-4.7	7.87	14.477	16.370	13.249	37.3	24.0	42.0	28.7	1.46	-0.35	30.7	6.6	35.3
182	434.6	1.070	46.1	-4.7	7.88	14.560	16.542	13.382	37.4	24.0	42.1	28.7	1.47	-0.35	30.7	6.7	35.4

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	435.1	1.075	46.1	-4.7	7.89	14.643	16.611	13.427	37.5	24.0	42.2	28.7	1.47	-0.35	30.8	6.7	35.4
184	435.4	1.079	46.0	-4.7	7.90	14.726	16.662	13.457	37.5	24.0	42.2	28.8	1.47	-0.35	30.8	6.7	35.5
185	434.8	1.083	46.0	-4.7	7.90	14.800	16.576	13.372	37.4	24.0	42.1	28.8	1.46	-0.35	30.7	6.7	35.4
186	435.9	1.088	46.0	-4.7	7.91	14.883	16.731	13.490	37.5	24.0	42.3	28.8	1.47	-0.35	30.8	6.7	35.5
187	435.8	1.092	46.1	-4.7	7.92	14.966	16.714	13.461	37.5	24.0	42.2	28.7	1.47	-0.35	30.8	6.7	35.5
188	435.8	1.097	46.1	-4.7	7.93	15.041	16.714	13.449	37.5	24.0	42.2	28.7	1.47	-0.35	30.8	6.7	35.5
189	434.3	1.101	46.0	-4.7	7.93	15.124	16.490	13.245	37.3	24.0	42.0	28.8	1.46	-0.36	30.7	6.6	35.4
190	434.8	1.106	46.0	-4.8	7.94	15.207	16.576	13.304	37.3	24.0	42.1	28.8	1.46	-0.36	30.7	6.7	35.5
191	435.4	1.110	46.0	-4.8	7.95	15.281	16.662	13.365	37.4	24.0	42.2	28.8	1.46	-0.36	30.7	6.7	35.5
192	435.9	1.115	46.0	-4.7	7.96	15.364	16.731	13.409	37.5	24.0	42.2	28.8	1.47	-0.35	30.8	6.7	35.5
193	437.4	1.119	46.0	-4.7	7.96	15.439	16.955	13.586	37.6	24.0	42.4	28.8	1.47	-0.35	30.8	6.8	35.6
194	435.4	1.123	46.0	-4.8	7.97	15.522	16.662	13.325	37.4	24.0	42.1	28.8	1.46	-0.36	30.7	6.7	35.5
195	436.3	1.127	46.0	-4.8	7.98	15.596	16.800	13.428	37.5	24.0	42.3	28.8	1.47	-0.36	30.8	6.7	35.5
196	436.6	1.132	45.9	-4.8	7.99	15.679	16.834	13.444	37.5	24.0	42.3	28.9	1.47	-0.36	30.8	6.7	35.6
197	437.4	1.136	45.9	-4.8	7.99	15.754	16.955	13.532	37.6	24.0	42.4	28.9	1.47	-0.36	30.8	6.8	35.6
198	437.7	1.140	45.9	-4.8	8.00	15.828	17.006	13.563	37.6	24.0	42.4	28.9	1.47	-0.35	30.8	6.8	35.6
199	435.3	1.145	45.9	-4.8	8.01	15.911	16.645	13.245	37.3	24.0	42.1	28.9	1.46	-0.36	30.7	6.6	35.5
200	436.1	1.149	45.9	-4.8	8.02	15.986	16.766	13.334	37.4	24.0	42.2	28.9	1.46	-0.36	30.7	6.7	35.5
201	437.3	1.154	45.9	-4.8	8.02	16.069	16.938	13.465	37.5	24.0	42.3	28.9	1.47	-0.36	30.8	6.7	35.6
202	437.7	1.158	45.9	-4.9	8.03	16.143	17.006	13.510	37.6	24.0	42.4	28.9	1.47	-0.36	30.8	6.8	35.7
203	438.3	1.162	45.9	-4.8	8.04	16.218	17.092	13.569	37.6	24.0	42.4	28.9	1.47	-0.36	30.8	6.8	35.7
204	438.7	1.167	45.9	-4.8	8.05	16.301	17.144	13.598	37.6	24.0	42.5	28.9	1.47	-0.36	30.8	6.8	35.7
205	438.1	1.171	45.9	-4.8	8.05	16.376	17.058	13.513	37.6	24.0	42.4	28.9	1.47	-0.36	30.8	6.8	35.6
206	438.9	1.175	45.9	-4.8	8.06	16.459	17.178	13.600	37.6	24.0	42.5	28.9	1.47	-0.35	30.8	6.8	35.7
207	435.9	1.179	45.9	-4.9	8.07	16.533	16.731	13.214	37.3	24.0	42.2	28.9	1.46	-0.37	30.7	6.6	35.5
208	436.9	1.184	45.8	-4.9	8.08	16.616	16.886	13.329	37.4	24.0	42.3	29.0	1.46	-0.37	30.7	6.7	35.6
209	438.7	1.189	45.9	-4.9	8.08	16.699	17.144	13.530	37.6	24.0	42.4	28.9	1.47	-0.36	30.8	6.8	35.7
210	439.5	1.193	45.9	-4.8	8.09	16.774	17.264	13.617	37.7	24.0	42.5	28.9	1.47	-0.36	30.9	6.8	35.7
211	440.3	1.197	45.9	-4.8	8.10	16.857	17.385	13.703	37.7	24.0	42.6	28.9	1.47	-0.35	30.9	6.9	35.7
212	440.4	1.202	45.9	-4.8	8.11	16.939	17.402	13.703	37.7	24.0	42.6	28.9	1.47	-0.35	30.9	6.9	35.7
213	440.9	1.207	45.9	-4.9	8.12	17.022	17.471	13.745	37.8	24.0	42.7	28.9	1.48	-0.35	30.9	6.9	35.8
214	440.9	1.211	45.9	-4.9	8.12	17.097	17.471	13.732	37.8	24.0	42.7	28.9	1.47	-0.36	30.9	6.9	35.8
215	437.8	1.215	45.9	-4.9	8.13	17.180	17.023	13.348	37.4	24.0	42.3	28.9	1.46	-0.37	30.7	6.7	35.6
216	439.5	1.220	45.9	-4.9	8.14	17.263	17.264	13.533	37.6	24.0	42.4	28.9	1.47	-0.36	30.8	6.8	35.7
217	439.2	1.225	45.9	-4.8	8.15	17.354	17.230	13.488	37.5	24.0	42.4	28.9	1.47	-0.36	30.8	6.7	35.6
218	441.0	1.229	45.9	-4.9	8.16	17.429	17.488	13.689	37.7	24.0	42.6	28.9	1.47	-0.36	30.9	6.8	35.8
219	440.7	1.234	45.9	-4.9	8.16	17.512	17.453	13.646	37.7	24.0	42.6	28.9	1.47	-0.36	30.9	6.8	35.8
220	441.2	1.238	45.9	-4.9	8.17	17.595	17.522	13.688	37.7	24.0	42.6	28.9	1.47	-0.36	30.9	6.8	35.8
221	440.4	1.243	45.9	-4.9	8.18	17.677	17.402	13.574	37.6	24.0	42.5	28.9	1.47	-0.36	30.8	6.8	35.7
222	437.8	1.248	45.9	-4.9	8.19	17.760	17.023	13.249	37.3	24.0	42.2	28.9	1.46	-0.37	30.7	6.6	35.6
223	439.1	1.252	45.9	-4.9	8.20	17.843	17.213	13.390	37.4	24.0	42.3	28.9	1.46	-0.36	30.7	6.7	35.6

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	439.8	1.256	45.9	-4.9	8.20	17.918	17.316	13.462	37.5	24.0	42.4	28.9	1.47	-0.36	30.8	6.7	35.6
225	439.7	1.261	45.8	-4.9	8.21	18.001	17.299	13.433	37.5	24.0	42.4	29.0	1.46	-0.37	30.8	6.7	35.7
226	440.6	1.265	45.9	-4.9	8.22	18.075	17.436	13.533	37.6	24.0	42.5	28.9	1.47	-0.36	30.8	6.8	35.7
227	440.9	1.270	45.9	-4.9	8.23	18.158	17.471	13.547	37.6	24.0	42.5	28.9	1.47	-0.36	30.8	6.8	35.7
228	440.4	1.274	45.9	-4.9	8.24	18.233	17.402	13.478	37.5	24.0	42.4	28.9	1.47	-0.36	30.8	6.7	35.6
229	437.8	1.278	45.9	-4.9	8.24	18.316	17.023	13.154	37.2	24.0	42.1	28.9	1.45	-0.37	30.6	6.6	35.5
230	439.6	1.283	45.9	-4.9	8.25	18.390	17.281	13.352	37.4	24.0	42.3	28.9	1.46	-0.37	30.7	6.7	35.6
231	440.9	1.287	45.8	-4.9	8.26	18.473	17.471	13.492	37.5	24.0	42.5	29.0	1.47	-0.36	30.8	6.7	35.7
232	441.3	1.291	45.9	-4.9	8.27	18.548	17.539	13.535	37.6	24.0	42.5	28.9	1.47	-0.36	30.8	6.8	35.7
233	441.3	1.296	45.9	-4.9	8.28	18.631	17.539	13.520	37.6	24.0	42.4	28.9	1.47	-0.36	30.8	6.8	35.7
234	442.0	1.300	45.9	-4.8	8.28	18.706	17.643	13.591	37.6	24.0	42.5	28.9	1.47	-0.36	30.8	6.8	35.7
235	442.0	1.304	45.9	-4.8	8.29	18.780	17.643	13.578	37.6	24.0	42.5	28.9	1.47	-0.36	30.8	6.8	35.7
236	438.8	1.309	45.8	-4.9	8.30	18.863	17.161	13.173	37.2	24.0	42.1	29.0	1.45	-0.37	30.6	6.6	35.6
237	440.5	1.313	45.8	-4.9	8.31	18.938	17.419	13.369	37.4	24.0	42.3	29.0	1.46	-0.37	30.7	6.7	35.7
238	442.0	1.317	45.9	-4.9	8.32	19.012	17.643	13.537	37.6	24.0	42.5	28.9	1.47	-0.36	30.8	6.8	35.7
239	443.1	1.322	45.9	-4.9	8.32	19.095	17.797	13.648	37.7	24.0	42.6	28.9	1.47	-0.36	30.9	6.8	35.7
240	443.7	1.326	45.9	-4.8	8.33	19.170	17.900	13.718	37.8	24.0	42.6	28.9	1.47	-0.35	30.9	6.9	35.7
241	443.1	1.330	45.9	-4.8	8.34	19.253	17.797	13.620	37.7	24.0	42.5	28.9	1.47	-0.36	30.9	6.8	35.7
242	440.5	1.335	45.8	-4.9	8.35	19.327	17.419	13.301	37.3	24.0	42.3	29.0	1.46	-0.37	30.7	6.7	35.6
243	441.2	1.339	45.8	-4.9	8.36	19.410	17.522	13.370	37.4	24.0	42.3	29.0	1.46	-0.37	30.7	6.7	35.7
244	442.2	1.344	45.9	-4.9	8.37	19.493	17.677	13.480	37.5	24.0	42.4	28.9	1.47	-0.36	30.8	6.7	35.6
245	442.2	1.348	45.9	-4.8	8.37	19.568	17.677	13.467	37.5	24.0	42.3	28.9	1.47	-0.36	30.8	6.7	35.6
246	442.4	1.353	45.9	-4.8	8.38	19.651	17.694	13.466	37.5	24.0	42.3	28.9	1.47	-0.36	30.8	6.7	35.6
247	442.4	1.357	45.9	-4.8	8.39	19.734	17.694	13.451	37.5	24.0	42.3	28.9	1.47	-0.36	30.8	6.7	35.6
248	442.4	1.361	45.9	-4.9	8.40	19.808	17.694	13.438	37.5	24.0	42.4	28.9	1.46	-0.36	30.8	6.7	35.7
249	440.4	1.366	45.8	-4.9	8.41	19.891	17.402	13.189	37.2	24.0	42.2	29.0	1.46	-0.37	30.6	6.6	35.6
250	441.4	1.370	45.9	-4.9	8.42	19.974	17.557	13.298	37.3	24.0	42.2	28.9	1.46	-0.37	30.7	6.6	35.6
251	442.1	1.372	45.9	-4.9	8.42	19.999	17.660	13.377	37.4	24.0	42.3	28.9	1.46	-0.36	30.7	6.7	35.6

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. U-2412B

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project 39406.1.1 **County** GUILFORD **Owner**

Date: Sampled 3/1/13 **Received** 12/16/13 **Reported** 12/20/13

Sampled from RDWY **By** N ROBERSON

Submitted by M HURT- RESEARCH 1995 **Standard Specifications**

788987 TO 788988
12/30/13

TEST RESULTS

Proj. Sample No.		ST-23 #1	ST-23 #2				
Lab. Sample No.		788987	788988				
Retained #4 Sieve	%	-	-				
Passing #10 Sieve	%	96	97				
Passing #40 Sieve	%	83	83				
Passing #200 Sieve	%	49	50				

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	26.2	26.6				
Fine Sand Ret - #270	%	29.0	29.2				
Silt 0.05 - 0.005 mm	%	36.8	36.2				
Clay < 0.005 mm	%	8.1	8.1				
T-#		T-5788	T-5788				
Specific Gravity		2.677	2.67				

L. L.		31	31				
P. I.		5	5				
AASHTO Classification		A-4(0)	A-4(1)				
Station		403+45	403+45				
Offset		3 FT RT	3 FT RT				
Alignment		L	L				
Location							
Depth (Ft)		34.6 FT	34.6 FT				
	to	36.6 FT	36.6 FT				
Final Moisture Content	%	21.79	20.04				

cc: N ROBERSON
SURIYATI BS
GREG BODENHEIMER

Soils Engineer

North Carolina Department of Transportation
Division of Highways

Materials & Tests Unit

NCDOT

Test for Determining Coefficient of Permability
Falling Head - Rising Tail Method C (ASTM D5084)

Project :	39406.1.1	**Station :**	403+45	**Lab No. :**	T-5788
County:	Guilford	**Sample No.:**	ST-23	**Depth Sample :**	34.6' - 36.6'
Cell No. :	4	**Tip #:**	U-2412B	**Date :**	12/17/2013

Cell Pressure (psi) : 68

Hydraulic Gradient : 2

Sample Information		
	Length (cm) :	15.62
	Diameter (cm) :	7.26
	Areas (cm2) :	41.39
	Specific Gravity:	2.677
	AASHTO Class:	A-4(0)

Backpressure (psi)	
Base	**Top**
50.0	50.0

Tested By: Suriyati B S

Time (sec)	Outflow	h1 (cm)	h2 (cm)	k (cm/sec)
63.0	0.16	31.50	29.667	0.00003530
77.0	0.24	31.50	28.804	0.00004315
108.0	0.32	31.50	28.143	0.00003875
159.0	0.38	31.50	27.635	0.00003058
239.0	0.44	31.50	26.975	0.00002411

K avg =	0.000034376
Ft/day =	0.097443299
m/day =	0.029720206

North Carolina Department of Transportation
Division of Highways

Materials & Tests Unit

NCDOT

Test for Determining Coefficient of Permability
Falling Head - Rising Tail Method C (ASTM D5084)

Project :	39406.1.1	**Station :**	403+45	**Lab No. :**	T-5788
County:	Guilford	**Sample No.:**	ST-23 #2	**Depth Sample :**	34.6' - 36.6'
Cell No. :	10	**Tip #:**	U-2412B	**Date :**	12/17/2013

Cell Pressure (psi) : 86

Hydraulic Gradient : 2

Sample Information		
	Length (cm) :	15.64
	Diameter (cm) :	7.24
	Areas (cm2) :	41.21
	Specific Gravity:	2.670
	AASHTO Class:	A-4(1)

Backpressure (psi)	
Base	**Top**
50.0	50.0

Tested By: Suriyati B S

Time (sec)	Outflow	h1 (cm)	h2 (cm)	k (cm/sec)
57.0	0.24	31.50	28.702	0.00006094
64.0	0.30	31.50	28.143	0.00006576
127.0	0.58	31.50	25.095	0.00006689
136.0	0.68	31.50	24.181	0.00007267
154.0	0.88	31.50	22.555	0.00008107

K avg =	0.000069465
Ft/day =	0.196907315
m/day =	0.060056731

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	19.08	21.73	**Plastic Limits:**	0	
Dry Density (pcf):	101.77	108.38	**Plasticity Index (%):**	0	
Saturation (%):	79.14	106.67			
Void Ratio:	0.6482	0.5478	**Specific Gravity:**	2.686	Measured

Soil Description: Yellowish-tan colored silt

Project Number: 39406.1.1 **Depth:** 34.6 - 36.6 ft

Sample Number: ST-23 **Boring Number:**

Project: U-2412B

Client: T-5788

Location: Guilford County (Sta. 403+45)

Remarks:
Solid Height is 0.60922 inch; Blows/ft. = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	19.08	21.73	**Plastic Limits:**	0	
Dry Density (pcf):	101.77	108.38	**Plasticity Index (%):**	0	
Saturation (%):	79.14	106.67			
Void Ratio:	0.6482	0.5478	**Specific Gravity:**	2.686	Measured

Soil Description: Yellowish-tan colored silt

Project Number: 39406.1.1 **Depth:** 34.6 - 36.6 ft

Sample Number: ST-23 **Boring Number:**

Project: U-2412B

Client: T-5788

Location: Guilford County (Sta. 403+45)

Remarks:
Solid Height is 0.60922 inch; Blows/ft. = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	19.08	21.73	**Plastic Limits:**	0	
Dry Density (pcf):	101.77	108.38	**Plasticity Index (%):**	0	
Saturation (%):	79.14	106.67			
Void Ratio:	0.6482	0.5478	**Specific Gravity:**	2.686	Measured

Soil Description: Yellowish-tan colored silt

Project Number: 39406.1.1 **Depth:** 34.6 - 36.6 ft

Sample Number: ST-23 **Boring Number:**

Project: U-2412B

Client: T-5788

Location: Guilford County (Sta. 403+45)

Remarks:
Solid Height is 0.60922 inch; Blows/ft. = NA

Consolidation Test Results
Summary

Project: U-2412B
Location: Guilford County (Sta. 403+45)
Job Number: T-5788

Project Number: 39406.1.1

Sample Number: ST-23
Boring Number:
Depth: 34.6 - 36.6 ft
Sample Type: Undisturbed

Soil Description:
Yellowish-tan colored silt
Remarks:
Solid Height is 0.60922 inch; Blows/ft. = NA

Test Number:
Test Date:

Index	Load Sequence (tsf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	1.0011	0.3937	0.00	0.6482	0.000		0.000	
1	0.063	0.0028	0.9983	0.3909	0.28	0.6436	0.067		11579.147	
2	0.125	0.0060	0.9951	0.3877	0.60	0.6383	0.067		11505.034	
3	0.250	0.0105	0.9906	0.3832	1.05	0.6309	0.078		9759.909	
4	0.500	0.0173	0.9838	0.3764	1.73	0.6197	0.065		11611.349	
5	1.000	0.0275	0.9736	0.3662	2.75	0.6029	0.063		11735.722	
6	2.000	0.0398	0.9613	0.3539	3.98	0.5827	0.052		13646.312	
7	4.000	0.0557	0.9454	0.3380	5.56	0.5565	0.063		11065.725	
8	2.000	0.0540	0.9471	0.3397	5.39	0.5593	0.000		0.000	
9	1.000	0.0511	0.9500	0.3426	5.10	0.5641	0.000		0.000	
10	0.500	0.0471	0.9540	0.3466	4.70	0.5706	0.000		0.000	
11	1.000	0.0494	0.9517	0.3443	4.93	0.5668	0.000		0.000	
12	2.000	0.0525	0.9486	0.3412	5.24	0.5617	0.000		0.000	
13	4.000	0.0578	0.9433	0.3359	5.77	0.5530	0.000		0.000	
14	8.000	0.0749	0.9262	0.3188	7.48	0.5249	0.059		11250.873	
15	16.000	0.0988	0.9023	0.2949	9.87	0.4855	0.083		7599.344	
16	4.000	0.0935	0.9076	0.3002	9.34	0.4942	0.000		0.000	
17	0.016	0.0610	0.9401	0.3327	6.09	0.5478	0.000		0.000	

Tested By:

Checked By:

Consolidation Test
Consolidation Specimen Information

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County (Sta. 403+45)
Job Number: T-5788 **Test Date:**

Sample Number: ST-23 **Soil Description:**
Boring Number: Yellowish-tan colored silt
Depth: 34.6 - 36.6 ft **Remarks:**
Sample Type: Undisturbed Solid Height is 0.60922 inch; Blows/ft. = NA

Test Number:
Liquid Limit: 0.0000 **Initial Void Ratio:** 0.6482 **Initial Height (in):** 1.0011
Plastic Limit: 0.0000 **Plasticity Index (%):** 0.0000 **Initial Diameter (in):** 2.5000
Specific Gravity: 2.6860 Measured **Weight of Ring (g):** 107.3200

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	156.33	159.81
Dry Soil + Container (g)	131.28	131.28
Weight of Container (g)	0.00	0.00
Moisture Content (%)	19.08	21.73
Void Ratio	0.6482	0.5478
Saturation (%)	79.14	106.67
Dry Density (pcf)	101.77	108.38

Tested By: **Checked By:**

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Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date :

Tested By:

Effective Stress at Maximum Deviator Stress Criterion

Deviator Stress Vs. Axial Strain

Initial	Specimen A	B	C	D
Water Content (%)	20.2	18.4		
Dry Density (pcf)	104.6	106.8		
Saturation (%)	90.48	87.65		
Void Ratio	0.594	0.556		
Diameter (in)	2.858	2.852		
Height (in)	6.151	6.159		
Specific Gravity	2.68	2.67		
Liquid Limit	0	0		
Plastic Limit	0	0		
After Consolidation	**A**	**B**	**C**	**D**
B-Value	0.00	0.00		
Water Content (%)	21.5	20.7		
Dry Density (pcf)	108.19	113.34		
Saturation (%)	100.00	100.00		
Void Ratio	0.545	0.471		
Effective Stress (psi)	18.0	36.0		
Back Press. (psi)	51.0	50.7		
Rate of Strain	0.009	0.009		

Maximium Deviator Stress Criterion		After Shear	A	B	C	D
C (psi)	0.0	σ'1 at Failure (psi)	89.84	150.00		
C' (psi)	0.0	σ'3 at Failure (psi)	22.67	39.74		
Ø (deg)	0.0					
Ø' (deg)	0.0					

		A	B	C	D
Project:	U-2412B (T-5788)	N/A	N/A	N/A	N/A
Location:	Guilford County (Sta. 403+45)				
Project Number:	39406.1.1				
Boring Number:					
Sample Number:	ST-23				
Depth:	34.6 - 36.6 ft				
Sample Type:	Undisturbed	Failure Photographs			
Description:					
Test Type	Consolidated Undrained				
Remarks					

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Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date:

Tested By:

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)

Change in Pore Pressure vs. Axial Strain

Deviator Stress vs. Axial Strain

Principal Stress Ratio vs. Axial Strain

Change in Pore Pressure vs. Axial Strain

Mohr Stress Circles at Maximum Deviator Stress Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at Maximum Principal Stress Ratio Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at 15% Axial Strain Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)
Q (psi)
100.0
75.0
50.0
25.0
0.0
0.0
25.0
50.0
75.0
100.0
P' (psi)
Specimen A
Specimen B
Specimen C
Specimen D
Tangent Line

Stress Paths (Total)
(C' = 0.0 Ø' = 0.0)
Q (psi)
100.0
80.0
60.0
40.0
20.0
0.0
0.0
20.0
40.0
60.0
80.0
100.0
P (psi)

Specimen A Shear Data

CU Triaxial Test

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File Location
T-5788.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B (T-5788)
Client: T-5788
Sample Location: Guilford County (Sta. 403+45)
Sample Description: Tannish white colored silt
Remarks: 20° shear plane

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.677
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.858	2.822	
Height (in)	6.150	6.095	
Weight (grams)	1302.00		1319.00
Moisture (%)	20.22		21.79
Dry Density (pcf)	104.57	108.19	
Saturation (%)	90.48	100.00	
Void Ratio	0.594	0.545	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 69.000
Effective Confining Stress (psi): 18.0
Corrected Peak Deviator Stress (psi): 67.170 at reading number: 109

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	75.2	0.121	51.0	0.0	6.26	0.000	0.000	0.000	18.0	18.0	18.0	18.0	1.00	0.00	18.0	0.0	18.0
1	107.8	0.126	52.9	1.8	6.26	0.068	5.220	5.190	23.1	18.0	21.3	16.1	1.32	0.35	20.5	2.6	18.7
2	118.1	0.130	53.7	2.6	6.26	0.136	6.867	6.805	24.8	18.0	22.1	15.3	1.44	0.39	21.4	3.4	18.7
3	126.3	0.134	54.2	3.2	6.27	0.204	8.182	8.085	26.0	18.0	22.8	14.8	1.55	0.40	22.0	4.0	18.8
4	134.0	0.138	54.7	3.7	6.27	0.264	9.403	9.275	27.2	18.0	23.6	14.3	1.65	0.39	22.6	4.6	18.9
5	141.5	0.142	55.1	4.0	6.28	0.340	10.606	10.438	28.4	18.0	24.3	13.9	1.75	0.39	23.2	5.2	19.1
6	148.3	0.146	55.4	4.4	6.28	0.408	11.699	11.492	29.4	18.0	25.1	13.6	1.85	0.38	23.7	5.7	19.3
7	155.2	0.150	55.6	4.6	6.29	0.476	12.791	12.544	30.5	18.0	25.9	13.4	1.94	0.37	24.2	6.3	19.6
8	160.7	0.155	55.9	4.8	6.29	0.544	13.679	13.393	31.3	18.0	26.5	13.1	2.02	0.36	24.6	6.7	19.8
9	167.2	0.159	56.1	5.0	6.29	0.612	14.716	14.387	32.3	18.0	27.3	12.9	2.11	0.35	25.1	7.2	20.1
10	172.9	0.163	56.2	5.2	6.30	0.679	15.623	15.252	33.2	18.0	28.0	12.8	2.19	0.34	25.6	7.6	20.4
11	177.8	0.168	56.4	5.3	6.30	0.755	16.400	15.982	33.9	18.0	28.6	12.6	2.26	0.33	25.9	8.0	20.6
12	184.0	0.172	56.4	5.4	6.31	0.823	17.400	16.936	34.9	18.0	29.5	12.6	2.35	0.32	26.4	8.5	21.0
13	188.8	0.176	56.5	5.5	6.31	0.891	18.159	17.650	35.6	18.0	30.1	12.5	2.42	0.31	26.8	8.8	21.3
14	193.6	0.180	56.6	5.6	6.32	0.966	18.936	18.376	36.3	18.0	30.8	12.4	2.48	0.30	27.1	9.2	21.6
15	198.9	0.185	56.7	5.6	6.32	1.034	19.788	19.180	37.1	18.0	31.5	12.3	2.56	0.29	27.5	9.6	21.9
16	204.6	0.189	56.7	5.7	6.33	1.110	20.695	20.032	38.0	18.0	32.3	12.3	2.63	0.28	28.0	10.0	22.3
17	209.0	0.193	56.7	5.7	6.33	1.178	21.398	20.687	38.6	18.0	33.0	12.3	2.68	0.27	28.3	10.3	22.6
18	213.7	0.198	56.7	5.7	6.34	1.253	22.138	21.372	39.3	18.0	33.7	12.3	2.74	0.26	28.6	10.7	23.0

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	219.0	0.202	56.7	5.7	6.34	1.329	22.990	22.167	40.1	18.0	34.4	12.3	2.81	0.26	29.0	11.1	23.4
20	224.0	0.207	56.7	5.7	6.34	1.397	23.786	22.909	40.9	18.0	35.2	12.3	2.87	0.25	29.4	11.5	23.7
21	228.4	0.211	56.7	5.7	6.35	1.472	24.489	23.555	41.5	18.0	35.9	12.3	2.92	0.24	29.7	11.8	24.1
22	232.8	0.216	56.7	5.6	6.35	1.548	25.193	24.199	42.2	18.0	36.5	12.3	2.96	0.23	30.1	12.1	24.4
23	236.5	0.220	56.6	5.6	6.36	1.623	25.785	24.734	42.7	18.0	37.1	12.4	3.00	0.23	30.3	12.4	24.7
24	241.2	0.225	56.6	5.6	6.36	1.691	26.544	25.436	43.4	18.0	37.8	12.4	3.05	0.22	30.7	12.7	25.1
25	245.8	0.229	56.6	5.5	6.37	1.759	27.284	26.119	44.1	18.0	38.5	12.4	3.10	0.21	31.0	13.1	25.5
26	249.6	0.233	56.5	5.5	6.37	1.835	27.877	26.650	44.6	18.0	39.1	12.5	3.14	0.21	31.3	13.3	25.8
27	253.7	0.238	56.5	5.4	6.38	1.910	28.543	27.253	45.2	18.0	39.8	12.5	3.17	0.20	31.6	13.6	26.2
28	257.7	0.242	56.4	5.3	6.38	1.978	29.172	27.824	45.8	18.0	40.4	12.6	3.20	0.19	31.9	13.9	26.5
29	261.0	0.247	56.4	5.3	6.39	2.054	29.709	28.320	46.3	18.0	41.0	12.6	3.24	0.19	32.1	14.2	26.8
30	266.1	0.251	56.3	5.2	6.39	2.129	30.524	29.094	47.0	18.0	41.8	12.7	3.29	0.18	32.5	14.5	27.3
31	270.0	0.255	56.2	5.2	6.40	2.197	31.153	29.689	47.6	18.0	42.5	12.8	3.33	0.17	32.8	14.8	27.6
32	274.9	0.260	56.1	5.1	6.40	2.272	31.930	30.425	48.4	18.0	43.3	12.9	3.36	0.17	33.2	15.2	28.1
33	278.6	0.265	56.1	5.0	6.41	2.348	32.523	30.980	48.9	18.0	43.9	12.9	3.39	0.16	33.4	15.5	28.4
34	282.1	0.269	56.0	4.9	6.41	2.416	33.078	31.499	49.5	18.0	44.5	13.0	3.42	0.16	33.7	15.7	28.8
35	286.5	0.273	55.9	4.9	6.42	2.491	33.781	32.160	50.1	18.0	45.2	13.1	3.46	0.15	34.0	16.1	29.2
36	290.9	0.278	55.8	4.8	6.42	2.567	34.485	32.820	50.8	18.0	46.0	13.2	3.49	0.15	34.4	16.4	29.6
37	294.0	0.282	55.7	4.7	6.43	2.635	34.985	33.283	51.2	18.0	46.5	13.3	3.51	0.14	34.6	16.6	29.9
38	298.1	0.287	55.6	4.6	6.43	2.710	35.632	33.887	51.8	18.0	47.3	13.4	3.53	0.13	34.9	16.9	30.3
39	302.6	0.291	55.6	4.5	6.44	2.786	36.354	34.562	52.5	18.0	48.0	13.4	3.57	0.13	35.2	17.3	30.7
40	305.6	0.295	55.5	4.5	6.44	2.854	36.836	35.005	53.0	18.0	48.5	13.5	3.59	0.13	35.5	17.5	31.0
41	309.9	0.300	55.4	4.3	6.44	2.929	37.521	35.642	53.6	18.0	49.3	13.6	3.62	0.12	35.8	17.8	31.4
42	313.9	0.305	55.3	4.2	6.45	3.005	38.168	36.242	54.2	18.0	50.0	13.7	3.64	0.12	36.1	18.1	31.9
43	318.1	0.309	55.2	4.1	6.45	3.080	38.835	36.859	54.8	18.0	50.7	13.8	3.67	0.11	36.4	18.4	32.3
44	321.2	0.313	55.1	4.0	6.46	3.148	39.335	37.317	55.3	18.0	51.2	13.9	3.68	0.11	36.6	18.7	32.6
45	326.1	0.318	55.0	4.0	6.46	3.224	40.112	38.039	56.0	18.0	52.0	14.0	3.72	0.10	37.0	19.0	33.0
46	330.0	0.322	54.9	3.8	6.47	3.292	40.741	38.621	56.6	18.0	52.7	14.1	3.74	0.10	37.3	19.3	33.4
47	333.7	0.327	54.8	3.7	6.47	3.367	41.334	39.162	57.1	18.0	53.4	14.2	3.75	0.10	37.5	19.6	33.8
48	337.7	0.331	54.7	3.6	6.48	3.435	41.963	39.742	57.7	18.0	54.1	14.3	3.78	0.09	37.8	19.9	34.2
49	341.4	0.335	54.6	3.5	6.48	3.511	42.555	40.282	58.2	18.0	54.7	14.4	3.80	0.09	38.1	20.1	34.5
50	345.9	0.340	54.5	3.5	6.49	3.579	43.277	40.949	58.9	18.0	55.4	14.5	3.83	0.08	38.4	20.5	35.0
51	348.7	0.344	54.4	3.3	6.49	3.654	43.722	41.344	59.3	18.0	56.0	14.6	3.82	0.08	38.6	20.7	35.3
52	353.0	0.348	54.2	3.2	6.50	3.722	44.406	41.974	59.9	18.0	56.7	14.8	3.84	0.08	38.9	21.0	35.7
53	356.8	0.353	54.2	3.1	6.50	3.790	45.017	42.532	60.5	18.0	57.4	14.8	3.86	0.07	39.2	21.3	36.1
54	359.9	0.357	54.0	3.0	6.51	3.858	45.517	42.981	60.9	18.0	57.9	15.0	3.87	0.07	39.4	21.5	36.5
55	364.3	0.361	53.9	2.9	6.51	3.933	46.220	43.623	61.6	18.0	58.7	15.1	3.90	0.07	39.8	21.8	36.9
56	368.4	0.365	53.8	2.8	6.52	4.001	46.868	44.213	62.2	18.0	59.4	15.2	3.91	0.06	40.1	22.1	37.3
57	371.5	0.370	53.7	2.6	6.52	4.069	47.368	44.661	62.6	18.0	60.0	15.3	3.92	0.06	40.3	22.3	37.6
58	375.4	0.374	53.6	2.5	6.53	4.145	47.997	45.228	63.2	18.0	60.7	15.4	3.93	0.06	40.6	22.6	38.0
59	379.1	0.379	53.5	2.4	6.53	4.220	48.590	45.760	63.7	18.0	61.3	15.5	3.95	0.05	40.8	22.9	38.4

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	383.3	0.383	53.4	2.3	6.54	4.288	49.256	46.364	64.3	18.0	62.0	15.6	3.96	0.05	41.1	23.2	38.8
61	386.7	0.387	53.2	2.2	6.54	4.356	49.793	46.844	64.8	18.0	62.6	15.8	3.97	0.05	41.4	23.4	39.2
62	391.1	0.392	53.1	2.0	6.55	4.432	50.496	47.479	65.4	18.0	63.4	15.9	3.98	0.04	41.7	23.7	39.7
63	395.1	0.396	53.0	1.9	6.55	4.500	51.144	48.063	66.0	18.0	64.1	16.0	4.00	0.04	42.0	24.0	40.0
64	398.7	0.400	52.9	1.8	6.56	4.575	51.718	48.572	66.5	18.0	64.7	16.1	4.01	0.04	42.2	24.3	40.4
65	400.7	0.405	52.7	1.7	6.56	4.651	52.033	48.833	66.8	18.0	65.1	16.3	4.00	0.03	42.4	24.4	40.7
66	406.2	0.409	52.6	1.6	6.57	4.719	52.921	49.645	67.6	18.0	66.0	16.4	4.03	0.03	42.8	24.8	41.2
67	410.6	0.414	52.5	1.4	6.57	4.794	53.625	50.274	68.2	18.0	66.8	16.5	4.04	0.03	43.1	25.1	41.7
68	413.4	0.418	52.4	1.3	6.58	4.870	54.069	50.656	68.6	18.0	67.3	16.6	4.05	0.03	43.3	25.3	42.0
69	416.5	0.423	52.2	1.2	6.58	4.945	54.569	51.091	69.0	18.0	67.8	16.8	4.05	0.02	43.5	25.5	42.3
70	420.5	0.428	52.1	1.1	6.59	5.021	55.198	51.647	69.6	18.0	68.5	16.9	4.06	0.02	43.8	25.8	42.7
71	425.7	0.432	52.0	0.9	6.59	5.096	56.031	52.396	70.3	18.0	69.4	17.0	4.07	0.02	44.2	26.2	43.2
72	429.9	0.437	51.8	0.8	6.60	5.172	56.697	52.986	70.9	18.0	70.2	17.2	4.08	0.01	44.4	26.5	43.7
73	433.4	0.441	51.7	0.6	6.60	5.247	57.271	53.487	71.4	18.0	70.8	17.3	4.09	0.01	44.7	26.7	44.1
74	437.4	0.446	51.6	0.5	6.61	5.323	57.900	54.039	72.0	18.0	71.5	17.4	4.10	0.01	45.0	27.0	44.4
75	440.6	0.450	51.4	0.4	6.61	5.391	58.419	54.490	72.4	18.0	72.1	17.6	4.10	0.01	45.2	27.2	44.8
76	446.2	0.455	51.3	0.2	6.62	5.474	59.307	55.282	73.2	18.0	73.0	17.7	4.12	0.00	45.6	27.6	45.4
77	447.7	0.459	51.1	0.1	6.62	5.541	59.548	55.469	73.4	18.0	73.3	17.9	4.10	0.00	45.7	27.7	45.6
78	450.5	0.464	51.0	0.0	6.63	5.617	59.992	55.843	73.8	18.0	73.8	18.0	4.11	0.00	45.9	27.9	45.9
79	455.4	0.469	50.9	-0.1	6.63	5.700	60.788	56.544	74.5	18.0	74.6	18.1	4.12	0.00	46.2	28.3	46.4
80	458.9	0.473	50.8	-0.3	6.64	5.768	61.343	57.026	75.0	18.0	75.3	18.2	4.13	-0.01	46.5	28.5	46.8
81	461.8	0.478	50.6	-0.5	6.64	5.843	61.806	57.415	75.4	18.0	75.8	18.4	4.12	-0.01	46.7	28.7	47.1
82	466.0	0.482	50.4	-0.6	6.65	5.919	62.473	57.995	75.9	18.0	76.6	18.6	4.12	-0.01	47.0	29.0	47.6
83	469.7	0.486	50.3	-0.7	6.65	5.987	63.065	58.510	76.5	18.0	77.2	18.7	4.13	-0.01	47.2	29.3	47.9
84	472.7	0.491	50.2	-0.8	6.66	6.062	63.546	58.914	76.9	18.0	77.7	18.8	4.13	-0.01	47.4	29.5	48.3
85	475.9	0.495	50.0	-1.0	6.66	6.130	64.064	59.358	77.3	18.0	78.3	19.0	4.13	-0.02	47.6	29.7	48.7
86	479.0	0.500	49.8	-1.2	6.67	6.206	64.546	59.761	77.7	18.0	78.9	19.2	4.12	-0.02	47.8	29.9	49.0
87	483.1	0.504	49.7	-1.3	6.68	6.281	65.212	60.336	78.3	18.0	79.6	19.3	4.13	-0.02	48.1	30.2	49.5
88	486.2	0.509	49.6	-1.5	6.68	6.349	65.712	60.760	78.7	18.0	80.2	19.4	4.13	-0.02	48.3	30.4	49.8
89	489.3	0.513	49.4	-1.6	6.69	6.417	66.193	61.166	79.1	18.0	80.7	19.6	4.13	-0.03	48.5	30.6	50.1
90	492.6	0.517	49.3	-1.8	6.69	6.493	66.730	61.618	79.6	18.0	81.4	19.7	4.12	-0.03	48.8	30.8	50.5
91	496.2	0.521	49.1	-2.0	6.70	6.561	67.304	62.109	80.1	18.0	82.0	19.9	4.12	-0.03	49.0	31.1	51.0
92	499.2	0.526	49.0	-2.1	6.70	6.636	67.785	62.507	80.5	18.0	82.5	20.0	4.12	-0.03	49.2	31.3	51.3
93	502.5	0.531	48.8	-2.2	6.71	6.712	68.303	62.939	80.9	18.0	83.1	20.2	4.12	-0.04	49.4	31.5	51.6
94	505.2	0.535	48.7	-2.4	6.71	6.780	68.748	63.307	81.3	18.0	83.6	20.3	4.11	-0.04	49.6	31.7	52.0
95	508.4	0.539	48.5	-2.5	6.72	6.855	69.247	63.721	81.7	18.0	84.2	20.5	4.11	-0.04	49.8	31.9	52.4
96	512.0	0.543	48.3	-2.7	6.72	6.923	69.821	64.208	82.2	18.0	84.9	20.7	4.11	-0.04	50.1	32.1	52.8
97	514.6	0.548	48.2	-2.8	6.73	6.999	70.247	64.551	82.5	18.0	85.3	20.8	4.10	-0.04	50.2	32.3	53.1
98	516.6	0.552	48.1	-3.0	6.73	7.067	70.562	64.796	82.7	18.0	85.7	20.9	4.09	-0.05	50.4	32.4	53.3
99	519.6	0.557	47.9	-3.1	6.74	7.142	71.043	65.189	83.1	18.0	86.3	21.1	4.09	-0.05	50.5	32.6	53.7
100	521.0	0.561	47.7	-3.3	6.74	7.218	71.265	65.342	83.3	18.0	86.6	21.3	4.07	-0.05	50.6	32.7	53.9

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	523.9	0.566	47.6	-3.5	6.75	7.285	71.728	65.722	83.7	18.0	87.2	21.4	4.07	-0.05	50.8	32.9	54.3
102	526.9	0.570	47.4	-3.6	6.75	7.353	72.209	66.120	84.1	18.0	87.7	21.6	4.06	-0.05	51.0	33.1	54.6
103	528.7	0.574	47.3	-3.8	6.76	7.429	72.505	66.339	84.3	18.0	88.1	21.7	4.05	-0.06	51.1	33.2	54.9
104	529.7	0.579	47.1	-3.9	6.76	7.504	72.653	66.422	84.4	18.0	88.3	21.9	4.04	-0.06	51.2	33.2	55.1
105	531.8	0.583	46.9	-4.1	6.77	7.572	72.986	66.680	84.6	18.0	88.8	22.1	4.02	-0.06	51.3	33.3	55.4
106	533.4	0.587	46.8	-4.3	6.77	7.640	73.246	66.870	84.8	18.0	89.1	22.2	4.01	-0.06	51.4	33.4	55.7
107	533.6	0.592	46.6	-4.4	6.78	7.716	73.283	66.849	84.8	18.0	89.2	22.4	3.99	-0.07	51.4	33.4	55.8
108	535.9	0.596	46.5	-4.5	6.78	7.784	73.653	67.140	85.1	18.0	89.6	22.5	3.98	-0.07	51.5	33.6	56.1
109	536.5	0.601	46.3	-4.7	6.79	7.859	73.745	67.170	85.1	18.0	89.8	22.7	3.96	-0.07	51.5	33.6	56.3
110	536.2	0.605	46.2	-4.9	6.80	7.935	73.690	67.063	85.0	18.0	89.9	22.8	3.94	-0.07	51.5	33.5	56.4
111	537.1	0.609	46.0	-5.0	6.80	8.003	73.838	67.149	85.1	18.0	90.1	23.0	3.92	-0.08	51.5	33.6	56.6
112	536.7	0.614	45.9	-5.2	6.81	8.078	73.782	67.043	85.0	18.0	90.2	23.1	3.90	-0.08	51.5	33.5	56.6
113	537.1	0.618	45.8	-5.3	6.81	8.154	73.838	67.038	85.0	18.0	90.3	23.2	3.89	-0.08	51.5	33.5	56.7
114	536.5	0.623	45.6	-5.4	6.82	8.222	73.745	66.903	84.9	18.0	90.3	23.4	3.86	-0.08	51.4	33.5	56.8
115	535.2	0.627	45.5	-5.6	6.82	8.297	73.542	66.660	84.6	18.0	90.2	23.5	3.83	-0.08	51.3	33.3	56.9
116	534.8	0.632	45.4	-5.7	6.83	8.373	73.468	66.537	84.5	18.0	90.1	23.6	3.82	-0.09	51.2	33.3	56.9
117	532.7	0.636	45.3	-5.7	6.83	8.441	73.134	66.182	84.1	18.0	89.9	23.7	3.79	-0.09	51.0	33.1	56.8
118	529.3	0.641	45.2	-5.8	6.84	8.516	72.598	65.636	83.6	18.0	89.4	23.8	3.76	-0.09	50.8	32.8	56.6
119	527.7	0.645	45.2	-5.9	6.84	8.592	72.339	65.344	83.3	18.0	89.2	23.8	3.74	-0.09	50.6	32.7	56.5
120	526.8	0.650	45.1	-6.0	6.85	8.667	72.190	65.154	83.1	18.0	89.1	23.9	3.72	-0.09	50.5	32.6	56.5
121	524.2	0.654	45.0	-6.0	6.85	8.735	71.783	64.733	82.7	18.0	88.7	24.0	3.70	-0.09	50.3	32.4	56.3
122	522.7	0.659	45.0	-6.1	6.86	8.818	71.543	64.454	82.4	18.0	88.5	24.0	3.68	-0.09	50.2	32.2	56.2
123	520.8	0.664	44.9	-6.1	6.87	8.894	71.228	64.114	82.1	18.0	88.2	24.1	3.66	-0.10	50.0	32.1	56.1
124	518.8	0.668	44.9	-6.2	6.87	8.969	70.913	63.773	81.7	18.0	87.9	24.1	3.64	-0.10	49.8	31.9	56.0
125	517.6	0.673	44.8	-6.2	6.88	9.045	70.728	63.552	81.5	18.0	87.7	24.2	3.63	-0.10	49.7	31.8	55.9
126	516.9	0.677	44.8	-6.2	6.88	9.120	70.617	63.397	81.3	18.0	87.6	24.2	3.62	-0.10	49.7	31.7	55.9
127	517.2	0.682	44.8	-6.3	6.89	9.188	70.654	63.383	81.3	18.0	87.6	24.2	3.62	-0.10	49.6	31.7	55.9
128	515.8	0.687	44.7	-6.3	6.90	9.271	70.432	63.123	81.1	18.0	87.4	24.3	3.60	-0.10	49.5	31.6	55.8
129	515.8	0.691	44.7	-6.4	6.90	9.347	70.432	63.070	81.0	18.0	87.4	24.3	3.59	-0.10	49.5	31.5	55.8
130	516.1	0.696	44.7	-6.3	6.91	9.422	70.488	63.067	81.0	18.0	87.3	24.3	3.60	-0.10	49.5	31.5	55.8
131	517.1	0.700	44.7	-6.3	6.91	9.490	70.636	63.153	81.1	18.0	87.4	24.3	3.60	-0.10	49.5	31.6	55.8
132	516.7	0.705	44.7	-6.3	6.92	9.565	70.580	63.049	81.0	18.0	87.3	24.3	3.60	-0.10	49.5	31.5	55.8
133	516.8	0.709	44.7	-6.4	6.92	9.641	70.599	63.013	81.0	18.0	87.3	24.3	3.59	-0.10	49.5	31.5	55.8
134	516.8	0.714	44.7	-6.4	6.93	9.716	70.599	62.959	80.9	18.0	87.3	24.3	3.59	-0.10	49.4	31.5	55.8
135	516.0	0.718	44.6	-6.4	6.94	9.792	70.469	62.789	80.7	18.0	87.2	24.4	3.58	-0.10	49.3	31.4	55.8
136	514.6	0.723	44.7	-6.4	6.94	9.860	70.247	62.541	80.5	18.0	86.9	24.3	3.57	-0.10	49.2	31.3	55.6
137	515.1	0.727	44.7	-6.4	6.95	9.935	70.321	62.555	80.5	18.0	86.9	24.3	3.57	-0.10	49.2	31.3	55.6
138	514.4	0.731	44.6	-6.4	6.95	10.003	70.210	62.407	80.4	18.0	86.8	24.4	3.56	-0.10	49.2	31.2	55.6
139	514.2	0.736	44.6	-6.4	6.96	10.079	70.173	62.321	80.3	18.0	86.7	24.4	3.55	-0.10	49.1	31.2	55.6
140	513.8	0.740	44.6	-6.4	6.96	10.147	70.117	62.223	80.2	18.0	86.6	24.4	3.55	-0.10	49.1	31.1	55.5
141	514.2	0.745	44.6	-6.4	6.97	10.222	70.173	62.220	80.2	18.0	86.6	24.4	3.55	-0.10	49.1	31.1	55.5

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	513.6	0.749	44.6	-6.4	6.97	10.290	70.080	62.089	80.0	18.0	86.5	24.4	3.55	-0.10	49.0	31.0	55.4
143	514.5	0.753	44.6	-6.4	6.98	10.366	70.228	62.169	80.1	18.0	86.5	24.4	3.55	-0.10	49.0	31.1	55.5
144	514.3	0.757	44.6	-6.4	6.98	10.434	70.191	62.088	80.0	18.0	86.5	24.4	3.54	-0.10	49.0	31.0	55.4
145	513.6	0.762	44.6	-6.4	6.99	10.502	70.080	61.941	79.9	18.0	86.3	24.4	3.54	-0.10	48.9	31.0	55.4
146	513.3	0.766	44.6	-6.4	7.00	10.577	70.043	61.855	79.8	18.0	86.3	24.4	3.54	-0.10	48.9	30.9	55.3
147	514.4	0.770	44.6	-6.4	7.00	10.645	70.210	61.956	79.9	18.0	86.4	24.4	3.54	-0.10	48.9	31.0	55.4
148	513.2	0.775	44.6	-6.4	7.01	10.721	70.025	61.738	79.7	18.0	86.1	24.4	3.53	-0.10	48.8	30.9	55.3
149	513.5	0.779	44.5	-6.5	7.01	10.789	70.062	61.724	79.7	18.0	86.2	24.5	3.52	-0.11	48.8	30.9	55.3
150	514.7	0.784	44.5	-6.5	7.02	10.864	70.265	61.852	79.8	18.0	86.3	24.5	3.53	-0.11	48.9	30.9	55.4
151	515.2	0.788	44.6	-6.5	7.02	10.940	70.339	61.865	79.8	18.0	86.3	24.4	3.53	-0.10	48.9	30.9	55.4
152	515.8	0.793	44.6	-6.5	7.03	11.015	70.432	61.894	79.8	18.0	86.3	24.4	3.53	-0.10	48.9	30.9	55.4
153	515.7	0.798	44.5	-6.5	7.04	11.091	70.413	61.825	79.8	18.0	86.3	24.5	3.53	-0.11	48.9	30.9	55.4
154	516.1	0.802	44.5	-6.5	7.04	11.166	70.488	61.837	79.8	18.0	86.3	24.5	3.53	-0.11	48.9	30.9	55.4
155	516.2	0.807	44.5	-6.5	7.05	11.242	70.506	61.801	79.8	18.0	86.3	24.5	3.53	-0.11	48.9	30.9	55.4
156	517.2	0.811	44.5	-6.5	7.05	11.317	70.654	61.879	79.8	18.0	86.3	24.5	3.53	-0.11	48.9	30.9	55.4
157	519.0	0.816	44.5	-6.5	7.06	11.393	70.950	62.088	80.0	18.0	86.5	24.5	3.54	-0.10	49.0	31.0	55.5
158	519.4	0.821	44.5	-6.5	7.07	11.468	71.006	62.083	80.0	18.0	86.6	24.5	3.54	-0.11	49.0	31.0	55.5
159	519.4	0.825	44.5	-6.6	7.07	11.544	71.006	62.030	80.0	18.0	86.5	24.5	3.53	-0.11	49.0	31.0	55.5
160	521.2	0.830	44.5	-6.6	7.08	11.619	71.302	62.238	80.2	18.0	86.8	24.5	3.54	-0.11	49.1	31.1	55.6
161	521.1	0.834	44.5	-6.6	7.08	11.695	71.283	62.168	80.1	18.0	86.7	24.5	3.54	-0.11	49.0	31.1	55.6
162	522.0	0.838	44.5	-6.6	7.09	11.762	71.432	62.250	80.2	18.0	86.8	24.5	3.54	-0.11	49.1	31.1	55.6
163	523.5	0.844	44.5	-6.6	7.10	11.846	71.672	62.403	80.4	18.0	86.9	24.5	3.55	-0.11	49.2	31.2	55.7
164	524.3	0.848	44.4	-6.6	7.10	11.913	71.802	62.468	80.4	18.0	87.0	24.6	3.54	-0.11	49.2	31.2	55.8
165	525.6	0.852	44.4	-6.6	7.11	11.989	72.005	62.593	80.5	18.0	87.2	24.6	3.55	-0.11	49.2	31.3	55.9
166	524.7	0.857	44.5	-6.6	7.11	12.064	71.857	62.409	80.4	18.0	87.0	24.5	3.54	-0.11	49.2	31.2	55.8
167	526.9	0.861	44.5	-6.6	7.12	12.140	72.209	62.663	80.6	18.0	87.2	24.5	3.55	-0.11	49.3	31.3	55.9
168	526.7	0.866	44.4	-6.7	7.13	12.208	72.172	62.582	80.5	18.0	87.2	24.6	3.54	-0.11	49.2	31.3	55.9
169	528.2	0.870	44.4	-6.7	7.13	12.283	72.413	62.738	80.7	18.0	87.4	24.6	3.55	-0.11	49.3	31.4	56.0
170	529.4	0.875	44.4	-6.7	7.14	12.359	72.616	62.862	80.8	18.0	87.5	24.6	3.55	-0.11	49.4	31.4	56.1
171	530.1	0.879	44.4	-6.7	7.14	12.434	72.727	62.905	80.9	18.0	87.5	24.6	3.55	-0.11	49.4	31.5	56.1
172	530.6	0.884	44.4	-6.7	7.15	12.502	72.801	62.920	80.9	18.0	87.6	24.6	3.55	-0.11	49.4	31.5	56.1
173	530.7	0.888	44.3	-6.7	7.16	12.578	72.820	62.881	80.8	18.0	87.6	24.7	3.55	-0.11	49.4	31.4	56.1
174	531.3	0.892	44.3	-6.8	7.16	12.646	72.912	62.913	80.9	18.0	87.6	24.7	3.54	-0.11	49.4	31.5	56.2
175	531.9	0.897	44.2	-6.8	7.17	12.721	73.005	62.938	80.9	18.0	87.7	24.8	3.54	-0.11	49.4	31.5	56.2
176	532.1	0.902	44.2	-6.8	7.17	12.797	73.042	62.915	80.9	18.0	87.7	24.8	3.54	-0.11	49.4	31.5	56.2
177	532.2	0.906	44.2	-6.8	7.18	12.865	73.060	62.882	80.8	18.0	87.6	24.8	3.54	-0.11	49.4	31.4	56.2
178	534.0	0.910	44.2	-6.8	7.19	12.940	73.338	63.068	81.0	18.0	87.8	24.8	3.55	-0.11	49.5	31.5	56.3
179	533.7	0.915	44.2	-6.9	7.19	13.016	73.301	62.981	80.9	18.0	87.8	24.8	3.54	-0.11	49.4	31.5	56.3
180	535.0	0.919	44.2	-6.9	7.20	13.091	73.505	63.103	81.1	18.0	87.9	24.8	3.54	-0.11	49.5	31.6	56.4
181	534.3	0.924	44.2	-6.9	7.20	13.159	73.394	62.956	80.9	18.0	87.8	24.8	3.53	-0.11	49.4	31.5	56.3
182	535.2	0.928	44.2	-6.9	7.21	13.235	73.542	63.029	81.0	18.0	87.9	24.8	3.54	-0.11	49.5	31.5	56.4

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	536.4	0.932	44.1	-6.9	7.22	13.303	73.727	63.140	81.1	18.0	88.0	24.9	3.54	-0.11	49.5	31.6	56.4
184	536.9	0.937	44.1	-6.9	7.22	13.378	73.801	63.148	81.1	18.0	88.0	24.9	3.54	-0.11	49.5	31.6	56.5
185	537.8	0.942	44.1	-7.0	7.23	13.454	73.949	63.221	81.2	18.0	88.1	24.9	3.54	-0.11	49.6	31.6	56.5
186	536.5	0.946	44.1	-7.0	7.23	13.522	73.745	62.994	80.9	18.0	87.9	24.9	3.53	-0.11	49.4	31.5	56.4
187	536.9	0.950	44.1	-7.0	7.24	13.597	73.801	62.987	80.9	18.0	87.9	24.9	3.53	-0.11	49.4	31.5	56.4
188	537.5	0.955	44.1	-7.0	7.25	13.673	73.912	63.027	81.0	18.0	88.0	24.9	3.53	-0.11	49.5	31.5	56.4
189	537.5	0.959	44.0	-7.0	7.25	13.740	73.912	62.977	80.9	18.0	88.0	25.0	3.52	-0.11	49.4	31.5	56.5
190	538.6	0.964	44.0	-7.0	7.26	13.816	74.079	63.064	81.0	18.0	88.0	25.0	3.52	-0.11	49.5	31.5	56.5
191	531.1	0.968	44.0	-7.0	7.26	13.884	72.875	61.978	79.9	18.0	86.9	25.0	3.48	-0.11	48.9	31.0	55.9
192	532.3	0.972	44.0	-7.0	7.27	13.959	73.079	62.098	80.1	18.0	87.1	25.0	3.49	-0.11	49.0	31.0	56.0
193	533.7	0.977	44.0	-7.0	7.28	14.027	73.301	62.239	80.2	18.0	87.2	25.0	3.49	-0.11	49.1	31.1	56.1
194	534.8	0.981	44.0	-7.1	7.28	14.095	73.468	62.333	80.3	18.0	87.3	25.0	3.49	-0.11	49.1	31.2	56.2
195	535.0	0.985	44.0	-7.1	7.29	14.171	73.505	62.309	80.3	18.0	87.3	25.0	3.49	-0.11	49.1	31.2	56.2
196	534.5	0.989	44.0	-7.0	7.29	14.239	73.431	62.196	80.1	18.0	87.2	25.0	3.49	-0.11	49.1	31.1	56.1
197	535.5	0.994	44.0	-7.0	7.30	14.314	73.579	62.267	80.2	18.0	87.3	25.0	3.49	-0.11	49.1	31.1	56.1
198	536.3	0.998	44.0	-7.1	7.31	14.382	73.708	62.328	80.3	18.0	87.3	25.0	3.49	-0.11	49.1	31.2	56.2
199	537.7	1.003	44.0	-7.1	7.31	14.458	73.930	62.462	80.4	18.0	87.5	25.0	3.50	-0.11	49.2	31.2	56.2
200	537.5	1.007	44.0	-7.0	7.32	14.533	73.912	62.391	80.3	18.0	87.4	25.0	3.50	-0.11	49.1	31.2	56.2
201	539.2	1.012	44.0	-7.0	7.33	14.601	74.171	62.562	80.5	18.0	87.5	25.0	3.51	-0.11	49.2	31.3	56.2
202	540.1	1.016	44.0	-7.0	7.33	14.677	74.319	62.632	80.6	18.0	87.6	25.0	3.51	-0.11	49.3	31.3	56.3
203	541.1	1.020	44.0	-7.1	7.34	14.745	74.486	62.724	80.7	18.0	87.7	25.0	3.51	-0.11	49.3	31.4	56.4
204	540.4	1.025	44.0	-7.1	7.34	14.820	74.375	62.573	80.5	18.0	87.6	25.0	3.50	-0.11	49.2	31.3	56.3
205	541.8	1.029	44.0	-7.1	7.35	14.896	74.597	62.706	80.7	18.0	87.7	25.0	3.51	-0.11	49.3	31.4	56.4
206	536.4	1.034	44.0	-7.1	7.36	14.964	73.727	61.915	79.9	18.0	86.9	25.0	3.48	-0.11	48.9	31.0	56.0
207	538.4	1.038	44.0	-7.1	7.36	15.039	74.041	62.127	80.1	18.0	87.1	25.0	3.48	-0.11	49.0	31.1	56.1
208	542.3	1.043	44.0	-7.1	7.37	15.115	74.671	62.605	80.6	18.0	87.6	25.0	3.50	-0.11	49.3	31.3	56.3
209	544.1	1.047	43.9	-7.1	7.38	15.190	74.967	62.800	80.8	18.0	87.9	25.1	3.50	-0.11	49.4	31.4	56.5
210	545.3	1.052	44.0	-7.1	7.38	15.266	75.152	62.900	80.9	18.0	87.9	25.0	3.51	-0.11	49.4	31.5	56.5
211	546.0	1.057	44.0	-7.1	7.39	15.341	75.263	62.938	80.9	18.0	88.0	25.0	3.51	-0.11	49.4	31.5	56.5
212	547.2	1.061	44.0	-7.1	7.40	15.417	75.448	63.037	81.0	18.0	88.1	25.0	3.52	-0.11	49.5	31.5	56.6
213	547.9	1.066	43.9	-7.2	7.40	15.492	75.559	63.074	81.0	18.0	88.2	25.1	3.51	-0.11	49.5	31.5	56.6
214	550.1	1.070	43.9	-7.2	7.41	15.568	75.911	63.314	81.3	18.0	88.4	25.1	3.52	-0.11	49.6	31.7	56.8
215	550.2	1.075	43.9	-7.2	7.42	15.635	75.930	63.278	81.2	18.0	88.4	25.1	3.52	-0.11	49.6	31.6	56.7
216	550.4	1.079	43.9	-7.1	7.42	15.711	75.967	63.252	81.2	18.0	88.3	25.1	3.52	-0.11	49.6	31.6	56.7
217	551.1	1.084	43.9	-7.2	7.43	15.786	76.078	63.288	81.2	18.0	88.4	25.1	3.52	-0.11	49.6	31.6	56.7
218	551.9	1.088	43.8	-7.2	7.43	15.854	76.207	63.346	81.3	18.0	88.5	25.2	3.52	-0.11	49.6	31.7	56.8
219	552.0	1.092	43.8	-7.2	7.44	15.930	76.226	63.304	81.3	18.0	88.5	25.2	3.52	-0.11	49.6	31.7	56.8
220	552.1	1.097	43.8	-7.2	7.45	16.005	76.244	63.262	81.2	18.0	88.4	25.2	3.51	-0.11	49.6	31.6	56.8
221	553.2	1.101	43.9	-7.2	7.45	16.073	76.411	63.350	81.3	18.0	88.5	25.1	3.52	-0.11	49.6	31.7	56.8
222	552.5	1.106	43.8	-7.2	7.46	16.149	76.300	63.199	81.2	18.0	88.4	25.2	3.51	-0.11	49.6	31.6	56.8
223	552.3	1.110	43.8	-7.2	7.47	16.217	76.263	63.116	81.1	18.0	88.3	25.2	3.51	-0.11	49.5	31.6	56.7

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	553.2	1.114	43.8	-7.2	7.47	16.285	76.411	63.188	81.1	18.0	88.3	25.2	3.51	-0.11	49.5	31.6	56.8
225	548.9	1.119	43.8	-7.2	7.48	16.360	75.726	62.557	80.5	18.0	87.7	25.2	3.49	-0.12	49.2	31.3	56.4
226	549.8	1.123	43.9	-7.2	7.49	16.428	75.874	62.630	80.6	18.0	87.8	25.1	3.49	-0.11	49.3	31.3	56.4
227	551.8	1.127	43.8	-7.2	7.49	16.496	76.189	62.841	80.8	18.0	88.0	25.2	3.50	-0.11	49.4	31.4	56.6
228	552.3	1.132	43.8	-7.2	7.50	16.572	76.263	62.845	80.8	18.0	88.0	25.2	3.49	-0.12	49.4	31.4	56.6
229	553.0	1.136	43.8	-7.2	7.50	16.640	76.374	62.886	80.8	18.0	88.1	25.2	3.50	-0.12	49.4	31.4	56.6
230	555.5	1.140	43.8	-7.2	7.51	16.715	76.781	63.168	81.1	18.0	88.4	25.2	3.51	-0.11	49.5	31.6	56.8
231	556.4	1.145	43.8	-7.2	7.52	16.783	76.929	63.239	81.2	18.0	88.4	25.2	3.51	-0.11	49.6	31.6	56.8
232	557.4	1.149	43.8	-7.3	7.52	16.851	77.077	63.309	81.3	18.0	88.5	25.2	3.51	-0.11	49.6	31.7	56.9
233	558.5	1.153	43.8	-7.3	7.53	16.926	77.262	63.405	81.4	18.0	88.7	25.2	3.51	-0.12	49.7	31.7	57.0
234	559.7	1.158	43.7	-7.3	7.54	17.002	77.447	63.500	81.5	18.0	88.8	25.3	3.51	-0.12	49.7	31.8	57.0
235	560.2	1.162	43.8	-7.3	7.54	17.070	77.540	63.524	81.5	18.0	88.8	25.2	3.52	-0.11	49.7	31.8	57.0
236	561.5	1.167	43.7	-7.3	7.55	17.145	77.744	63.635	81.6	18.0	88.9	25.3	3.52	-0.12	49.8	31.8	57.1
237	555.6	1.171	43.7	-7.3	7.56	17.221	76.800	62.794	80.7	18.0	88.1	25.3	3.48	-0.12	49.3	31.4	56.7
238	556.9	1.175	43.7	-7.4	7.56	17.289	77.003	62.911	80.9	18.0	88.2	25.3	3.49	-0.12	49.4	31.5	56.8
239	558.3	1.180	43.7	-7.4	7.57	17.364	77.225	63.036	81.0	18.0	88.4	25.3	3.49	-0.12	49.5	31.5	56.9
240	559.6	1.185	43.7	-7.4	7.58	17.440	77.429	63.146	81.1	18.0	88.5	25.3	3.50	-0.12	49.5	31.6	56.9
241	561.1	1.189	43.7	-7.4	7.58	17.515	77.670	63.286	81.2	18.0	88.6	25.3	3.50	-0.12	49.6	31.6	57.0
242	560.7	1.193	43.7	-7.4	7.59	17.583	77.614	63.187	81.1	18.0	88.5	25.3	3.49	-0.12	49.5	31.6	56.9
243	562.7	1.198	43.6	-7.4	7.60	17.659	77.929	63.388	81.3	18.0	88.8	25.4	3.50	-0.12	49.6	31.7	57.1
244	564.1	1.202	43.6	-7.4	7.60	17.734	78.151	63.512	81.5	18.0	88.9	25.4	3.50	-0.12	49.7	31.8	57.2
245	563.6	1.207	43.6	-7.4	7.61	17.810	78.077	63.392	81.3	18.0	88.8	25.4	3.50	-0.12	49.6	31.7	57.1
246	565.0	1.211	43.6	-7.4	7.62	17.878	78.299	63.521	81.5	18.0	88.9	25.4	3.50	-0.12	49.7	31.8	57.2
247	565.6	1.216	43.6	-7.5	7.62	17.953	78.391	63.538	81.5	18.0	89.0	25.4	3.50	-0.12	49.7	31.8	57.2
248	560.5	1.220	43.5	-7.5	7.63	18.029	77.577	62.811	80.8	18.0	88.3	25.5	3.46	-0.12	49.4	31.4	56.9
249	562.9	1.225	43.5	-7.5	7.64	18.097	77.966	63.077	81.0	18.0	88.6	25.5	3.48	-0.12	49.5	31.5	57.0
250	564.1	1.229	43.5	-7.5	7.65	18.172	78.151	63.170	81.1	18.0	88.7	25.5	3.48	-0.12	49.5	31.6	57.1
251	565.8	1.234	43.5	-7.5	7.65	18.248	78.428	63.338	81.3	18.0	88.8	25.5	3.49	-0.12	49.6	31.7	57.1
252	566.0	1.238	43.5	-7.5	7.66	18.316	78.465	63.315	81.3	18.0	88.8	25.5	3.48	-0.12	49.6	31.7	57.1
253	566.4	1.243	43.5	-7.6	7.67	18.391	78.521	63.301	81.3	18.0	88.8	25.5	3.48	-0.12	49.6	31.7	57.2
254	568.0	1.247	43.5	-7.6	7.67	18.459	78.780	63.459	81.4	18.0	89.0	25.5	3.48	-0.12	49.7	31.7	57.3
255	568.1	1.251	43.5	-7.6	7.68	18.535	78.799	63.414	81.4	18.0	89.0	25.5	3.48	-0.12	49.7	31.7	57.2
256	568.6	1.255	43.5	-7.6	7.69	18.603	78.873	63.421	81.4	18.0	89.0	25.5	3.48	-0.12	49.7	31.7	57.3
257	568.7	1.260	43.4	-7.6	7.69	18.678	78.891	63.376	81.3	18.0	88.9	25.6	3.48	-0.12	49.6	31.7	57.3
258	569.2	1.264	43.4	-7.6	7.70	18.746	78.965	63.383	81.3	18.0	89.0	25.6	3.48	-0.12	49.6	31.7	57.3
259	564.3	1.269	43.4	-7.6	7.71	18.821	78.188	62.692	80.6	18.0	88.3	25.6	3.45	-0.12	49.3	31.3	56.9
260	566.0	1.273	43.4	-7.6	7.71	18.897	78.465	62.858	80.8	18.0	88.4	25.6	3.46	-0.12	49.4	31.4	57.0
261	568.2	1.277	43.4	-7.6	7.72	18.965	78.817	63.090	81.0	18.0	88.7	25.6	3.47	-0.12	49.5	31.5	57.1
262	568.7	1.282	43.4	-7.6	7.73	19.040	78.891	63.091	81.0	18.0	88.7	25.6	3.46	-0.12	49.5	31.5	57.1
263	568.5	1.287	43.4	-7.7	7.73	19.116	78.854	63.001	81.0	18.0	88.6	25.6	3.46	-0.12	49.5	31.5	57.1
264	569.0	1.291	43.4	-7.6	7.74	19.184	78.947	63.022	81.0	18.0	88.6	25.6	3.46	-0.12	49.5	31.5	57.1

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
265	569.7	1.295	43.4	-7.6	7.75	19.259	79.058	63.052	81.0	18.0	88.6	25.6	3.47	-0.12	49.5	31.5	57.1
266	569.6	1.300	43.4	-7.6	7.76	19.335	79.039	62.978	80.9	18.0	88.6	25.6	3.46	-0.12	49.4	31.5	57.1
267	570.8	1.304	43.4	-7.6	7.76	19.403	79.224	63.073	81.0	18.0	88.7	25.6	3.46	-0.12	49.5	31.5	57.1
268	570.3	1.309	43.4	-7.7	7.77	19.478	79.150	62.954	80.9	18.0	88.6	25.6	3.46	-0.12	49.4	31.5	57.1
269	571.2	1.313	43.4	-7.7	7.78	19.554	79.298	63.013	81.0	18.0	88.6	25.6	3.46	-0.12	49.5	31.5	57.1
270	570.9	1.318	43.4	-7.7	7.78	19.629	79.243	62.909	80.9	18.0	88.5	25.6	3.45	-0.12	49.4	31.5	57.1
271	569.6	1.322	43.4	-7.7	7.79	19.697	79.039	62.691	80.6	18.0	88.3	25.6	3.45	-0.12	49.3	31.3	57.0
272	565.9	1.327	43.3	-7.7	7.80	19.773	78.447	62.156	80.1	18.0	87.8	25.7	3.42	-0.12	49.0	31.1	56.7
273	567.2	1.331	43.3	-7.7	7.80	19.841	78.651	62.266	80.2	18.0	87.9	25.7	3.43	-0.12	49.1	31.1	56.8
274	568.1	1.335	43.4	-7.7	7.81	19.916	78.799	62.325	80.3	18.0	88.0	25.6	3.43	-0.12	49.1	31.2	56.8
275	568.4	1.340	43.4	-7.6	7.82	19.984	78.836	62.302	80.3	18.0	87.9	25.6	3.43	-0.12	49.1	31.2	56.8
276	568.2	1.341	43.4	-7.6	7.82	19.999	78.817	62.275	80.2	18.0	87.9	25.6	3.43	-0.12	49.1	31.1	56.7

Specimen B Shear Data

CU Triaxial Test

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File Location
T-5788.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B (T-5788)
Client: T-5788
Sample Location: Guilford County (Sta. 403+45)
Sample Description: Tannish colored silt
Remarks: 25° shear plane

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.6700001
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.852	2.803	
Height (in)	6.159	6.007	
Weight (grams)	1306.00		1324.00
Moisture (%)	18.40		20.04
Dry Density (pcf)	106.81	113.34	
Saturation (%)	87.65	100.00	
Void Ratio	0.556	0.471	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 86.700
Effective Confining Stress (psi): 36.0
Corrected Peak Deviator Stress (psi): 110.255 at reading number: 114

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	54.5	0.206	50.7	0.0	6.17	0.000	0.000	0.000	36.0	36.0	36.0	36.0	1.00	0.00	36.0	0.0	36.0
1	106.6	0.211	54.1	3.3	6.18	0.086	8.451	8.411	44.4	36.0	41.1	32.6	1.26	0.39	40.2	4.2	36.8
2	127.2	0.216	56.3	5.6	6.18	0.162	11.795	11.712	47.7	36.0	42.1	30.4	1.39	0.48	41.8	5.9	36.2
3	142.5	0.220	58.0	7.3	6.19	0.238	14.265	14.138	50.1	36.0	42.8	28.7	1.49	0.51	43.0	7.1	35.7
4	155.3	0.225	59.3	8.6	6.19	0.314	16.345	16.171	52.1	36.0	43.6	27.4	1.59	0.53	44.0	8.1	35.5
5	166.3	0.230	60.3	9.6	6.20	0.390	18.129	17.905	53.9	36.0	44.3	26.4	1.68	0.53	44.9	9.0	35.3
6	176.5	0.235	61.2	10.4	6.20	0.475	19.782	19.501	55.5	36.0	45.0	25.5	1.76	0.53	45.7	9.8	35.3
7	186.2	0.239	61.9	11.1	6.21	0.551	21.342	21.008	57.0	36.0	45.8	24.8	1.85	0.53	46.5	10.5	35.3
8	195.0	0.244	62.5	11.7	6.21	0.627	22.772	22.383	58.3	36.0	46.6	24.2	1.92	0.52	47.2	11.2	35.4
9	203.9	0.249	62.9	12.2	6.22	0.713	24.221	23.769	59.7	36.0	47.5	23.8	2.00	0.51	47.8	11.9	35.7
10	212.2	0.253	63.3	12.6	6.22	0.789	25.558	25.047	61.0	36.0	48.4	23.4	2.07	0.50	48.5	12.5	35.9
11	220.2	0.258	63.7	12.9	6.23	0.865	26.859	26.287	62.2	36.0	49.3	23.0	2.14	0.49	49.1	13.1	36.2
12	228.3	0.263	64.0	13.2	6.23	0.941	28.177	27.543	63.5	36.0	50.3	22.7	2.21	0.48	49.7	13.8	36.5
13	236.5	0.267	64.2	13.5	6.23	1.017	29.496	28.797	64.8	36.0	51.3	22.5	2.28	0.47	50.4	14.4	36.9
14	244.2	0.272	64.4	13.7	6.24	1.093	30.741	29.976	65.9	36.0	52.3	22.3	2.35	0.46	50.9	15.0	37.3
15	252.1	0.277	64.6	13.9	6.25	1.179	32.022	31.182	67.1	36.0	53.3	22.1	2.41	0.44	51.6	15.6	37.7
16	259.6	0.281	64.7	14.0	6.25	1.255	33.248	32.339	68.3	36.0	54.3	22.0	2.47	0.43	52.1	16.2	38.2
17	267.2	0.286	64.8	14.1	6.25	1.331	34.474	33.493	69.5	36.0	55.4	21.9	2.53	0.42	52.7	16.7	38.6
18	274.8	0.291	64.9	14.2	6.26	1.416	35.700	34.639	70.6	36.0	56.4	21.8	2.59	0.41	53.3	17.3	39.1

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	282.6	0.296	65.0	14.2	6.27	1.492	36.963	35.826	71.8	36.0	57.6	21.7	2.65	0.40	53.9	17.9	39.6
20	290.4	0.300	65.0	14.3	6.27	1.568	38.226	37.011	73.0	36.0	58.7	21.7	2.71	0.39	54.5	18.5	40.2
21	297.7	0.305	65.0	14.3	6.27	1.644	39.415	38.122	74.1	36.0	59.8	21.7	2.76	0.37	55.0	19.1	40.7
22	304.9	0.309	65.0	14.3	6.28	1.720	40.585	39.212	75.2	36.0	60.9	21.7	2.81	0.36	55.6	19.6	41.3
23	312.1	0.315	65.0	14.3	6.29	1.806	41.755	40.293	76.3	36.0	62.0	21.7	2.86	0.35	56.1	20.1	41.8
24	319.4	0.319	65.0	14.3	6.29	1.872	42.925	41.387	77.3	36.0	63.1	21.7	2.91	0.34	56.7	20.7	42.4
25	326.8	0.324	64.9	14.2	6.29	1.958	44.133	42.500	78.5	36.0	64.3	21.8	2.95	0.33	57.2	21.3	43.0
26	333.9	0.328	64.9	14.1	6.30	2.034	45.284	43.579	79.5	36.0	65.4	21.8	3.00	0.32	57.7	21.8	43.6
27	341.1	0.333	64.9	14.1	6.30	2.110	46.455	44.690	80.6	36.0	66.5	21.8	3.05	0.32	58.3	22.3	44.2
28	348.3	0.337	64.8	14.0	6.31	2.186	47.606	45.781	81.7	36.0	67.7	21.9	3.09	0.31	58.8	22.9	44.8
29	355.1	0.342	64.7	13.9	6.31	2.262	48.721	46.834	82.8	36.0	68.9	22.0	3.13	0.30	59.4	23.4	45.4
30	362.4	0.347	64.6	13.9	6.32	2.348	49.891	47.935	83.9	36.0	70.0	22.1	3.17	0.29	59.9	24.0	46.1
31	369.0	0.351	64.5	13.7	6.32	2.414	50.968	48.953	84.9	36.0	71.2	22.2	3.20	0.28	60.4	24.5	46.7
32	376.2	0.356	64.4	13.6	6.33	2.490	52.138	50.055	86.0	36.0	72.4	22.3	3.24	0.27	61.0	25.0	47.3
33	383.7	0.361	64.3	13.5	6.33	2.576	53.346	51.187	87.1	36.0	73.6	22.4	3.28	0.26	61.6	25.6	48.0
34	390.8	0.365	64.2	13.4	6.34	2.642	54.497	52.273	88.2	36.0	74.8	22.5	3.32	0.26	62.1	26.1	48.7
35	397.8	0.370	64.0	13.3	6.34	2.728	55.630	53.328	89.3	36.0	76.0	22.7	3.35	0.25	62.6	26.7	49.4
36	404.8	0.375	63.9	13.1	6.35	2.804	56.763	54.387	90.3	36.0	77.2	22.8	3.38	0.24	63.2	27.2	50.0
37	411.5	0.379	63.7	13.0	6.35	2.880	57.859	55.408	91.4	36.0	78.4	23.0	3.41	0.23	63.7	27.7	50.7
38	418.3	0.383	63.6	12.9	6.36	2.946	58.955	56.433	92.4	36.0	79.5	23.1	3.44	0.23	64.2	28.2	51.3
39	425.5	0.388	63.4	12.7	6.36	3.032	60.125	57.518	93.5	36.0	80.8	23.3	3.47	0.22	64.7	28.8	52.0
40	432.1	0.393	63.3	12.5	6.37	3.108	61.184	58.498	94.5	36.0	81.9	23.4	3.50	0.21	65.2	29.2	52.7
41	439.0	0.397	63.1	12.4	6.37	3.184	62.317	59.548	95.5	36.0	83.1	23.6	3.53	0.21	65.7	29.8	53.3
42	445.9	0.402	63.0	12.2	6.38	3.260	63.432	60.579	96.5	36.0	84.3	23.7	3.55	0.20	66.2	30.3	54.0
43	453.0	0.407	62.8	12.1	6.38	3.336	64.583	61.644	97.6	36.0	85.5	23.9	3.58	0.20	66.8	30.8	54.7
44	459.8	0.411	62.6	11.9	6.39	3.412	65.679	62.653	98.6	36.0	86.7	24.1	3.60	0.19	67.3	31.3	55.4
45	466.7	0.416	62.5	11.7	6.40	3.498	66.794	63.673	99.6	36.0	87.9	24.2	3.63	0.18	67.8	31.8	56.1
46	473.4	0.421	62.3	11.6	6.40	3.574	67.889	64.678	100.6	36.0	89.1	24.4	3.65	0.18	68.3	32.3	56.7
47	480.1	0.425	62.1	11.4	6.40	3.640	68.967	65.671	101.6	36.0	90.2	24.6	3.67	0.17	68.8	32.8	57.4
48	486.8	0.429	62.0	11.2	6.41	3.716	70.063	66.674	102.6	36.0	91.4	24.7	3.69	0.17	69.3	33.3	58.1
49	493.5	0.434	61.7	11.0	6.42	3.802	71.140	67.651	103.6	36.0	92.6	25.0	3.71	0.16	69.8	33.8	58.8
50	500.0	0.439	61.6	10.8	6.42	3.878	72.199	68.614	104.6	36.0	93.7	25.1	3.73	0.16	70.3	34.3	59.4
51	506.7	0.444	61.4	10.7	6.43	3.954	73.276	69.594	105.6	36.0	94.9	25.3	3.75	0.15	70.8	34.8	60.1
52	513.3	0.448	61.2	10.4	6.43	4.030	74.353	70.572	106.5	36.0	96.1	25.5	3.77	0.15	71.2	35.3	60.8
53	520.0	0.453	61.0	10.3	6.44	4.106	75.431	71.549	107.5	36.0	97.2	25.7	3.79	0.14	71.7	35.8	61.5
54	526.9	0.457	60.8	10.1	6.44	4.182	76.545	72.559	108.5	36.0	98.5	25.9	3.80	0.14	72.2	36.3	62.2
55	534.1	0.462	60.6	9.9	6.45	4.258	77.715	73.621	109.6	36.0	99.7	26.1	3.82	0.13	72.8	36.8	62.9
56	540.6	0.466	60.4	9.7	6.45	4.334	78.774	74.575	110.5	36.0	100.8	26.3	3.84	0.13	73.2	37.3	63.6
57	542.7	0.471	60.2	9.5	6.46	4.410	79.108	74.835	110.8	36.0	101.3	26.5	3.83	0.13	73.4	37.4	63.9
58	553.4	0.476	60.0	9.3	6.46	4.486	80.854	76.442	112.4	36.0	103.1	26.7	3.87	0.12	74.2	38.2	64.9
59	560.6	0.480	59.8	9.1	6.47	4.562	82.006	77.480	113.4	36.0	104.3	26.9	3.88	0.12	74.7	38.7	65.6

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	567.2	0.485	59.6	8.9	6.47	4.638	83.083	78.445	114.4	36.0	105.5	27.1	3.90	0.11	75.2	39.2	66.3
61	574.0	0.489	59.4	8.7	6.48	4.714	84.179	79.426	115.4	36.0	106.7	27.3	3.91	0.11	75.7	39.7	67.0
62	580.3	0.494	59.3	8.5	6.48	4.790	85.201	80.335	116.3	36.0	107.8	27.4	3.93	0.11	76.1	40.2	67.6
63	587.3	0.498	59.0	8.3	6.49	4.866	86.334	81.348	117.3	36.0	109.0	27.7	3.94	0.10	76.6	40.7	68.3
64	593.6	0.503	58.8	8.1	6.49	4.942	87.355	82.253	118.2	36.0	110.1	27.9	3.95	0.10	77.1	41.1	69.0
65	600.2	0.508	58.6	7.9	6.50	5.028	88.433	83.202	119.2	36.0	111.3	28.1	3.96	0.09	77.6	41.6	69.7
66	606.8	0.512	58.4	7.7	6.50	5.094	89.492	84.148	120.1	36.0	112.4	28.3	3.98	0.09	78.0	42.1	70.3
67	612.9	0.517	58.2	7.5	6.51	5.170	90.495	85.031	121.0	36.0	113.5	28.5	3.99	0.09	78.5	42.5	71.0
68	619.5	0.521	58.0	7.2	6.51	5.247	91.553	85.965	121.9	36.0	114.7	28.7	3.99	0.08	78.9	43.0	71.7
69	624.5	0.526	57.8	7.0	6.52	5.323	92.371	86.669	122.6	36.0	115.6	28.9	4.00	0.08	79.3	43.3	72.3
70	631.9	0.531	57.6	6.8	6.52	5.408	93.559	87.715	123.7	36.0	116.8	29.1	4.01	0.08	79.8	43.9	73.0
71	638.3	0.536	57.3	6.6	6.53	5.484	94.600	88.627	124.6	36.0	118.0	29.4	4.02	0.07	80.3	44.3	73.7
72	644.8	0.540	57.2	6.4	6.53	5.560	95.658	89.555	125.5	36.0	119.1	29.5	4.03	0.07	80.7	44.8	74.3
73	651.5	0.545	56.9	6.2	6.54	5.636	96.736	90.499	126.5	36.0	120.3	29.8	4.04	0.07	81.2	45.2	75.0
74	657.9	0.549	56.7	6.0	6.55	5.712	97.776	91.406	127.4	36.0	121.4	30.0	4.05	0.07	81.7	45.7	75.7
75	663.8	0.554	56.5	5.8	6.55	5.788	98.742	92.241	128.2	36.0	122.4	30.2	4.05	0.06	82.1	46.1	76.3
76	669.1	0.558	56.3	5.5	6.56	5.864	99.596	92.971	128.9	36.0	123.4	30.4	4.06	0.06	82.4	46.5	76.9
77	675.5	0.563	56.1	5.3	6.56	5.940	100.636	93.873	129.8	36.0	124.5	30.6	4.07	0.06	82.9	46.9	77.6
78	681.5	0.568	55.8	5.1	6.57	6.016	101.602	94.704	130.7	36.0	125.6	30.9	4.07	0.05	83.3	47.4	78.2
79	687.3	0.572	55.6	4.9	6.57	6.092	102.549	95.517	131.5	36.0	126.6	31.1	4.07	0.05	83.7	47.8	78.8
80	692.7	0.577	55.4	4.7	6.58	6.168	103.422	96.258	132.2	36.0	127.6	31.3	4.08	0.05	84.1	48.1	79.4
81	698.6	0.581	55.2	4.4	6.58	6.244	104.370	97.067	133.0	36.0	128.6	31.5	4.08	0.05	84.5	48.5	80.1
82	704.5	0.586	54.9	4.2	6.59	6.321	105.336	97.893	133.9	36.0	129.7	31.8	4.08	0.04	84.9	48.9	80.7
83	709.9	0.590	54.7	4.0	6.59	6.397	106.209	98.630	134.6	36.0	130.6	32.0	4.08	0.04	85.3	49.3	81.3
84	714.3	0.595	54.5	3.7	6.60	6.473	106.914	99.209	135.2	36.0	131.4	32.2	4.08	0.04	85.6	49.6	81.8
85	720.5	0.599	54.2	3.5	6.60	6.549	107.917	100.065	136.0	36.0	132.5	32.5	4.08	0.03	86.0	50.0	82.5
86	725.2	0.604	54.0	3.3	6.61	6.625	108.679	100.694	136.7	36.0	133.4	32.7	4.08	0.03	86.3	50.3	83.0
87	730.7	0.609	53.8	3.1	6.61	6.701	109.570	101.444	137.4	36.0	134.4	32.9	4.08	0.03	86.7	50.7	83.6
88	735.7	0.613	53.5	2.8	6.62	6.777	110.388	102.122	138.1	36.0	135.3	33.2	4.08	0.03	87.0	51.1	84.2
89	740.6	0.618	53.3	2.6	6.63	6.862	111.186	102.772	138.7	36.0	136.2	33.4	4.08	0.02	87.3	51.4	84.8
90	744.8	0.622	53.1	2.3	6.63	6.929	111.855	103.320	139.3	36.0	137.0	33.6	4.07	0.02	87.6	51.7	85.3
91	749.1	0.627	52.8	2.1	6.64	7.005	112.561	103.891	139.9	36.0	137.8	33.9	4.07	0.02	87.9	51.9	85.8
92	753.1	0.631	52.6	1.8	6.64	7.081	113.211	104.410	140.4	36.0	138.5	34.1	4.06	0.02	88.2	52.2	86.3
93	758.6	0.636	52.3	1.6	6.65	7.157	114.103	105.152	141.1	36.0	139.5	34.4	4.06	0.02	88.5	52.6	87.0
94	761.4	0.641	52.1	1.3	6.65	7.233	114.548	105.478	141.4	36.0	140.1	34.6	4.05	0.01	88.7	52.7	87.3
95	766.1	0.645	51.8	1.1	6.66	7.309	115.310	106.097	142.1	36.0	141.0	34.9	4.04	0.01	89.0	53.0	87.9
96	769.3	0.650	51.6	0.9	6.66	7.395	115.830	106.480	142.4	36.0	141.6	35.1	4.03	0.01	89.2	53.2	88.3
97	773.4	0.655	51.3	0.6	6.67	7.471	116.499	107.011	143.0	36.0	142.4	35.4	4.03	0.01	89.5	53.5	88.9
98	776.9	0.659	51.1	0.3	6.68	7.547	117.056	107.437	143.4	36.0	143.1	35.6	4.01	0.00	89.7	53.7	89.4
99	780.6	0.664	50.8	0.1	6.68	7.623	117.669	107.915	143.9	36.0	143.8	35.9	4.01	0.00	89.9	54.0	89.9
100	783.5	0.669	50.5	-0.2	6.69	7.699	118.133	108.254	144.2	36.0	144.4	36.2	3.99	0.00	90.1	54.1	90.3

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	786.8	0.673	50.3	-0.5	6.69	7.775	118.672	108.661	144.6	36.0	145.1	36.4	3.98	0.00	90.3	54.3	90.8
102	789.2	0.678	50.0	-0.7	6.70	7.851	119.062	108.930	144.9	36.0	145.6	36.7	3.97	-0.01	90.4	54.5	91.2
103	791.7	0.682	49.7	-1.0	6.70	7.927	119.452	109.199	145.2	36.0	146.2	37.0	3.95	-0.01	90.6	54.6	91.6
104	793.9	0.687	49.5	-1.3	6.71	8.003	119.824	109.449	145.4	36.0	146.7	37.2	3.94	-0.01	90.7	54.7	91.9
105	795.4	0.691	49.2	-1.5	6.71	8.079	120.065	109.580	145.5	36.0	147.1	37.5	3.92	-0.01	90.7	54.8	92.3
106	797.7	0.696	49.0	-1.8	6.72	8.155	120.437	109.830	145.8	36.0	147.6	37.7	3.91	-0.02	90.9	54.9	92.6
107	798.9	0.701	48.7	-2.0	6.73	8.231	120.622	109.909	145.9	36.0	147.9	38.0	3.89	-0.02	90.9	55.0	92.9
108	800.6	0.706	48.5	-2.3	6.73	8.316	120.901	110.061	146.0	36.0	148.3	38.2	3.88	-0.02	91.0	55.0	93.3
109	801.9	0.710	48.2	-2.6	6.74	8.393	121.105	110.157	146.1	36.0	148.7	38.5	3.86	-0.02	91.0	55.1	93.6
110	802.5	0.715	47.9	-2.8	6.74	8.469	121.217	110.167	146.1	36.0	148.9	38.8	3.84	-0.03	91.0	55.1	93.9
111	803.2	0.719	47.7	-3.1	6.75	8.545	121.328	110.176	146.1	36.0	149.2	39.0	3.82	-0.03	91.0	55.1	94.1
112	802.9	0.724	47.5	-3.3	6.75	8.621	121.272	110.033	146.0	36.0	149.3	39.2	3.80	-0.03	91.0	55.0	94.3
113	805.0	0.729	47.2	-3.6	6.76	8.697	121.607	110.246	146.2	36.0	149.8	39.5	3.79	-0.03	91.1	55.1	94.6
114	805.6	0.733	47.0	-3.8	6.77	8.773	121.718	110.255	146.2	36.0	150.0	39.7	3.77	-0.03	91.1	55.1	94.9
115	805.0	0.738	46.8	-4.0	6.77	8.849	121.607	110.061	146.0	36.0	150.0	39.9	3.76	-0.04	91.0	55.0	95.0
116	805.1	0.742	46.6	-4.1	6.78	8.925	121.625	109.986	145.9	36.0	150.1	40.1	3.74	-0.04	91.0	55.0	95.1
117	804.0	0.747	46.4	-4.3	6.78	9.001	121.458	109.741	145.7	36.0	150.0	40.3	3.72	-0.04	90.8	54.9	95.2
118	802.9	0.751	46.2	-4.5	6.79	9.077	121.272	109.480	145.4	36.0	150.0	40.5	3.70	-0.04	90.7	54.7	95.2
119	803.2	0.756	46.0	-4.8	6.79	9.162	121.328	109.427	145.4	36.0	150.1	40.7	3.69	-0.04	90.7	54.7	95.4
120	801.9	0.761	45.8	-5.0	6.80	9.238	121.105	109.132	145.1	36.0	150.1	40.9	3.67	-0.05	90.5	54.6	95.5
121	800.5	0.766	45.6	-5.2	6.81	9.314	120.882	108.838	144.8	36.0	150.0	41.1	3.65	-0.05	90.4	54.4	95.5
122	798.5	0.770	45.4	-5.3	6.81	9.391	120.567	108.460	144.4	36.0	149.8	41.3	3.63	-0.05	90.2	54.2	95.5
123	796.9	0.775	45.2	-5.5	6.82	9.476	120.307	108.121	144.1	36.0	149.6	41.5	3.60	-0.05	90.0	54.1	95.6
124	794.9	0.780	45.0	-5.7	6.82	9.552	119.972	107.727	143.7	36.0	149.4	41.7	3.59	-0.05	89.8	53.9	95.5
125	794.1	0.784	44.8	-5.9	6.83	9.628	119.842	107.519	143.5	36.0	149.4	41.9	3.57	-0.05	89.7	53.8	95.6
126	791.9	0.789	44.7	-6.1	6.83	9.704	119.489	107.109	143.1	36.0	149.1	42.0	3.55	-0.06	89.5	53.6	95.6
127	789.7	0.794	44.5	-6.2	6.84	9.790	119.136	106.688	142.6	36.0	148.8	42.2	3.53	-0.06	89.3	53.3	95.5
128	786.5	0.798	44.5	-6.3	6.85	9.856	118.616	106.140	142.1	36.0	148.4	42.2	3.51	-0.06	89.0	53.1	95.3
129	784.1	0.803	44.4	-6.4	6.85	9.932	118.226	105.699	141.7	36.0	148.0	42.3	3.50	-0.06	88.8	52.8	95.2
130	780.4	0.808	44.3	-6.5	6.86	10.018	117.632	105.063	141.0	36.0	147.5	42.4	3.48	-0.06	88.5	52.5	94.9
131	776.6	0.812	44.2	-6.5	6.86	10.094	117.019	104.422	140.4	36.0	146.9	42.5	3.46	-0.06	88.2	52.2	94.7
132	773.0	0.817	44.1	-6.6	6.87	10.170	116.424	103.799	139.8	36.0	146.4	42.6	3.44	-0.06	87.9	51.9	94.5
133	770.0	0.822	44.0	-6.7	6.88	10.246	115.942	103.277	139.2	36.0	146.0	42.7	3.42	-0.07	87.6	51.6	94.3
134	766.3	0.826	44.0	-6.7	6.88	10.322	115.347	102.656	138.6	36.0	145.4	42.7	3.40	-0.07	87.3	51.3	94.0
135	762.5	0.831	43.9	-6.8	6.89	10.398	114.734	102.019	138.0	36.0	144.8	42.8	3.39	-0.07	87.0	51.0	93.8
136	760.6	0.835	43.9	-6.9	6.89	10.474	114.418	101.649	137.6	36.0	144.5	42.8	3.37	-0.07	86.8	50.8	93.7
137	757.3	0.840	43.8	-6.9	6.90	10.550	113.880	101.081	137.0	36.0	144.0	42.9	3.36	-0.07	86.5	50.5	93.4
138	753.3	0.845	43.8	-7.0	6.91	10.636	113.230	100.402	136.4	36.0	143.3	42.9	3.34	-0.07	86.2	50.2	93.1
139	750.4	0.850	43.8	-7.0	6.91	10.712	112.765	99.901	135.9	36.0	142.8	42.9	3.33	-0.07	85.9	50.0	92.9
140	747.9	0.854	43.8	-7.0	6.92	10.788	112.357	99.451	135.4	36.0	142.4	42.9	3.32	-0.07	85.7	49.7	92.6
141	745.6	0.859	43.8	-7.0	6.92	10.864	111.985	99.035	135.0	36.0	141.9	42.9	3.31	-0.07	85.5	49.5	92.4

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	742.2	0.863	43.8	-7.0	6.93	10.940	111.447	98.470	134.4	36.0	141.4	42.9	3.29	-0.07	85.2	49.2	92.2
143	737.5	0.868	43.8	-7.0	6.94	11.025	110.685	97.697	133.7	36.0	140.6	42.9	3.28	-0.07	84.8	48.8	91.8
144	735.4	0.873	43.8	-7.0	6.94	11.101	110.332	97.299	133.3	36.0	140.2	42.9	3.27	-0.07	84.6	48.6	91.6
145	731.9	0.878	43.8	-6.9	6.95	11.177	109.775	96.720	132.7	36.0	139.6	42.9	3.26	-0.07	84.3	48.4	91.2
146	729.5	0.882	43.8	-6.9	6.95	11.253	109.385	96.290	132.2	36.0	139.1	42.9	3.25	-0.07	84.1	48.1	91.0
147	726.4	0.887	43.8	-6.9	6.96	11.329	108.883	95.763	131.7	36.0	138.6	42.9	3.23	-0.07	83.8	47.9	90.7
148	723.2	0.891	43.9	-6.8	6.97	11.405	108.363	95.219	131.2	36.0	138.0	42.8	3.22	-0.07	83.6	47.6	90.4
149	720.5	0.896	43.9	-6.8	6.97	11.491	107.917	94.732	130.7	36.0	137.5	42.8	3.22	-0.07	83.3	47.4	90.1
150	716.8	0.900	44.0	-6.7	6.98	11.558	107.323	94.134	130.1	36.0	136.8	42.7	3.20	-0.07	83.0	47.1	89.8
151	712.9	0.906	44.0	-6.7	6.98	11.643	106.691	93.484	129.4	36.0	136.1	42.7	3.19	-0.07	82.7	46.7	89.4
152	711.5	0.910	44.1	-6.6	6.99	11.719	106.469	93.207	129.2	36.0	135.8	42.6	3.19	-0.07	82.6	46.6	89.2
153	708.8	0.915	44.2	-6.6	7.00	11.795	106.023	92.732	128.7	36.0	135.3	42.5	3.18	-0.07	82.3	46.4	88.9
154	706.3	0.919	44.2	-6.5	7.00	11.871	105.614	92.292	128.3	36.0	134.8	42.5	3.17	-0.07	82.1	46.1	88.6
155	704.0	0.924	44.3	-6.5	7.01	11.947	105.243	91.884	127.8	36.0	134.3	42.4	3.17	-0.07	81.9	45.9	88.4
156	701.0	0.928	44.3	-6.4	7.01	12.023	104.760	91.379	127.3	36.0	133.8	42.4	3.16	-0.07	81.6	45.7	88.1
157	697.4	0.933	44.4	-6.4	7.02	12.099	104.184	90.794	126.8	36.0	133.1	42.3	3.15	-0.07	81.4	45.4	87.7
158	691.8	0.937	44.4	-6.3	7.03	12.175	103.274	89.915	125.9	36.0	132.2	42.3	3.13	-0.07	80.9	45.0	87.2
159	690.8	0.942	44.5	-6.2	7.03	12.251	103.107	89.690	125.6	36.0	131.9	42.2	3.13	-0.07	80.8	44.8	87.0
160	687.9	0.947	44.6	-6.1	7.04	12.327	102.642	89.204	125.2	36.0	131.3	42.1	3.12	-0.07	80.6	44.6	86.7
161	684.9	0.951	44.7	-6.0	7.05	12.403	102.159	88.703	124.7	36.0	130.7	42.0	3.11	-0.07	80.3	44.4	86.4
162	682.0	0.956	44.8	-6.0	7.05	12.479	101.676	88.203	124.2	36.0	130.1	41.9	3.10	-0.07	80.1	44.1	86.0
163	679.0	0.960	44.8	-5.9	7.06	12.556	101.193	87.703	123.7	36.0	129.6	41.9	3.10	-0.07	79.8	43.9	85.7
164	676.8	0.965	45.0	-5.8	7.06	12.641	100.841	87.308	123.3	36.0	129.0	41.7	3.09	-0.07	79.6	43.7	85.4
165	673.5	0.970	45.0	-5.7	7.07	12.717	100.302	86.762	122.7	36.0	128.4	41.7	3.08	-0.07	79.3	43.4	85.0
166	671.1	0.975	45.1	-5.6	7.08	12.793	99.912	86.345	122.3	36.0	127.9	41.6	3.08	-0.06	79.1	43.2	84.7
167	669.3	0.979	45.2	-5.5	7.08	12.869	99.633	86.026	122.0	36.0	127.5	41.5	3.07	-0.06	79.0	43.0	84.5
168	666.8	0.984	45.3	-5.4	7.09	12.945	99.225	85.595	121.6	36.0	127.0	41.4	3.07	-0.06	78.8	42.8	84.2
169	665.0	0.988	45.4	-5.3	7.10	13.021	98.927	85.261	121.2	36.0	126.6	41.3	3.06	-0.06	78.6	42.6	83.9
170	662.7	0.993	45.5	-5.3	7.10	13.097	98.556	84.863	120.8	36.0	126.1	41.2	3.06	-0.06	78.4	42.4	83.6
171	660.5	0.998	45.5	-5.2	7.11	13.183	98.203	84.472	120.4	36.0	125.6	41.2	3.05	-0.06	78.2	42.2	83.4
172	658.1	1.003	45.6	-5.1	7.11	13.259	97.813	84.059	120.0	36.0	125.2	41.1	3.05	-0.06	78.0	42.0	83.1
173	656.5	1.007	45.7	-5.1	7.12	13.335	97.553	83.759	119.7	36.0	124.8	41.0	3.04	-0.06	77.8	41.9	82.9
174	653.3	1.012	45.8	-5.0	7.13	13.411	97.033	83.235	119.2	36.0	124.2	40.9	3.03	-0.06	77.6	41.6	82.6
175	650.7	1.017	45.8	-4.9	7.13	13.496	96.606	82.782	118.7	36.0	123.6	40.9	3.03	-0.06	77.4	41.4	82.3
176	648.1	1.021	45.9	-4.8	7.14	13.573	96.197	82.356	118.3	36.0	123.1	40.8	3.02	-0.06	77.1	41.2	81.9
177	646.6	1.026	46.0	-4.7	7.15	13.649	95.955	82.074	118.0	36.0	122.8	40.7	3.02	-0.06	77.0	41.0	81.7
178	644.8	1.031	46.1	-4.7	7.15	13.734	95.658	81.736	117.7	36.0	122.4	40.6	3.01	-0.06	76.8	40.9	81.5
179	643.1	1.036	46.2	-4.6	7.16	13.810	95.380	81.423	117.4	36.0	122.0	40.5	3.01	-0.06	76.7	40.7	81.2
180	641.7	1.040	46.3	-4.5	7.17	13.886	95.157	81.158	117.1	36.0	121.6	40.4	3.01	-0.06	76.5	40.6	81.0
181	640.6	1.045	46.3	-4.4	7.17	13.962	94.971	80.926	116.9	36.0	121.3	40.4	3.00	-0.05	76.4	40.5	80.9
182	638.8	1.049	46.4	-4.4	7.18	14.038	94.692	80.614	116.6	36.0	120.9	40.3	3.00	-0.05	76.3	40.3	80.6

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	637.4	1.055	46.5	-4.3	7.19	14.124	94.451	80.326	116.3	36.0	120.6	40.2	3.00	-0.05	76.1	40.2	80.4
184	635.5	1.059	46.5	-4.2	7.19	14.190	94.154	80.008	116.0	36.0	120.2	40.2	2.99	-0.05	76.0	40.0	80.2
185	633.2	1.063	46.6	-4.2	7.20	14.266	93.782	79.618	115.6	36.0	119.7	40.1	2.98	-0.05	75.8	39.8	79.9
186	631.9	1.068	46.6	-4.1	7.20	14.342	93.559	79.356	115.3	36.0	119.4	40.1	2.98	-0.05	75.6	39.7	79.7
187	630.0	1.073	46.7	-4.0	7.21	14.428	93.262	79.022	115.0	36.0	119.0	40.0	2.98	-0.05	75.5	39.5	79.5
188	628.1	1.077	46.7	-4.0	7.22	14.504	92.946	78.681	114.6	36.0	118.6	40.0	2.97	-0.05	75.3	39.3	79.3
189	626.1	1.082	46.8	-3.9	7.22	14.580	92.631	78.340	114.3	36.0	118.2	39.9	2.96	-0.05	75.1	39.2	79.1
190	624.7	1.086	46.9	-3.9	7.23	14.656	92.408	78.080	114.0	36.0	117.9	39.8	2.96	-0.05	75.0	39.0	78.9
191	622.8	1.091	46.9	-3.8	7.24	14.732	92.092	77.740	113.7	36.0	117.5	39.8	2.95	-0.05	74.8	38.9	78.6
192	621.5	1.096	47.0	-3.8	7.25	14.818	91.888	77.487	113.4	36.0	117.2	39.7	2.95	-0.05	74.7	38.7	78.5
193	620.0	1.101	47.0	-3.7	7.25	14.894	91.646	77.212	113.2	36.0	116.9	39.7	2.95	-0.05	74.6	38.6	78.3
194	618.3	1.105	47.1	-3.6	7.26	14.970	91.368	76.905	112.9	36.0	116.5	39.6	2.94	-0.05	74.4	38.5	78.0
195	617.1	1.110	47.2	-3.6	7.26	15.046	91.163	76.662	112.6	36.0	116.2	39.5	2.94	-0.05	74.3	38.3	77.8
196	615.9	1.114	47.2	-3.5	7.27	15.122	90.978	76.435	112.4	36.0	115.9	39.5	2.94	-0.05	74.2	38.2	77.7
197	614.3	1.119	47.3	-3.4	7.28	15.198	90.717	76.146	112.1	36.0	115.5	39.4	2.93	-0.05	74.0	38.1	77.5
198	611.9	1.124	47.4	-3.3	7.28	15.274	90.327	75.746	111.7	36.0	115.1	39.3	2.93	-0.04	73.8	37.9	77.2
199	611.5	1.128	47.5	-3.3	7.29	15.350	90.253	75.615	111.6	36.0	114.9	39.2	2.93	-0.04	73.8	37.8	77.1
200	609.8	1.133	47.5	-3.2	7.30	15.426	89.993	75.326	111.3	36.0	114.5	39.2	2.92	-0.04	73.6	37.7	76.9
201	607.9	1.137	47.6	-3.2	7.30	15.502	89.677	74.991	110.9	36.0	114.1	39.1	2.92	-0.04	73.5	37.5	76.6
202	607.9	1.142	47.6	-3.1	7.31	15.578	89.677	74.923	110.9	36.0	114.0	39.1	2.92	-0.04	73.4	37.5	76.6
203	606.5	1.147	47.6	-3.1	7.32	15.664	89.454	74.658	110.6	36.0	113.7	39.1	2.91	-0.04	73.3	37.3	76.4
204	605.3	1.151	47.7	-3.1	7.32	15.730	89.250	74.426	110.4	36.0	113.4	39.0	2.91	-0.04	73.2	37.2	76.2
205	603.7	1.156	47.7	-3.0	7.33	15.806	88.990	74.139	110.1	36.0	113.1	39.0	2.90	-0.04	73.0	37.1	76.1
206	601.9	1.160	47.8	-3.0	7.34	15.882	88.711	73.837	109.8	36.0	112.8	38.9	2.90	-0.04	72.9	36.9	75.8
207	600.8	1.165	47.8	-2.9	7.34	15.958	88.526	73.614	109.6	36.0	112.5	38.9	2.89	-0.04	72.8	36.8	75.7
208	598.6	1.170	47.9	-2.9	7.35	16.044	88.173	73.242	109.2	36.0	112.1	38.8	2.89	-0.04	72.6	36.6	75.5
209	597.0	1.174	47.9	-2.8	7.36	16.110	87.913	72.965	108.9	36.0	111.8	38.8	2.88	-0.04	72.4	36.5	75.3
210	595.6	1.178	47.9	-2.8	7.36	16.186	87.690	72.711	108.7	36.0	111.5	38.8	2.88	-0.04	72.3	36.4	75.1
211	593.9	1.183	48.0	-2.8	7.37	16.262	87.411	72.411	108.4	36.0	111.2	38.7	2.87	-0.04	72.2	36.2	75.0
212	592.5	1.188	48.0	-2.8	7.38	16.338	87.188	72.158	108.1	36.0	110.9	38.7	2.86	-0.04	72.0	36.1	74.8
213	589.4	1.192	48.0	-2.7	7.38	16.414	86.687	71.673	107.6	36.0	110.4	38.7	2.85	-0.04	71.8	35.8	74.5
214	586.5	1.197	48.1	-2.6	7.39	16.490	86.204	71.204	107.2	36.0	109.8	38.6	2.84	-0.04	71.6	35.6	74.2
215	584.2	1.201	48.1	-2.6	7.40	16.566	85.832	70.828	106.8	36.0	109.4	38.6	2.84	-0.04	71.4	35.4	74.0
216	581.5	1.206	48.2	-2.6	7.40	16.652	85.405	70.399	106.4	36.0	108.9	38.5	2.83	-0.04	71.2	35.2	73.7
217	579.0	1.211	48.2	-2.5	7.41	16.728	84.997	69.993	106.0	36.0	108.5	38.5	2.82	-0.04	71.0	35.0	73.5
218	576.9	1.216	48.3	-2.5	7.42	16.804	84.662	69.651	105.6	36.0	108.1	38.4	2.81	-0.04	70.8	34.8	73.2
219	574.7	1.220	48.3	-2.4	7.42	16.880	84.291	69.278	105.2	36.0	107.6	38.4	2.81	-0.03	70.6	34.6	73.0
220	572.6	1.225	48.4	-2.3	7.43	16.956	83.956	68.936	104.9	36.0	107.2	38.3	2.80	-0.03	70.4	34.5	72.8
221	570.9	1.229	48.4	-2.3	7.44	17.032	83.678	68.641	104.6	36.0	106.9	38.3	2.79	-0.03	70.3	34.3	72.6
222	569.8	1.234	48.5	-2.3	7.45	17.108	83.511	68.439	104.4	36.0	106.7	38.2	2.79	-0.03	70.2	34.2	72.4
223	569.0	1.239	48.5	-2.2	7.45	17.194	83.381	68.259	104.2	36.0	106.4	38.2	2.79	-0.03	70.1	34.1	72.3

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	566.7	1.244	48.6	-2.2	7.46	17.270	83.009	67.889	103.8	36.0	106.0	38.1	2.78	-0.03	69.9	33.9	72.1
225	564.7	1.248	48.6	-2.1	7.47	17.346	82.675	67.549	103.5	36.0	105.6	38.1	2.77	-0.03	69.7	33.8	71.8
226	562.3	1.253	48.7	-2.1	7.47	17.422	82.285	67.164	103.1	36.0	105.2	38.0	2.77	-0.03	69.5	33.6	71.6
227	559.9	1.257	48.7	-2.0	7.48	17.498	81.895	66.780	102.7	36.0	104.7	38.0	2.76	-0.03	69.3	33.4	71.3
228	559.6	1.262	48.8	-1.9	7.49	17.583	81.857	66.679	102.6	36.0	104.6	37.9	2.76	-0.03	69.3	33.3	71.2
229	557.5	1.267	48.8	-1.9	7.50	17.659	81.505	66.326	102.3	36.0	104.2	37.9	2.75	-0.03	69.1	33.2	71.0
230	556.3	1.271	48.9	-1.8	7.50	17.736	81.319	66.112	102.1	36.0	103.9	37.8	2.75	-0.03	69.0	33.1	70.9
231	555.2	1.276	48.9	-1.8	7.51	17.812	81.133	65.897	101.9	36.0	103.7	37.8	2.74	-0.03	68.9	32.9	70.7
232	553.2	1.281	49.0	-1.8	7.52	17.888	80.817	65.576	101.5	36.0	103.3	37.7	2.74	-0.03	68.7	32.8	70.5
233	552.8	1.286	49.0	-1.8	7.52	17.973	80.743	65.446	101.4	36.0	103.2	37.7	2.74	-0.03	68.7	32.7	70.4
234	550.8	1.290	49.0	-1.7	7.53	18.049	80.427	65.126	101.1	36.0	102.8	37.7	2.73	-0.03	68.5	32.6	70.2
235	549.9	1.295	49.1	-1.7	7.54	18.125	80.279	64.943	100.9	36.0	102.6	37.6	2.73	-0.03	68.4	32.5	70.1
236	548.9	1.299	49.1	-1.6	7.54	18.201	80.111	64.745	100.7	36.0	102.3	37.6	2.72	-0.03	68.3	32.4	70.0
237	547.5	1.304	49.1	-1.6	7.55	18.277	79.889	64.502	100.5	36.0	102.1	37.6	2.72	-0.03	68.2	32.3	69.8
238	545.7	1.309	49.2	-1.6	7.56	18.353	79.591	64.199	100.2	36.0	101.7	37.5	2.71	-0.02	68.1	32.1	69.6
239	541.6	1.313	49.2	-1.5	7.57	18.429	78.941	63.608	99.6	36.0	101.1	37.5	2.70	-0.02	67.8	31.8	69.3
240	540.8	1.318	49.2	-1.5	7.57	18.505	78.811	63.442	99.4	36.0	100.9	37.5	2.69	-0.02	67.7	31.7	69.2
241	538.3	1.322	49.3	-1.4	7.58	18.581	78.403	63.049	99.0	36.0	100.4	37.4	2.69	-0.02	67.5	31.5	68.9
242	536.1	1.327	49.3	-1.4	7.59	18.657	78.050	62.703	98.7	36.0	100.1	37.4	2.68	-0.02	67.3	31.4	68.7
243	535.1	1.331	49.4	-1.3	7.59	18.733	77.883	62.508	98.5	36.0	99.8	37.3	2.68	-0.02	67.2	31.3	68.6
244	534.1	1.336	49.4	-1.3	7.60	18.810	77.715	62.313	98.3	36.0	99.6	37.3	2.67	-0.02	67.1	31.2	68.4
245	533.4	1.341	49.4	-1.3	7.61	18.895	77.604	62.156	98.1	36.0	99.4	37.3	2.67	-0.02	67.0	31.1	68.3
246	531.4	1.346	49.5	-1.3	7.62	18.971	77.288	61.841	97.8	36.0	99.1	37.2	2.66	-0.02	66.9	30.9	68.1
247	530.4	1.350	49.5	-1.2	7.62	19.047	77.121	61.647	97.6	36.0	98.8	37.2	2.66	-0.02	66.8	30.8	68.0
248	529.1	1.355	49.5	-1.2	7.63	19.123	76.917	61.423	97.4	36.0	98.6	37.2	2.65	-0.02	66.7	30.7	67.9
249	528.2	1.359	49.6	-1.1	7.64	19.199	76.768	61.244	97.2	36.0	98.3	37.1	2.65	-0.02	66.6	30.6	67.7
250	526.1	1.364	49.6	-1.1	7.65	19.275	76.415	60.901	96.9	36.0	98.0	37.1	2.64	-0.02	66.4	30.5	67.5
251	522.7	1.369	49.6	-1.1	7.65	19.351	75.876	60.409	96.4	36.0	97.5	37.1	2.63	-0.02	66.2	30.2	67.3
252	523.9	1.373	49.7	-1.1	7.66	19.427	76.062	60.501	96.5	36.0	97.5	37.0	2.63	-0.02	66.2	30.3	67.3
253	523.1	1.378	49.7	-1.0	7.67	19.503	75.932	60.338	96.3	36.0	97.3	37.0	2.63	-0.02	66.1	30.2	67.2
254	521.5	1.382	49.8	-1.0	7.67	19.579	75.672	60.071	96.0	36.0	97.0	36.9	2.63	-0.02	66.0	30.0	67.0
255	520.9	1.387	49.8	-1.0	7.68	19.655	75.579	59.939	95.9	36.0	96.9	36.9	2.62	-0.02	65.9	30.0	66.9
256	519.3	1.392	49.8	-1.0	7.69	19.741	75.319	59.666	95.6	36.0	96.6	36.9	2.62	-0.02	65.8	29.8	66.8
257	518.7	1.396	49.8	-0.9	7.70	19.808	75.226	59.541	95.5	36.0	96.4	36.9	2.61	-0.02	65.7	29.8	66.7
258	517.1	1.401	49.8	-0.9	7.70	19.884	74.966	59.276	95.2	36.0	96.1	36.9	2.61	-0.02	65.6	29.6	66.5
259	515.5	1.405	49.9	-0.9	7.71	19.960	74.706	59.010	95.0	36.0	95.8	36.8	2.60	-0.01	65.5	29.5	66.3
260	514.8	1.408	49.9	-0.9	7.72	20.007	74.595	58.886	94.8	36.0	95.7	36.8	2.60	-0.01	65.4	29.4	66.3

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)

Photographs of Sample Failures

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. U-2412B

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project 39406.1.1 **County** GUILFORD **Owner**

Date: Sampled 3/1/13 **Received** 12/16/13 **Reported** 12/20/13

Sampled from RDWY **By** N ROBERSON

Submitted by M HURT- RESEARCH 1995 **Standard Specifications**

788989 TO 788991
1/2/14

TEST RESULTS

Proj. Sample No.		ST-24 #1	ST-24 #2	ST-24 #3			
Lab. Sample No.		788989	788990	788991			
Retained #4 Sieve	%	-	-	-			
Passing #10 Sieve	%	100	100	100			
Passing #40 Sieve	%	84	95	95			
Passing #200 Sieve	%	71	68	74			

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	10.7	13.5	12.3			
Fine Sand Ret - #270	%	28.2	24.4	19.1			
Silt 0.05 - 0.005 mm	%	49.0	46.0	46.4			
Clay < 0.005 mm	%	12.1	16.1	22.2			
T-#		T-5789	T-5789	T-5789			
Specific Gravity		2.859	2.875	2.881			

L. L.		41	43	48			
P. I.		8	12	10			
AASHTO Classification		A-5(6)	A-7-5(8)	A-5(9)			
Station		403+45	403+45	403+45			
Offset		3 FT RT	3 FT RT	3 FT RT			
Alignment		L	L	L			
Location							
Depth (Ft)		39.6 FT	39.6 FT	39.6 FT			
	to	41.6 FT	41.6 FT	41.6 FT			
Final Moisture Content	%	25.09	29.64	29.99			

cc: N ROBERSON
SURIYATI BS
GREG BODENHEIMER

Soils Engineer

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	40.64	38.56	**Plastic Limits:**	0	
Dry Density (pcf):	78.18	86.12	**Plasticity Index (%):**	0	
Saturation (%):	90.33	102.50			
Void Ratio:	1.2895	1.0782	**Specific Gravity:**	2.868	Measured

Soil Description: Tannish colored clayey silt

Project Number: 39406.1.1 **Depth:** 39.6 - 41.6 ft

Sample Number: ST-24 **Boring Number:**

Project: U-2412B

Client: T-5789

Location: Guilford County (Sta. 403+45)

Remarks:
Solid Height is 0.43783 inches; Blows/ft = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	40.64	38.56	**Plastic Limits:**	0	
Dry Density (pcf):	78.18	86.12	**Plasticity Index (%):**	0	
Saturation (%):	90.33	102.50			
Void Ratio:	1.2895	1.0782	**Specific Gravity:**	2.868	Measured

Soil Description: Tannish colored clayey silt

Project Number: 39406.1.1 **Depth:** 39.6 - 41.6 ft

Sample Number: ST-24 **Boring Number:**

Project: U-2412B

Client: T-5789

Location: Guilford County (Sta. 403+45)

Remarks:
Solid Height is 0.43783 inches; Blows/ft = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	40.64	38.56	**Plastic Limits:**	0	
Dry Density (pcf):	78.18	86.12	**Plasticity Index (%):**	0	
Saturation (%):	90.33	102.50			
Void Ratio:	1.2895	1.0782	**Specific Gravity:**	2.868	Measured

Soil Description: Tannish colored clayey silt

Project Number: 39406.1.1 **Depth:** 39.6 - 41.6 ft

Sample Number: ST-24 **Boring Number:**

Project: U-2412B

Client: T-5789

Location: Guilford County (Sta. 403+45)

Remarks:
Solid Height is 0.43783 inches; Blows/ft = NA

Consolidation Test Results
Summary

Project: U-2412B
Location: Guilford County (Sta. 403+45)
Job Number: T-5789

Project Number: 39406.1.1

Sample Number: ST-24
Boring Number:
Depth: 39.6 - 41.6 ft
Sample Type: Undisturbed

Soil Description:
Tannish colored clayey silt
Remarks:
Solid Height is 0.43783 inches; Blows/ft = NA

Test Number:
Test Date:

Index	Load Sequence (tsf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	1.0001	0.5633	0.00	1.2895	0.000		0.000	
1	0.031	0.0002	0.9999	0.5631	0.02	1.2890	0.113		6822.270	
2	0.063	0.0010	0.9991	0.5623	0.10	1.2872	1.475		523.666	
3	0.125	0.0021	0.9980	0.5612	0.21	1.2847	1.904		404.784	
4	0.250	0.0042	0.9959	0.5591	0.42	1.2799	0.250		3069.872	
5	0.500	0.0076	0.9925	0.5557	0.76	1.2721	0.225		3387.718	
6	1.000	0.0141	0.9860	0.5492	1.41	1.2572	0.160		4701.783	
7	2.000	0.0223	0.9778	0.5410	2.23	1.2384	0.191		3865.333	
8	4.000	0.0339	0.9662	0.5294	3.39	1.2119	0.096		7564.138	
9	2.000	0.0308	0.9693	0.5325	3.08	1.2190	0.000		0.000	
10	1.000	0.0271	0.9730	0.5362	2.71	1.2275	0.000		0.000	
11	0.500	0.0233	0.9768	0.5400	2.33	1.2362	0.000		0.000	
12	1.000	0.0250	0.9751	0.5383	2.50	1.2323	0.000		0.000	
13	2.000	0.0285	0.9716	0.5348	2.85	1.2243	0.000		0.000	
14	4.000	0.0348	0.9653	0.5285	3.48	1.2098	0.000		0.000	
15	8.000	0.0630	0.9371	0.5003	6.30	1.1453	0.127		5333.732	
16	16.000	0.1444	0.8557	0.4189	14.44	0.9589	0.331		1713.835	
17	4.000	0.1343	0.8658	0.4290	13.43	0.9820	0.000		0.000	
18	0.016	0.0923	0.9078	0.4710	9.23	1.0782	0.000		0.000	

Tested By:

Checked By:

Consolidation Test
Consolidation Specimen Information

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County (Sta. 403+45)
Job Number: T-5789 **Test Date:**

Sample Number: ST-24 **Soil Description:**
Boring Number: Tannish colored clayey silt
Depth: 39.6 - 41.6 ft **Remarks:**
Sample Type: Undisturbed Solid Height is 0.43783 inches; Blows/ft = NA

Test Number:
Liquid Limit: 0.0000 **Initial Void Ratio:** 1.2895 **Initial Height (in):** 1.0001
Plastic Limit: 0.0000 **Plasticity Index (%):** 0.0000 **Initial Diameter (in):** 2.4999
Specific Gravity: 2.8680 Measured **Weight of Ring (g):** 109.4000

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	141.67	139.57
Dry Soil + Container (g)	100.73	100.73
Weight of Container (g)	0.00	0.00
Moisture Content (%)	40.64	38.56
Void Ratio	1.2895	1.0782
Saturation (%)	90.33	102.50
Dry Density (pcf)	78.18	86.12

Tested By: **Checked By:**

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Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date

Tested By:

Effective Stress at Maximum Deviator Stress Criterion

Deviator Stress Vs. Axial Strain

Initial	Specimen A	B	C	D
Water Content (%)	23.8	28.7	28.7	
Dry Density (pcf)	105.7	97.1	93.5	
Saturation (%)	98.65	97.39	89.58	
Void Ratio	0.685	0.843	0.918	
Diameter (in)	2.863	2.850	2.840	
Height (in)	5.981	5.997	6.028	
Specific Gravity	2.86	2.88	2.88	
Liquid Limit	0	0	0	
Plastic Limit	0	0	0	
After Consolidation	**A**	**B**	**C**	**D**
B-Value	0.00	0.00	0.00	
Water Content (%)	24.5	30.2	31.3	
Dry Density (pcf)	107.69	100.69	99.90	
Saturation (%)	100.00	100.00	100.00	
Void Ratio	0.657	0.783	0.800	
Effective Stress (psi)	9.0	18.0	36.0	
Back Press. (psi)	50.3	50.0	50.6	
Rate of Strain	0.009	0.009	0.009	

Maximium Deviator Stress Criterion		After Shear	A	B	C	D
C (psi)	0.0	σ'1 at Failure (psi)	35.98	40.72	47.89	
C' (psi)	0.0	σ'3 at Failure (psi)	12.01	14.76	24.40	
Ø (deg)	0.0					
Ø' (deg)	0.0					

		A	B	C	D
Project:	U-2412B (T-5789)	N/A	N/A	N/A	N/A
Location:	Guilford County (Sta. 403+45)				
Project Number:	39406.1.1				
Boring Number:					
Sample Number:	ST-24				
Depth:	39.6 - 41.6 ft				
Sample Type:	Undisturbed	Failure Photographs			
Description:					
Test Type	Consolidated Undrained				
Remarks					

ncdot

Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date:

Tested By:

Deviator Stress vs. Axial Strain

Principal Stress Ratio vs. Axial Strain

Change in Pore Pressure vs. Axial Strain

Mohr Stress Circles at Maximum Deviator Stress Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at Maximum Principal Stress Ratio Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at 15% Axial Strain Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)
Q (psi)
P' (psi)
0.0
10.0
20.0
30.0
40.0
50.0
Specimen A
Specimen B
Specimen C
Specimen D
Tangent Line

Stress Paths (Total)
(C' = 0.0 Ø' = 0.0)
Q (psi)
P (psi)
0.0
15.0
30.0
45.0
60.0

Specimen A Shear Data

CU Triaxial Test

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File Location
T-5789.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B (T-5789)
Client: T-5789
Sample Location: Guilford County (Sta. 403+45)
Sample Description: Tannish colored clayey silt
Remarks: 20° shear plane

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.859
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.863	2.845	
Height (in)	5.981	5.944	
Weight (grams)	1322.00		1336.00
Moisture (%)	23.78		25.09
Dry Density (pcf)	105.66	107.69	
Saturation (%)	98.65	100.00	
Void Ratio	0.685	0.657	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 59.300
Effective Confining Stress (psi): 9.0
Corrected Peak Deviator Stress (psi): 23.976 at reading number: 233

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	48.6	0.086	50.3	0.0	6.36	0.000	0.000	0.000	9.0	9.0	9.0	9.0	1.00	0.00	9.0	0.0	9.0
1	73.3	0.088	51.1	0.7	6.36	0.031	3.880	3.867	12.8	9.0	12.1	8.2	1.47	0.19	10.9	1.9	10.2
2	83.5	0.092	51.6	1.3	6.36	0.101	5.483	5.439	14.4	9.0	13.1	7.7	1.71	0.23	11.7	2.7	10.4
3	92.2	0.097	52.0	1.6	6.37	0.178	6.850	6.769	15.7	9.0	14.1	7.3	1.92	0.24	12.3	3.4	10.7
4	99.7	0.101	52.3	1.9	6.37	0.248	8.034	7.918	16.9	9.0	14.9	7.0	2.13	0.24	12.9	4.0	11.0
5	107.5	0.105	52.5	2.2	6.38	0.317	9.254	9.102	18.1	9.0	15.9	6.8	2.34	0.24	13.5	4.6	11.3
6	112.9	0.109	52.7	2.4	6.38	0.387	10.110	9.922	18.9	9.0	16.5	6.6	2.51	0.24	13.9	5.0	11.6
7	118.9	0.113	52.8	2.5	6.39	0.457	11.058	10.831	19.8	9.0	17.3	6.5	2.67	0.23	14.4	5.4	11.9
8	123.0	0.117	52.9	2.6	6.39	0.526	11.695	11.430	20.4	9.0	17.8	6.4	2.79	0.23	14.7	5.7	12.1
9	127.0	0.122	53.0	2.7	6.40	0.604	12.333	12.025	21.0	9.0	18.3	6.3	2.91	0.22	15.0	6.0	12.3
10	130.2	0.126	53.1	2.7	6.40	0.674	12.825	12.478	21.4	9.0	18.7	6.2	3.00	0.22	15.2	6.2	12.5
11	133.1	0.130	53.1	2.7	6.40	0.743	13.280	12.894	21.9	9.0	19.1	6.2	3.07	0.21	15.4	6.4	12.7
12	135.8	0.134	53.1	2.7	6.41	0.813	13.717	13.292	22.3	9.0	19.5	6.2	3.13	0.20	15.6	6.6	12.9
13	138.3	0.139	53.1	2.8	6.41	0.890	14.100	13.630	22.6	9.0	19.8	6.2	3.19	0.20	15.8	6.8	13.0
14	139.9	0.143	53.1	2.8	6.42	0.960	14.355	13.846	22.8	9.0	20.1	6.2	3.23	0.20	15.9	6.9	13.1
15	141.7	0.148	53.1	2.8	6.42	1.038	14.647	14.093	23.1	9.0	20.3	6.2	3.27	0.20	16.0	7.0	13.3
16	142.8	0.152	53.1	2.7	6.43	1.107	14.811	14.218	23.2	9.0	20.5	6.2	3.28	0.19	16.1	7.1	13.3
17	144.2	0.156	53.0	2.6	6.43	1.177	15.029	14.397	23.4	9.0	20.7	6.3	3.28	0.18	16.2	7.2	13.5
18	145.1	0.161	53.0	2.6	6.44	1.254	15.175	14.500	23.5	9.0	20.8	6.3	3.29	0.18	16.2	7.2	13.6

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	146.4	0.165	52.9	2.6	6.44	1.332	15.375	14.656	23.6	9.0	21.0	6.4	3.31	0.18	16.3	7.3	13.7
20	146.7	0.170	52.9	2.6	6.45	1.409	15.430	14.668	23.6	9.0	21.1	6.4	3.30	0.18	16.3	7.3	13.7
21	148.8	0.174	52.9	2.5	6.45	1.487	15.758	14.949	23.9	9.0	21.4	6.4	3.33	0.17	16.4	7.5	13.9
22	149.5	0.179	52.8	2.5	6.46	1.564	15.867	15.014	24.0	9.0	21.5	6.5	3.32	0.17	16.5	7.5	14.0
23	150.0	0.183	52.8	2.5	6.46	1.634	15.940	15.048	24.0	9.0	21.5	6.5	3.32	0.17	16.5	7.5	14.0
24	150.5	0.188	52.8	2.5	6.47	1.711	16.031	15.095	24.1	9.0	21.6	6.5	3.32	0.16	16.5	7.5	14.1
25	151.6	0.192	52.7	2.4	6.47	1.789	16.195	15.214	24.2	9.0	21.8	6.6	3.32	0.16	16.6	7.6	14.2
26	151.0	0.197	52.7	2.3	6.48	1.866	16.104	15.082	24.0	9.0	21.7	6.6	3.28	0.16	16.5	7.5	14.2
27	151.8	0.202	52.7	2.3	6.48	1.943	16.231	15.165	24.1	9.0	21.8	6.6	3.28	0.15	16.5	7.6	14.2
28	152.6	0.206	52.7	2.3	6.49	2.013	16.359	15.256	24.2	9.0	21.9	6.6	3.29	0.15	16.6	7.6	14.3
29	153.7	0.210	52.6	2.3	6.49	2.090	16.523	15.404	24.4	9.0	22.1	6.7	3.31	0.15	16.7	7.7	14.4
30	154.6	0.215	52.6	2.2	6.50	2.168	16.669	15.534	24.5	9.0	22.3	6.7	3.31	0.14	16.7	7.8	14.5
31	154.5	0.220	52.5	2.2	6.50	2.245	16.650	15.503	24.5	9.0	22.3	6.8	3.29	0.14	16.7	7.8	14.5
32	155.1	0.224	52.5	2.2	6.51	2.323	16.742	15.579	24.5	9.0	22.4	6.8	3.29	0.14	16.8	7.8	14.6
33	156.3	0.228	52.5	2.1	6.51	2.392	16.942	15.763	24.7	9.0	22.6	6.8	3.31	0.14	16.8	7.9	14.7
34	157.4	0.233	52.4	2.1	6.52	2.470	17.106	15.910	24.9	9.0	22.8	6.9	3.32	0.13	16.9	8.0	14.8
35	158.1	0.237	52.4	2.1	6.52	2.540	17.215	16.005	25.0	9.0	22.9	6.9	3.32	0.13	17.0	8.0	14.9
36	158.3	0.241	52.4	2.0	6.53	2.609	17.252	16.028	25.0	9.0	23.0	6.9	3.31	0.13	17.0	8.0	15.0
37	159.1	0.246	52.3	2.0	6.53	2.687	17.379	16.139	25.1	9.0	23.1	7.0	3.31	0.12	17.0	8.1	15.0
38	159.9	0.250	52.3	2.0	6.54	2.764	17.507	16.249	25.2	9.0	23.2	7.0	3.33	0.12	17.1	8.1	15.1
39	160.5	0.255	52.3	2.0	6.54	2.842	17.598	16.324	25.3	9.0	23.3	7.0	3.33	0.12	17.1	8.2	15.2
40	161.0	0.259	52.3	1.9	6.55	2.911	17.671	16.383	25.3	9.0	23.4	7.0	3.33	0.12	17.2	8.2	15.2
41	162.1	0.263	52.2	1.9	6.55	2.981	17.853	16.547	25.5	9.0	23.6	7.1	3.33	0.11	17.2	8.3	15.4
42	163.2	0.268	52.2	1.8	6.56	3.058	18.017	16.692	25.7	9.0	23.8	7.1	3.34	0.11	17.3	8.3	15.5
43	163.3	0.272	52.2	1.8	6.56	3.128	18.035	16.697	25.7	9.0	23.8	7.1	3.35	0.11	17.3	8.3	15.5
44	164.3	0.277	52.2	1.8	6.57	3.205	18.199	16.842	25.8	9.0	24.0	7.1	3.36	0.11	17.4	8.4	15.6
45	165.6	0.281	52.1	1.8	6.57	3.275	18.399	17.023	26.0	9.0	24.2	7.2	3.36	0.10	17.5	8.5	15.7
46	166.1	0.285	52.1	1.7	6.58	3.353	18.472	17.080	26.0	9.0	24.3	7.2	3.36	0.10	17.5	8.5	15.8
47	167.1	0.289	52.0	1.7	6.58	3.422	18.636	17.225	26.2	9.0	24.5	7.3	3.37	0.10	17.6	8.6	15.9
48	167.7	0.294	52.0	1.7	6.59	3.500	18.727	17.298	26.3	9.0	24.6	7.3	3.37	0.10	17.6	8.6	15.9
49	168.3	0.298	52.0	1.6	6.59	3.569	18.818	17.373	26.3	9.0	24.7	7.3	3.37	0.09	17.6	8.7	16.0
50	169.1	0.302	51.9	1.6	6.60	3.639	18.946	17.483	26.4	9.0	24.9	7.4	3.37	0.09	17.7	8.7	16.1
51	169.8	0.307	51.9	1.5	6.60	3.716	19.055	17.574	26.5	9.0	25.0	7.4	3.36	0.09	17.8	8.8	16.2
52	170.2	0.311	51.9	1.5	6.61	3.786	19.128	17.630	26.6	9.0	25.1	7.4	3.37	0.09	17.8	8.8	16.3
53	171.0	0.316	51.8	1.5	6.61	3.864	19.255	17.738	26.7	9.0	25.2	7.5	3.37	0.08	17.8	8.9	16.4
54	171.4	0.320	51.8	1.4	6.62	3.941	19.310	17.776	26.7	9.0	25.3	7.5	3.36	0.08	17.9	8.9	16.4
55	172.3	0.324	51.7	1.4	6.62	4.011	19.456	17.902	26.9	9.0	25.5	7.6	3.36	0.08	17.9	9.0	16.5
56	172.8	0.329	51.7	1.3	6.63	4.088	19.529	17.957	26.9	9.0	25.6	7.6	3.35	0.07	17.9	9.0	16.6
57	173.6	0.334	51.6	1.3	6.63	4.165	19.656	18.064	27.0	9.0	25.7	7.7	3.35	0.07	18.0	9.0	16.7
58	174.2	0.338	51.6	1.3	6.64	4.235	19.747	18.138	27.1	9.0	25.8	7.7	3.35	0.07	18.0	9.1	16.8
59	175.4	0.342	51.6	1.2	6.64	4.313	19.948	18.314	27.3	9.0	26.0	7.7	3.37	0.07	18.1	9.2	16.9

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	175.2	0.347	51.5	1.1	6.65	4.382	19.911	18.265	27.2	9.0	26.1	7.8	3.34	0.06	18.1	9.1	17.0
61	176.0	0.351	51.4	1.1	6.65	4.460	20.039	18.372	27.3	9.0	26.3	7.9	3.33	0.06	18.1	9.2	17.1
62	176.5	0.356	51.4	1.1	6.66	4.537	20.112	18.426	27.4	9.0	26.3	7.9	3.34	0.06	18.2	9.2	17.1
63	176.0	0.360	51.4	1.0	6.66	4.615	20.039	18.341	27.3	9.0	26.3	7.9	3.31	0.06	18.1	9.2	17.1
64	173.2	0.365	51.4	1.0	6.67	4.692	19.602	17.909	26.9	9.0	25.8	7.9	3.26	0.06	17.9	9.0	16.9
65	174.5	0.369	51.3	0.9	6.67	4.762	19.802	18.086	27.0	9.0	26.1	8.0	3.25	0.05	18.0	9.0	17.1
66	175.6	0.374	51.2	0.9	6.68	4.839	19.966	18.226	27.2	9.0	26.3	8.1	3.25	0.05	18.1	9.1	17.2
67	176.7	0.378	51.2	0.8	6.69	4.917	20.148	18.384	27.3	9.0	26.5	8.1	3.27	0.05	18.2	9.2	17.3
68	178.2	0.382	51.2	0.8	6.69	4.986	20.385	18.595	27.6	9.0	26.7	8.1	3.28	0.04	18.3	9.3	17.4
69	178.4	0.387	51.1	0.8	6.70	5.064	20.421	18.614	27.6	9.0	26.8	8.2	3.28	0.04	18.3	9.3	17.5
70	180.6	0.391	51.1	0.7	6.70	5.133	20.767	18.928	27.9	9.0	27.2	8.2	3.30	0.04	18.4	9.5	17.7
71	181.2	0.396	51.0	0.7	6.71	5.211	20.859	18.998	28.0	9.0	27.3	8.3	3.30	0.04	18.5	9.5	17.8
72	182.4	0.400	51.0	0.7	6.71	5.280	21.041	19.156	28.1	9.0	27.4	8.3	3.31	0.04	18.5	9.6	17.9
73	182.5	0.405	51.0	0.6	6.72	5.358	21.059	19.157	28.1	9.0	27.5	8.3	3.30	0.03	18.5	9.6	17.9
74	183.4	0.409	51.0	0.6	6.72	5.435	21.205	19.279	28.2	9.0	27.6	8.3	3.31	0.03	18.6	9.6	18.0
75	184.1	0.413	50.9	0.6	6.73	5.505	21.314	19.367	28.3	9.0	27.8	8.4	3.30	0.03	18.6	9.7	18.1
76	185.2	0.418	50.9	0.5	6.73	5.582	21.478	19.506	28.5	9.0	27.9	8.4	3.31	0.03	18.7	9.8	18.2
77	185.3	0.422	50.8	0.5	6.74	5.660	21.496	19.506	28.5	9.0	28.0	8.5	3.30	0.03	18.7	9.8	18.2
78	185.3	0.427	50.8	0.5	6.74	5.737	21.496	19.490	28.5	9.0	28.0	8.5	3.29	0.02	18.7	9.7	18.2
79	186.9	0.432	50.8	0.4	6.75	5.815	21.751	19.713	28.7	9.0	28.2	8.5	3.31	0.02	18.8	9.9	18.4
80	185.9	0.436	50.7	0.4	6.75	5.892	21.587	19.542	28.5	9.0	28.1	8.6	3.28	0.02	18.7	9.8	18.4
81	187.3	0.441	50.7	0.4	6.76	5.969	21.806	19.731	28.7	9.0	28.3	8.6	3.29	0.02	18.8	9.9	18.5
82	187.3	0.445	50.7	0.3	6.77	6.047	21.806	19.714	28.7	9.0	28.4	8.6	3.28	0.02	18.8	9.9	18.5
83	188.1	0.450	50.6	0.3	6.77	6.124	21.933	19.817	28.8	9.0	28.5	8.7	3.29	0.01	18.9	9.9	18.6
84	188.3	0.454	50.6	0.3	6.78	6.194	21.970	19.836	28.8	9.0	28.5	8.7	3.28	0.01	18.9	9.9	18.6
85	188.6	0.459	50.5	0.2	6.78	6.279	22.024	19.868	28.8	9.0	28.6	8.8	3.27	0.01	18.9	9.9	18.7
86	186.2	0.463	50.5	0.1	6.79	6.349	21.642	19.495	28.5	9.0	28.3	8.8	3.21	0.01	18.7	9.7	18.6
87	186.9	0.468	50.5	0.1	6.79	6.426	21.751	19.580	28.5	9.0	28.4	8.8	3.21	0.01	18.8	9.8	18.6
88	187.5	0.473	50.5	0.1	6.80	6.504	21.842	19.648	28.6	9.0	28.5	8.8	3.22	0.01	18.8	9.8	18.7
89	188.8	0.477	50.4	0.1	6.80	6.573	22.043	19.820	28.8	9.0	28.7	8.9	3.23	0.00	18.9	9.9	18.8
90	189.5	0.481	50.4	0.0	6.81	6.651	22.152	19.905	28.9	9.0	28.8	8.9	3.23	0.00	18.9	10.0	18.9
91	190.5	0.486	50.3	0.0	6.82	6.728	22.316	20.041	29.0	9.0	29.0	9.0	3.24	0.00	19.0	10.0	19.0
92	190.3	0.490	50.3	0.0	6.82	6.798	22.280	19.992	29.0	9.0	29.0	9.0	3.22	0.00	19.0	10.0	19.0
93	190.6	0.494	50.3	-0.1	6.83	6.868	22.334	20.027	29.0	9.0	29.0	9.0	3.22	0.00	19.0	10.0	19.0
94	191.7	0.499	50.2	-0.1	6.83	6.945	22.498	20.162	29.1	9.0	29.2	9.1	3.23	0.00	19.0	10.1	19.1
95	192.2	0.503	50.2	-0.1	6.84	7.015	22.589	20.231	29.2	9.0	29.3	9.1	3.22	-0.01	19.1	10.1	19.2
97	193.4	0.512	50.2	-0.2	6.85	7.162	22.771	20.367	29.3	9.0	29.5	9.1	3.23	-0.01	19.1	10.2	19.3
98	193.6	0.516	50.1	-0.2	6.85	7.232	22.808	20.385	29.3	9.0	29.6	9.2	3.22	-0.01	19.2	10.2	19.4
99	194.0	0.520	50.1	-0.2	6.86	7.309	22.862	20.418	29.4	9.0	29.6	9.2	3.22	-0.01	19.2	10.2	19.4
100	194.3	0.525	50.0	-0.3	6.86	7.379	22.917	20.453	29.4	9.0	29.7	9.3	3.21	-0.01	19.2	10.2	19.5
101	193.5	0.529	50.0	-0.3	6.87	7.456	22.790	20.317	29.3	9.0	29.6	9.3	3.19	-0.02	19.1	10.2	19.4

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
102	193.9	0.533	50.0	-0.3	6.87	7.526	22.844	20.352	29.3	9.0	29.6	9.3	3.19	-0.02	19.1	10.2	19.5
103	194.9	0.538	50.0	-0.4	6.88	7.603	23.008	20.486	29.4	9.0	29.8	9.3	3.20	-0.02	19.2	10.2	19.6
104	195.7	0.543	50.0	-0.4	6.89	7.681	23.136	20.585	29.5	9.0	29.9	9.3	3.20	-0.02	19.3	10.3	19.6
105	196.9	0.547	49.9	-0.4	6.89	7.750	23.318	20.737	29.7	9.0	30.1	9.4	3.21	-0.02	19.3	10.4	19.7
106	195.9	0.551	49.9	-0.4	6.90	7.828	23.172	20.585	29.5	9.0	30.0	9.4	3.19	-0.02	19.3	10.3	19.7
107	195.7	0.556	49.9	-0.4	6.90	7.905	23.136	20.534	29.5	9.0	29.9	9.4	3.18	-0.02	19.2	10.3	19.7
108	195.9	0.561	49.9	-0.5	6.91	7.983	23.172	20.549	29.5	9.0	30.0	9.4	3.18	-0.02	19.2	10.3	19.7
109	197.2	0.565	49.8	-0.5	6.91	8.060	23.373	20.715	29.7	9.0	30.2	9.5	3.18	-0.03	19.3	10.4	19.8
110	195.5	0.570	49.8	-0.6	6.92	8.137	23.099	20.446	29.4	9.0	30.0	9.5	3.14	-0.03	19.2	10.2	19.8
111	197.0	0.574	49.8	-0.6	6.93	8.215	23.336	20.646	29.6	9.0	30.2	9.5	3.17	-0.03	19.3	10.3	19.8
112	197.8	0.578	49.8	-0.6	6.93	8.285	23.464	20.746	29.7	9.0	30.3	9.5	3.17	-0.03	19.3	10.4	19.9
113	198.0	0.583	49.7	-0.6	6.94	8.362	23.500	20.762	29.7	9.0	30.3	9.6	3.17	-0.03	19.3	10.4	20.0
114	198.0	0.588	49.7	-0.6	6.94	8.439	23.500	20.743	29.7	9.0	30.4	9.6	3.16	-0.03	19.3	10.4	20.0
115	198.7	0.592	49.7	-0.7	6.95	8.517	23.609	20.825	29.8	9.0	30.5	9.6	3.16	-0.03	19.4	10.4	20.0
116	199.2	0.597	49.6	-0.7	6.95	8.594	23.682	20.874	29.8	9.0	30.5	9.7	3.16	-0.03	19.4	10.4	20.1
117	200.0	0.601	49.6	-0.7	6.96	8.664	23.810	20.974	29.9	9.0	30.6	9.7	3.17	-0.03	19.5	10.5	20.2
118	200.1	0.606	49.6	-0.7	6.97	8.741	23.828	20.972	29.9	9.0	30.7	9.7	3.16	-0.03	19.4	10.5	20.2
119	200.6	0.610	49.6	-0.8	6.97	8.819	23.901	21.020	30.0	9.0	30.7	9.7	3.16	-0.04	19.5	10.5	20.2
120	199.9	0.615	49.5	-0.8	6.98	8.896	23.792	20.902	29.9	9.0	30.7	9.8	3.14	-0.04	19.4	10.5	20.2
121	199.5	0.619	49.5	-0.8	6.98	8.966	23.737	20.835	29.8	9.0	30.6	9.8	3.14	-0.04	19.4	10.4	20.2
122	199.6	0.624	49.5	-0.8	6.99	9.043	23.755	20.834	29.8	9.0	30.6	9.8	3.13	-0.04	19.4	10.4	20.2
123	200.9	0.628	49.5	-0.8	6.99	9.113	23.955	20.999	30.0	9.0	30.8	9.8	3.14	-0.04	19.5	10.5	20.3
124	201.3	0.632	49.4	-0.9	7.00	9.190	24.010	21.030	30.0	9.0	30.9	9.9	3.13	-0.04	19.5	10.5	20.4
125	201.7	0.636	49.4	-0.9	7.01	9.260	24.083	21.080	30.0	9.0	31.0	9.9	3.13	-0.04	19.5	10.5	20.4
126	202.3	0.641	49.4	-0.9	7.01	9.338	24.174	21.144	30.1	9.0	31.0	9.9	3.14	-0.04	19.5	10.6	20.5
127	202.8	0.646	49.4	-0.9	7.02	9.415	24.247	21.191	30.2	9.0	31.1	9.9	3.14	-0.04	19.6	10.6	20.5
128	202.5	0.650	49.4	-1.0	7.02	9.485	24.211	21.141	30.1	9.0	31.1	9.9	3.13	-0.05	19.5	10.6	20.5
129	203.7	0.654	49.3	-1.0	7.03	9.554	24.393	21.289	30.3	9.0	31.2	10.0	3.14	-0.05	19.6	10.6	20.6
130	202.3	0.659	49.3	-1.1	7.03	9.639	24.174	21.071	30.0	9.0	31.1	10.0	3.10	-0.05	19.5	10.5	20.6
131	202.9	0.663	49.3	-1.1	7.04	9.709	24.265	21.136	30.1	9.0	31.2	10.0	3.11	-0.05	19.5	10.6	20.6
132	203.6	0.667	49.3	-1.1	7.05	9.779	24.374	21.218	30.2	9.0	31.3	10.0	3.11	-0.05	19.6	10.6	20.7
133	204.6	0.671	49.3	-1.1	7.05	9.849	24.538	21.348	30.3	9.0	31.4	10.0	3.12	-0.05	19.6	10.7	20.7
134	205.0	0.676	49.2	-1.1	7.06	9.926	24.593	21.379	30.3	9.0	31.5	10.1	3.12	-0.05	19.7	10.7	20.8
135	205.0	0.680	49.2	-1.2	7.06	9.996	24.593	21.362	30.3	9.0	31.5	10.1	3.11	-0.05	19.6	10.7	20.8
136	205.7	0.685	49.2	-1.2	7.07	10.073	24.702	21.441	30.4	9.0	31.6	10.1	3.12	-0.05	19.7	10.7	20.9
137	205.8	0.689	49.1	-1.2	7.07	10.143	24.721	21.440	30.4	9.0	31.6	10.2	3.11	-0.06	19.7	10.7	20.9
138	205.4	0.694	49.1	-1.2	7.08	10.220	24.666	21.372	30.3	9.0	31.5	10.2	3.10	-0.06	19.6	10.7	20.8
139	206.4	0.698	49.1	-1.2	7.09	10.290	24.812	21.485	30.4	9.0	31.7	10.2	3.11	-0.06	19.7	10.7	20.9
140	206.9	0.702	49.0	-1.3	7.09	10.367	24.903	21.548	30.5	9.0	31.8	10.3	3.10	-0.06	19.7	10.8	21.0
141	206.1	0.707	49.0	-1.3	7.10	10.445	24.775	21.414	30.4	9.0	31.7	10.3	3.09	-0.06	19.7	10.7	21.0
142	205.8	0.711	49.0	-1.3	7.10	10.514	24.721	21.348	30.3	9.0	31.6	10.3	3.08	-0.06	19.6	10.7	21.0

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
143	206.6	0.716	49.0	-1.3	7.11	10.592	24.848	21.443	30.4	9.0	31.7	10.3	3.09	-0.06	19.7	10.7	21.0
144	206.4	0.720	49.0	-1.4	7.12	10.669	24.812	21.391	30.4	9.0	31.7	10.3	3.07	-0.06	19.7	10.7	21.0
145	207.6	0.725	48.9	-1.4	7.12	10.747	25.012	21.551	30.5	9.0	31.9	10.4	3.08	-0.07	19.7	10.8	21.1
146	208.4	0.729	48.9	-1.4	7.13	10.816	25.140	21.647	30.6	9.0	32.0	10.4	3.09	-0.06	19.8	10.8	21.2
147	208.0	0.733	48.9	-1.4	7.13	10.886	25.067	21.565	30.5	9.0	31.9	10.4	3.08	-0.07	19.7	10.8	21.2
148	208.8	0.738	48.9	-1.4	7.14	10.971	25.194	21.657	30.6	9.0	32.1	10.4	3.08	-0.07	19.8	10.8	21.2
149	209.3	0.742	48.9	-1.5	7.15	11.041	25.267	21.704	30.7	9.0	32.1	10.4	3.08	-0.07	19.8	10.9	21.3
150	210.8	0.747	48.8	-1.5	7.15	11.118	25.504	21.895	30.9	9.0	32.4	10.5	3.09	-0.07	19.9	10.9	21.4
151	208.9	0.751	48.8	-1.5	7.16	11.188	25.212	21.618	30.6	9.0	32.1	10.5	3.06	-0.07	19.8	10.8	21.3
152	209.8	0.756	48.8	-1.6	7.16	11.265	25.358	21.728	30.7	9.0	32.2	10.5	3.07	-0.07	19.8	10.9	21.4
153	210.5	0.760	48.8	-1.6	7.17	11.343	25.468	21.805	30.8	9.0	32.3	10.5	3.07	-0.07	19.9	10.9	21.4
154	209.8	0.764	48.8	-1.6	7.18	11.413	25.358	21.691	30.7	9.0	32.2	10.5	3.06	-0.07	19.8	10.8	21.4
155	211.7	0.769	48.7	-1.6	7.18	11.490	25.650	21.929	30.9	9.0	32.5	10.6	3.07	-0.07	19.9	11.0	21.5
156	211.8	0.773	48.7	-1.6	7.19	11.560	25.668	21.927	30.9	9.0	32.5	10.6	3.07	-0.07	19.9	11.0	21.6
157	211.8	0.778	48.7	-1.6	7.19	11.637	25.668	21.908	30.9	9.0	32.5	10.6	3.07	-0.07	19.9	11.0	21.6
158	212.0	0.782	48.7	-1.7	7.20	11.714	25.704	21.920	30.9	9.0	32.6	10.6	3.06	-0.08	19.9	11.0	21.6
159	212.5	0.786	48.7	-1.7	7.21	11.784	25.777	21.966	30.9	9.0	32.6	10.6	3.07	-0.08	19.9	11.0	21.6
160	214.1	0.791	48.6	-1.7	7.21	11.862	26.032	22.171	31.1	9.0	32.9	10.7	3.07	-0.08	20.0	11.1	21.8
161	214.0	0.796	48.6	-1.7	7.22	11.939	26.014	22.135	31.1	9.0	32.8	10.7	3.07	-0.08	20.0	11.1	21.8
162	213.9	0.800	48.6	-1.7	7.22	12.009	25.996	22.101	31.1	9.0	32.8	10.7	3.07	-0.08	20.0	11.1	21.7
163	214.1	0.804	48.6	-1.8	7.23	12.086	26.032	22.113	31.1	9.0	32.8	10.7	3.06	-0.08	20.0	11.1	21.8
164	213.8	0.809	48.5	-1.8	7.24	12.164	25.978	22.044	31.0	9.0	32.9	10.8	3.04	-0.08	20.0	11.0	21.8
165	214.8	0.814	48.5	-1.8	7.24	12.241	26.142	22.168	31.1	9.0	32.9	10.8	3.06	-0.08	20.0	11.1	21.9
166	215.2	0.818	48.5	-1.8	7.25	12.318	26.196	22.196	31.2	9.0	33.0	10.8	3.06	-0.08	20.1	11.1	21.9
167	215.5	0.822	48.5	-1.8	7.26	12.388	26.251	22.226	31.2	9.0	33.0	10.8	3.06	-0.08	20.1	11.1	21.9
168	216.9	0.827	48.5	-1.8	7.26	12.473	26.469	22.395	31.4	9.0	33.2	10.8	3.07	-0.08	20.2	11.2	22.0
169	216.0	0.832	48.4	-1.9	7.27	12.543	26.324	22.249	31.2	9.0	33.1	10.9	3.05	-0.09	20.1	11.1	22.0
170	216.8	0.836	48.4	-1.9	7.27	12.620	26.451	22.340	31.3	9.0	33.2	10.9	3.06	-0.09	20.1	11.2	22.0
171	217.6	0.841	48.4	-1.9	7.28	12.698	26.579	22.431	31.4	9.0	33.3	10.9	3.06	-0.08	20.2	11.2	22.1
172	218.1	0.845	48.4	-1.9	7.29	12.775	26.652	22.474	31.4	9.0	33.3	10.9	3.07	-0.08	20.2	11.2	22.1
173	217.9	0.850	48.4	-1.9	7.29	12.853	26.633	22.437	31.4	9.0	33.3	10.9	3.06	-0.09	20.2	11.2	22.1
174	219.8	0.854	48.4	-2.0	7.30	12.922	26.925	22.672	31.6	9.0	33.6	10.9	3.08	-0.09	20.3	11.3	22.3
175	218.9	0.859	48.3	-2.0	7.31	13.000	26.779	22.525	31.5	9.0	33.5	11.0	3.06	-0.09	20.2	11.3	22.2
176	220.5	0.863	48.3	-2.0	7.31	13.069	27.034	22.728	31.7	9.0	33.7	11.0	3.07	-0.09	20.3	11.4	22.3
177	219.4	0.867	48.3	-2.0	7.32	13.147	26.870	22.564	31.5	9.0	33.5	11.0	3.05	-0.09	20.2	11.3	22.3
178	220.3	0.872	48.3	-2.0	7.32	13.217	26.998	22.656	31.6	9.0	33.7	11.0	3.06	-0.09	20.3	11.3	22.3
179	220.8	0.876	48.3	-2.1	7.33	13.294	27.089	22.714	31.7	9.0	33.8	11.0	3.06	-0.09	20.3	11.4	22.4
180	221.6	0.880	48.3	-2.1	7.34	13.364	27.216	22.806	31.8	9.0	33.8	11.0	3.07	-0.09	20.4	11.4	22.4
181	222.0	0.884	48.3	-2.1	7.34	13.433	27.271	22.834	31.8	9.0	33.9	11.0	3.07	-0.09	20.4	11.4	22.5
182	222.9	0.889	48.3	-2.1	7.35	13.511	27.417	22.939	31.9	9.0	34.0	11.0	3.08	-0.09	20.4	11.5	22.5
183	223.3	0.893	48.2	-2.1	7.36	13.580	27.471	22.967	31.9	9.0	34.1	11.1	3.07	-0.09	20.4	11.5	22.6

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
184	223.6	0.898	48.2	-2.2	7.36	13.658	27.526	22.993	32.0	9.0	34.1	11.1	3.07	-0.09	20.5	11.5	22.6
185	224.5	0.902	48.2	-2.2	7.37	13.728	27.672	23.100	32.1	9.0	34.2	11.1	3.08	-0.09	20.5	11.5	22.7
186	223.7	0.906	48.1	-2.2	7.37	13.797	27.544	22.971	31.9	9.0	34.1	11.2	3.06	-0.10	20.4	11.5	22.6
187	224.4	0.911	48.1	-2.2	7.38	13.875	27.654	23.043	32.0	9.0	34.2	11.2	3.06	-0.10	20.5	11.5	22.7
188	224.9	0.915	48.1	-2.3	7.39	13.952	27.726	23.085	32.0	9.0	34.3	11.2	3.06	-0.10	20.5	11.5	22.8
189	225.8	0.920	48.1	-2.3	7.39	14.029	27.872	23.189	32.2	9.0	34.4	11.2	3.06	-0.10	20.6	11.6	22.8
190	226.6	0.924	48.1	-2.3	7.40	14.099	28.000	23.279	32.2	9.0	34.5	11.2	3.07	-0.10	20.6	11.6	22.9
191	226.5	0.929	48.1	-2.3	7.41	14.177	27.981	23.241	32.2	9.0	34.5	11.2	3.07	-0.10	20.6	11.6	22.9
192	227.4	0.933	48.1	-2.3	7.41	14.254	28.127	23.345	32.3	9.0	34.6	11.2	3.08	-0.10	20.6	11.7	22.9
193	226.6	0.937	48.0	-2.3	7.42	14.324	28.000	23.216	32.2	9.0	34.5	11.3	3.05	-0.10	20.6	11.6	22.9
194	227.9	0.942	48.0	-2.4	7.43	14.401	28.200	23.366	32.3	9.0	34.7	11.3	3.06	-0.10	20.6	11.7	23.0
195	227.9	0.947	48.0	-2.4	7.43	14.479	28.200	23.344	32.3	9.0	34.7	11.3	3.06	-0.10	20.6	11.7	23.0
196	228.4	0.951	48.0	-2.4	7.44	14.548	28.273	23.386	32.3	9.0	34.7	11.3	3.06	-0.10	20.7	11.7	23.0
197	229.3	0.955	47.9	-2.4	7.45	14.626	28.419	23.489	32.5	9.0	34.9	11.4	3.07	-0.10	20.7	11.7	23.1
198	227.1	0.960	47.9	-2.4	7.45	14.703	28.073	23.172	32.1	9.0	34.6	11.4	3.03	-0.10	20.5	11.6	23.0
199	228.5	0.965	47.9	-2.5	7.46	14.781	28.291	23.336	32.3	9.0	34.8	11.4	3.04	-0.11	20.6	11.7	23.1
200	228.8	0.969	47.9	-2.5	7.47	14.858	28.346	23.361	32.3	9.0	34.8	11.4	3.05	-0.11	20.6	11.7	23.1
201	229.5	0.974	47.9	-2.5	7.47	14.935	28.455	23.432	32.4	9.0	34.9	11.4	3.05	-0.10	20.7	11.7	23.1
202	230.0	0.978	47.8	-2.5	7.48	15.005	28.528	23.474	32.4	9.0	34.9	11.5	3.05	-0.11	20.7	11.7	23.2
203	229.2	0.983	47.8	-2.5	7.49	15.082	28.400	23.344	32.3	9.0	34.8	11.5	3.03	-0.11	20.6	11.7	23.2
204	230.0	0.987	47.8	-2.5	7.49	15.152	28.528	23.432	32.4	9.0	34.9	11.5	3.04	-0.11	20.7	11.7	23.2
205	230.1	0.991	47.8	-2.5	7.50	15.230	28.546	23.425	32.4	9.0	34.9	11.5	3.04	-0.11	20.7	11.7	23.2
206	230.9	0.996	47.8	-2.5	7.51	15.307	28.674	23.511	32.5	9.0	35.0	11.5	3.04	-0.11	20.7	11.8	23.3
207	231.5	1.000	47.8	-2.6	7.51	15.377	28.765	23.568	32.5	9.0	35.1	11.5	3.04	-0.11	20.7	11.8	23.3
208	228.5	1.005	47.7	-2.6	7.52	15.454	28.291	23.146	32.1	9.0	34.7	11.6	3.00	-0.11	20.5	11.6	23.2
209	231.5	1.009	47.7	-2.6	7.52	15.524	28.765	23.526	32.5	9.0	35.1	11.6	3.03	-0.11	20.7	11.8	23.3
210	231.8	1.013	47.7	-2.6	7.53	15.601	28.819	23.550	32.5	9.0	35.1	11.6	3.04	-0.11	20.7	11.8	23.3
211	232.3	1.017	47.7	-2.6	7.54	15.671	28.892	23.591	32.6	9.0	35.2	11.6	3.03	-0.11	20.8	11.8	23.4
212	232.8	1.022	47.7	-2.7	7.54	15.748	28.965	23.630	32.6	9.0	35.3	11.6	3.03	-0.11	20.8	11.8	23.4
213	233.6	1.026	47.6	-2.7	7.55	15.818	29.093	23.718	32.7	9.0	35.4	11.7	3.03	-0.11	20.8	11.9	23.5
214	232.9	1.031	47.6	-2.7	7.56	15.895	28.983	23.603	32.6	9.0	35.3	11.7	3.02	-0.11	20.8	11.8	23.5
215	232.8	1.035	47.6	-2.7	7.57	15.973	28.965	23.565	32.5	9.0	35.2	11.7	3.02	-0.11	20.7	11.8	23.4
216	234.1	1.040	47.6	-2.7	7.57	16.043	29.184	23.729	32.7	9.0	35.4	11.7	3.04	-0.11	20.8	11.9	23.5
217	233.7	1.044	47.6	-2.8	7.58	16.120	29.111	23.645	32.6	9.0	35.4	11.7	3.02	-0.12	20.8	11.8	23.5
218	233.3	1.048	47.6	-2.8	7.58	16.190	29.056	23.579	32.5	9.0	35.3	11.7	3.01	-0.12	20.8	11.8	23.5
219	234.3	1.053	47.6	-2.8	7.59	16.267	29.202	23.678	32.6	9.0	35.4	11.7	3.02	-0.12	20.8	11.8	23.6
220	235.4	1.058	47.6	-2.8	7.60	16.345	29.384	23.808	32.8	9.0	35.6	11.7	3.03	-0.12	20.9	11.9	23.6
221	234.3	1.062	47.5	-2.8	7.61	16.414	29.202	23.635	32.6	9.0	35.4	11.8	3.01	-0.12	20.8	11.8	23.6
222	235.1	1.066	47.5	-2.8	7.61	16.492	29.330	23.719	32.7	9.0	35.5	11.8	3.01	-0.12	20.8	11.9	23.7
223	235.3	1.070	47.5	-2.9	7.62	16.561	29.366	23.729	32.7	9.0	35.6	11.8	3.01	-0.12	20.8	11.9	23.7
224	235.1	1.075	47.5	-2.9	7.63	16.639	29.330	23.676	32.6	9.0	35.5	11.8	3.00	-0.12	20.8	11.8	23.7

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
225	235.7	1.080	47.5	-2.9	7.63	16.716	29.421	23.729	32.7	9.0	35.6	11.8	3.01	-0.12	20.8	11.9	23.7
226	236.1	1.084	47.4	-2.9	7.64	16.786	29.493	23.769	32.7	9.0	35.6	11.9	3.00	-0.12	20.8	11.9	23.7
227	235.5	1.088	47.4	-2.9	7.65	16.863	29.402	23.671	32.6	9.0	35.6	11.9	2.99	-0.12	20.8	11.8	23.7
228	236.5	1.093	47.4	-3.0	7.65	16.941	29.548	23.769	32.7	9.0	35.7	11.9	2.99	-0.12	20.8	11.9	23.8
229	236.6	1.098	47.4	-3.0	7.66	17.018	29.566	23.761	32.7	9.0	35.7	11.9	2.99	-0.12	20.8	11.9	23.8
230	238.0	1.102	47.3	-3.0	7.67	17.088	29.785	23.922	32.9	9.0	35.9	12.0	3.00	-0.12	20.9	12.0	23.9
231	237.9	1.106	47.3	-3.0	7.67	17.157	29.767	23.886	32.8	9.0	35.8	12.0	3.00	-0.13	20.9	11.9	23.9
232	237.7	1.110	47.3	-3.0	7.68	17.235	29.749	23.848	32.8	9.0	35.9	12.0	2.99	-0.13	20.9	11.9	23.9
233	238.9	1.115	47.3	-3.0	7.69	17.312	29.931	23.976	32.9	9.0	36.0	12.0	3.00	-0.13	21.0	12.0	24.0
234	238.7	1.119	47.3	-3.0	7.69	17.382	29.894	23.925	32.9	9.0	35.9	12.0	2.99	-0.13	20.9	12.0	24.0
235	236.6	1.123	47.3	-3.1	7.70	17.452	29.566	23.633	32.6	9.0	35.7	12.0	2.96	-0.13	20.8	11.8	23.9
236	238.1	1.127	47.2	-3.1	7.71	17.521	29.803	23.808	32.8	9.0	35.9	12.1	2.97	-0.13	20.9	11.9	24.0
237	238.4	1.132	47.2	-3.1	7.71	17.599	29.858	23.830	32.8	9.0	35.9	12.1	2.97	-0.13	20.9	11.9	24.0
238	238.9	1.137	47.2	-3.1	7.72	17.676	29.931	23.867	32.8	9.0	36.0	12.1	2.97	-0.13	20.9	11.9	24.0
239	238.6	1.141	47.2	-3.2	7.73	17.746	29.876	23.801	32.8	9.0	35.9	12.1	2.96	-0.13	20.9	11.9	24.0
240	238.2	1.145	47.2	-3.2	7.74	17.823	29.821	23.733	32.7	9.0	35.9	12.1	2.96	-0.13	20.8	11.9	24.0
241	238.3	1.150	47.1	-3.2	7.74	17.901	29.840	23.725	32.7	9.0	35.9	12.2	2.95	-0.13	20.8	11.9	24.0
242	239.7	1.154	47.1	-3.3	7.75	17.970	30.058	23.883	32.8	9.0	36.1	12.2	2.96	-0.14	20.9	11.9	24.2
243	239.9	1.159	47.1	-3.3	7.76	18.048	30.095	23.890	32.9	9.0	36.1	12.2	2.96	-0.14	20.9	11.9	24.2
244	239.6	1.163	47.1	-3.3	7.76	18.125	30.040	23.822	32.8	9.0	36.0	12.2	2.95	-0.14	20.9	11.9	24.1
245	239.9	1.168	47.1	-3.3	7.77	18.203	30.095	23.843	32.8	9.0	36.1	12.2	2.95	-0.14	20.9	11.9	24.2
246	239.9	1.173	47.0	-3.3	7.78	18.280	30.095	23.820	32.8	9.0	36.1	12.3	2.94	-0.14	20.9	11.9	24.2
247	240.2	1.177	47.0	-3.3	7.79	18.350	30.131	23.829	32.8	9.0	36.1	12.3	2.94	-0.14	20.9	11.9	24.2
248	240.8	1.181	47.0	-3.3	7.79	18.427	30.222	23.880	32.8	9.0	36.2	12.3	2.94	-0.14	20.9	11.9	24.2
249	240.4	1.186	47.0	-3.3	7.80	18.505	30.168	23.812	32.8	9.0	36.1	12.3	2.94	-0.14	20.9	11.9	24.2
250	241.4	1.191	47.0	-3.4	7.81	18.582	30.331	23.922	32.9	9.0	36.3	12.3	2.94	-0.14	20.9	12.0	24.3
251	241.2	1.195	46.9	-3.4	7.81	18.660	30.295	23.869	32.8	9.0	36.2	12.4	2.93	-0.14	20.9	11.9	24.3
252	241.6	1.200	46.9	-3.4	7.82	18.737	30.350	23.890	32.9	9.0	36.3	12.4	2.93	-0.14	20.9	11.9	24.3
253	241.7	1.204	46.9	-3.4	7.83	18.814	30.368	23.881	32.8	9.0	36.3	12.4	2.93	-0.14	20.9	11.9	24.3
254	241.2	1.209	46.9	-3.5	7.84	18.892	30.295	23.798	32.8	9.0	36.2	12.4	2.92	-0.15	20.9	11.9	24.3
255	241.7	1.213	46.9	-3.5	7.84	18.961	30.368	23.836	32.8	9.0	36.3	12.4	2.92	-0.14	20.9	11.9	24.3
256	242.5	1.218	46.9	-3.5	7.85	19.039	30.495	23.916	32.9	9.0	36.4	12.4	2.92	-0.15	20.9	12.0	24.4
257	242.7	1.222	46.8	-3.5	7.86	19.116	30.532	23.922	32.9	9.0	36.4	12.5	2.92	-0.15	20.9	12.0	24.4
258	242.0	1.227	46.8	-3.5	7.87	19.194	30.423	23.810	32.8	9.0	36.3	12.5	2.91	-0.15	20.9	11.9	24.4
259	242.1	1.231	46.8	-3.5	7.87	19.263	30.441	23.804	32.8	9.0	36.3	12.5	2.91	-0.15	20.9	11.9	24.4
260	243.1	1.236	46.8	-3.5	7.88	19.341	30.587	23.898	32.9	9.0	36.4	12.5	2.91	-0.15	20.9	11.9	24.5
261	242.5	1.240	46.8	-3.6	7.89	19.411	30.495	23.803	32.8	9.0	36.3	12.5	2.90	-0.15	20.9	11.9	24.4
262	243.2	1.244	46.7	-3.6	7.90	19.488	30.605	23.867	32.8	9.0	36.4	12.6	2.90	-0.15	20.9	11.9	24.5
263	243.2	1.249	46.7	-3.6	7.90	19.558	30.605	23.846	32.8	9.0	36.4	12.6	2.90	-0.15	20.9	11.9	24.5
264	242.8	1.253	46.7	-3.6	7.91	19.627	30.550	23.781	32.7	9.0	36.4	12.6	2.89	-0.15	20.9	11.9	24.5
265	243.0	1.257	46.7	-3.6	7.92	19.705	30.568	23.772	32.7	9.0	36.4	12.6	2.89	-0.15	20.8	11.9	24.5

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
266	243.1	1.261	46.7	-3.7	7.92	19.774	30.587	23.765	32.7	9.0	36.4	12.6	2.88	-0.15	20.8	11.9	24.5
267	243.0	1.266	46.6	-3.7	7.93	19.844	30.568	23.729	32.7	9.0	36.4	12.7	2.88	-0.16	20.8	11.9	24.5
268	241.4	1.270	46.6	-3.7	7.94	19.922	30.331	23.516	32.5	9.0	36.2	12.7	2.86	-0.16	20.7	11.8	24.4
269	242.5	1.274	46.6	-3.7	7.95	19.991	30.495	23.626	32.6	9.0	36.3	12.7	2.87	-0.16	20.8	11.8	24.5
270	243.8	1.275	46.6	-3.7	7.95	19.999	30.696	23.784	32.7	9.0	36.4	12.7	2.88	-0.16	20.9	11.9	24.5

Specimen B Shear Data

CU Triaxial Test

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File Location
T-5789.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B (T-5789)
Client: T-5789
Sample Location: Guilford County (Sta. 403+45)
Sample Description: Tannish colored clay with traces of silt and sand
Remarks: 15° shear plane on left side and 10° shear plane on right side of the specimen.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.875
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.849	2.813	
Height (in)	5.997	5.936	
Weight (grams)	1255.00		1264.00
Moisture (%)	28.72		29.64
Dry Density (pcf)	97.13	100.69	
Saturation (%)	97.39	100.00	
Void Ratio	0.843	0.783	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 68.000
Effective Confining Stress (psi): 18.0
Corrected Peak Deviator Stress (psi): 25.955 at reading number: 199

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	13.1	0.093	50.0	0.0	6.22	0.000	0.000	0.000	18.0	18.0	18.0	18.0	1.00	0.00	18.0	0.0	18.0
1	40.9	0.097	51.3	1.2	6.22	0.068	4.463	4.434	22.4	18.0	21.2	16.7	1.27	0.28	20.2	2.2	18.9
2	70.0	0.101	52.7	2.7	6.22	0.135	9.149	9.084	27.1	18.0	24.4	15.3	1.59	0.30	22.5	4.5	19.8
3	85.6	0.105	53.6	3.6	6.23	0.203	11.668	11.565	29.5	18.0	25.9	14.4	1.81	0.31	23.7	5.8	20.1
4	95.7	0.109	54.3	4.3	6.23	0.271	13.279	13.138	31.1	18.0	26.8	13.7	1.96	0.33	24.5	6.6	20.3
5	103.8	0.113	54.9	4.9	6.24	0.338	14.594	14.413	32.4	18.0	27.5	13.1	2.10	0.34	25.2	7.2	20.3
6	110.6	0.117	55.4	5.4	6.24	0.406	15.687	15.465	33.4	18.0	28.1	12.6	2.23	0.35	25.7	7.7	20.3
7	116.7	0.121	55.8	5.8	6.24	0.473	16.669	16.405	34.4	18.0	28.6	12.2	2.35	0.35	26.2	8.2	20.4
8	121.6	0.125	56.2	6.2	6.25	0.541	17.447	17.140	35.1	18.0	28.9	11.8	2.45	0.36	26.5	8.6	20.4
9	126.0	0.129	56.5	6.5	6.25	0.609	18.169	17.820	35.8	18.0	29.3	11.5	2.55	0.36	26.9	8.9	20.4
10	130.2	0.133	56.8	6.8	6.26	0.676	18.836	18.444	36.4	18.0	29.6	11.2	2.65	0.37	27.2	9.2	20.4
11	134.0	0.137	57.0	7.0	6.26	0.744	19.447	19.011	37.0	18.0	30.0	11.0	2.73	0.37	27.5	9.5	20.5
12	137.6	0.142	57.2	7.2	6.27	0.821	20.021	19.535	37.5	18.0	30.3	10.8	2.82	0.37	27.7	9.8	20.5
13	141.5	0.146	57.4	7.4	6.27	0.889	20.651	20.119	38.1	18.0	30.7	10.6	2.90	0.37	28.0	10.1	20.7
14	145.3	0.150	57.6	7.5	6.28	0.957	21.262	20.684	38.7	18.0	31.1	10.4	2.98	0.36	28.3	10.3	20.8
15	146.8	0.154	57.7	7.6	6.28	1.034	21.503	20.876	38.8	18.0	31.2	10.3	3.02	0.37	28.4	10.4	20.8
16	149.3	0.158	57.8	7.7	6.28	1.102	21.910	21.238	39.2	18.0	31.5	10.2	3.07	0.36	28.6	10.6	20.9
17	151.9	0.163	57.8	7.8	6.29	1.179	22.336	21.612	39.6	18.0	31.8	10.2	3.13	0.36	28.8	10.8	21.0
18	154.4	0.167	57.9	7.8	6.29	1.247	22.725	21.954	39.9	18.0	32.1	10.1	3.17	0.36	28.9	11.0	21.1

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	156.1	0.171	57.9	7.9	6.30	1.314	23.003	22.187	40.2	18.0	32.3	10.1	3.20	0.36	29.1	11.1	21.2
20	157.9	0.176	57.9	7.9	6.30	1.401	23.299	22.425	40.4	18.0	32.5	10.1	3.22	0.35	29.2	11.2	21.3
21	158.8	0.180	58.0	7.9	6.31	1.469	23.447	22.528	40.5	18.0	32.6	10.0	3.24	0.35	29.2	11.3	21.3
22	161.0	0.185	58.0	7.9	6.31	1.546	23.799	22.827	40.8	18.0	32.9	10.0	3.27	0.35	29.4	11.4	21.5
23	162.1	0.189	58.0	7.9	6.32	1.623	23.966	22.942	40.9	18.0	33.0	10.0	3.28	0.35	29.4	11.5	21.5
24	162.8	0.194	57.9	7.9	6.32	1.710	24.077	22.996	41.0	18.0	33.1	10.1	3.28	0.34	29.5	11.5	21.6
25	164.1	0.200	57.9	7.9	6.33	1.797	24.299	23.160	41.1	18.0	33.2	10.1	3.30	0.34	29.5	11.6	21.7
26	165.2	0.204	57.9	7.8	6.33	1.875	24.466	23.274	41.2	18.0	33.4	10.1	3.30	0.34	29.6	11.6	21.8
27	165.4	0.209	57.8	7.8	6.34	1.962	24.503	23.255	41.2	18.0	33.4	10.2	3.29	0.34	29.6	11.6	21.8
28	166.0	0.215	57.8	7.8	6.35	2.049	24.595	23.310	41.3	18.0	33.5	10.2	3.28	0.33	29.6	11.7	21.9
29	166.3	0.219	57.8	7.7	6.35	2.126	24.651	23.345	41.3	18.0	33.6	10.2	3.28	0.33	29.6	11.7	21.9
30	167.4	0.224	57.7	7.7	6.36	2.203	24.818	23.489	41.5	18.0	33.8	10.3	3.28	0.33	29.7	11.7	22.0
31	166.9	0.229	57.7	7.6	6.36	2.290	24.744	23.395	41.4	18.0	33.7	10.3	3.27	0.33	29.7	11.7	22.0
32	168.1	0.233	57.7	7.6	6.37	2.367	24.929	23.557	41.5	18.0	33.9	10.3	3.28	0.32	29.7	11.8	22.1
33	168.4	0.238	57.6	7.6	6.37	2.445	24.984	23.592	41.6	18.0	34.0	10.4	3.27	0.32	29.8	11.8	22.2
34	168.4	0.242	57.6	7.5	6.38	2.512	24.984	23.575	41.5	18.0	34.0	10.4	3.26	0.32	29.8	11.8	22.2
35	168.9	0.247	57.5	7.5	6.38	2.590	25.059	23.628	41.6	18.0	34.1	10.5	3.25	0.32	29.8	11.8	22.3
36	169.3	0.251	57.5	7.4	6.39	2.667	25.133	23.680	41.6	18.0	34.2	10.5	3.25	0.31	29.8	11.8	22.4
37	170.0	0.256	57.4	7.4	6.39	2.744	25.244	23.769	41.7	18.0	34.3	10.6	3.25	0.31	29.9	11.9	22.4
38	170.8	0.260	57.4	7.3	6.40	2.822	25.373	23.875	41.8	18.0	34.5	10.6	3.24	0.31	29.9	11.9	22.6
39	170.8	0.265	57.3	7.3	6.40	2.899	25.373	23.856	41.8	18.0	34.5	10.7	3.23	0.31	29.9	11.9	22.6
40	171.3	0.270	57.3	7.2	6.41	2.976	25.447	23.908	41.9	18.0	34.6	10.7	3.23	0.30	29.9	12.0	22.7
41	171.6	0.274	57.2	7.2	6.41	3.054	25.503	23.942	41.9	18.0	34.7	10.8	3.22	0.30	29.9	12.0	22.8
42	172.1	0.279	57.2	7.1	6.42	3.131	25.577	23.994	42.0	18.0	34.8	10.8	3.21	0.30	30.0	12.0	22.8
43	172.1	0.284	57.1	7.1	6.42	3.218	25.577	23.972	41.9	18.0	34.9	10.9	3.20	0.30	30.0	12.0	22.9
44	172.4	0.289	57.0	7.0	6.43	3.305	25.633	24.003	42.0	18.0	35.0	11.0	3.19	0.29	30.0	12.0	23.0
45	172.9	0.294	57.0	7.0	6.43	3.392	25.707	24.053	42.0	18.0	35.1	11.0	3.19	0.29	30.0	12.0	23.0
46	172.7	0.298	57.0	6.9	6.44	3.459	25.670	24.000	42.0	18.0	35.0	11.0	3.17	0.29	30.0	12.0	23.0
47	173.6	0.302	56.9	6.9	6.44	3.527	25.818	24.125	42.1	18.0	35.2	11.1	3.18	0.29	30.0	12.1	23.1
48	173.7	0.306	56.8	6.8	6.45	3.595	25.836	24.126	42.1	18.0	35.3	11.2	3.16	0.28	30.0	12.1	23.2
49	174.4	0.310	56.8	6.8	6.45	3.662	25.948	24.215	42.2	18.0	35.4	11.2	3.16	0.28	30.1	12.1	23.3
50	174.8	0.314	56.8	6.7	6.46	3.730	26.022	24.269	42.2	18.0	35.5	11.2	3.16	0.28	30.1	12.1	23.4
51	175.2	0.318	56.7	6.7	6.46	3.798	26.077	24.305	42.3	18.0	35.6	11.3	3.15	0.28	30.1	12.2	23.4
52	175.8	0.323	56.7	6.6	6.47	3.875	26.170	24.374	42.3	18.0	35.7	11.3	3.15	0.27	30.2	12.2	23.5
53	176.3	0.327	56.6	6.6	6.47	3.943	26.262	24.445	42.4	18.0	35.8	11.4	3.14	0.27	30.2	12.2	23.6
54	176.8	0.331	56.6	6.5	6.47	4.010	26.336	24.498	42.5	18.0	35.9	11.4	3.14	0.27	30.2	12.2	23.7
55	177.5	0.335	56.5	6.5	6.48	4.078	26.448	24.587	42.6	18.0	36.1	11.5	3.14	0.26	30.3	12.3	23.8
56	178.1	0.339	56.5	6.4	6.48	4.146	26.540	24.658	42.6	18.0	36.2	11.5	3.14	0.26	30.3	12.3	23.9
57	178.6	0.344	56.4	6.4	6.49	4.223	26.633	24.726	42.7	18.0	36.3	11.6	3.14	0.26	30.3	12.4	23.9
58	179.6	0.348	56.4	6.3	6.49	4.290	26.781	24.850	42.8	18.0	36.5	11.6	3.13	0.25	30.4	12.4	24.1
59	179.6	0.352	56.3	6.3	6.50	4.368	26.781	24.829	42.8	18.0	36.5	11.7	3.13	0.25	30.4	12.4	24.1

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	180.1	0.356	56.3	6.2	6.50	4.435	26.874	24.900	42.9	18.0	36.6	11.7	3.12	0.25	30.4	12.4	24.2
61	181.2	0.361	56.2	6.2	6.51	4.513	27.040	25.038	43.0	18.0	36.8	11.8	3.13	0.25	30.5	12.5	24.3
62	181.3	0.365	56.2	6.2	6.51	4.580	27.059	25.037	43.0	18.0	36.8	11.8	3.12	0.25	30.5	12.5	24.3
63	181.9	0.369	56.1	6.1	6.52	4.658	27.151	25.105	43.1	18.0	37.0	11.9	3.11	0.24	30.5	12.6	24.4
64	182.8	0.374	56.1	6.0	6.52	4.735	27.300	25.225	43.2	18.0	37.1	11.9	3.12	0.24	30.6	12.6	24.5
65	182.9	0.378	56.0	6.0	6.53	4.803	27.318	25.224	43.2	18.0	37.2	12.0	3.11	0.24	30.6	12.6	24.6
66	182.9	0.383	56.0	6.0	6.53	4.890	27.318	25.200	43.2	18.0	37.2	12.0	3.10	0.24	30.6	12.6	24.6
67	183.4	0.388	56.0	5.9	6.54	4.967	27.392	25.250	43.2	18.0	37.3	12.0	3.10	0.23	30.6	12.6	24.7
68	184.2	0.392	55.9	5.9	6.55	5.044	27.522	25.351	43.3	18.0	37.4	12.1	3.10	0.23	30.6	12.7	24.8
69	183.7	0.397	55.9	5.8	6.55	5.121	27.448	25.260	43.2	18.0	37.4	12.1	3.08	0.23	30.6	12.6	24.8
70	183.6	0.402	55.8	5.8	6.56	5.208	27.429	25.218	43.2	18.0	37.4	12.2	3.07	0.23	30.6	12.6	24.8
71	183.9	0.407	55.8	5.8	6.56	5.286	27.485	25.250	43.2	18.0	37.5	12.2	3.07	0.23	30.6	12.6	24.8
72	183.7	0.412	55.8	5.7	6.57	5.373	27.448	25.191	43.2	18.0	37.4	12.2	3.06	0.23	30.6	12.6	24.8
73	183.6	0.416	55.7	5.6	6.57	5.450	27.429	25.152	43.1	18.0	37.5	12.3	3.04	0.22	30.5	12.6	24.9
74	183.8	0.421	55.6	5.6	6.58	5.527	27.466	25.166	43.1	18.0	37.5	12.4	3.04	0.22	30.5	12.6	24.9
75	183.8	0.426	55.6	5.6	6.58	5.605	27.466	25.145	43.1	18.0	37.5	12.4	3.03	0.22	30.5	12.6	25.0
76	184.4	0.430	55.6	5.5	6.59	5.682	27.559	25.211	43.2	18.0	37.7	12.4	3.03	0.22	30.6	12.6	25.0
77	183.9	0.435	55.5	5.5	6.59	5.759	27.485	25.120	43.1	18.0	37.6	12.5	3.01	0.22	30.5	12.6	25.0
78	184.1	0.439	55.5	5.4	6.60	5.827	27.503	25.119	43.1	18.0	37.6	12.5	3.01	0.22	30.5	12.6	25.1
79	184.6	0.443	55.4	5.4	6.61	5.904	27.596	25.184	43.2	18.0	37.7	12.6	3.00	0.21	30.6	12.6	25.2
80	184.6	0.448	55.4	5.4	6.61	5.982	27.596	25.163	43.1	18.0	37.8	12.6	3.00	0.21	30.5	12.6	25.2
81	184.7	0.453	55.3	5.3	6.62	6.059	27.614	25.159	43.1	18.0	37.8	12.7	2.98	0.21	30.5	12.6	25.3
82	185.2	0.457	55.3	5.2	6.62	6.136	27.688	25.207	43.2	18.0	37.9	12.7	2.98	0.21	30.6	12.6	25.3
83	185.9	0.462	55.2	5.2	6.63	6.213	27.800	25.290	43.3	18.0	38.1	12.8	2.98	0.21	30.6	12.6	25.4
84	186.1	0.466	55.2	5.2	6.63	6.291	27.837	25.303	43.3	18.0	38.1	12.8	2.98	0.20	30.6	12.7	25.5
85	185.9	0.471	55.1	5.1	6.64	6.368	27.800	25.247	43.2	18.0	38.1	12.9	2.96	0.20	30.6	12.6	25.5
86	186.4	0.475	55.1	5.0	6.64	6.445	27.874	25.295	43.3	18.0	38.2	12.9	2.96	0.20	30.6	12.6	25.6
87	186.2	0.481	55.1	5.0	6.65	6.532	27.855	25.253	43.2	18.0	38.2	12.9	2.95	0.20	30.6	12.6	25.6
88	186.0	0.486	55.0	5.0	6.66	6.619	27.818	25.195	43.2	18.0	38.2	13.0	2.94	0.20	30.6	12.6	25.6
89	185.9	0.490	55.0	4.9	6.66	6.697	27.800	25.156	43.1	18.0	38.2	13.0	2.93	0.20	30.5	12.6	25.6
90	186.5	0.495	54.9	4.9	6.67	6.774	27.892	25.221	43.2	18.0	38.3	13.1	2.93	0.19	30.6	12.6	25.7
91	186.9	0.500	54.9	4.8	6.67	6.851	27.966	25.268	43.2	18.0	38.4	13.1	2.93	0.19	30.6	12.6	25.8
92	187.1	0.504	54.8	4.8	6.68	6.919	27.985	25.266	43.2	18.0	38.4	13.2	2.92	0.19	30.6	12.6	25.8
93	187.2	0.508	54.8	4.7	6.68	6.986	28.003	25.265	43.2	18.0	38.5	13.2	2.91	0.19	30.6	12.6	25.9
94	188.3	0.512	54.7	4.7	6.69	7.064	28.189	25.415	43.4	18.0	38.7	13.3	2.91	0.18	30.7	12.7	26.0
95	188.4	0.516	54.7	4.6	6.69	7.131	28.207	25.413	43.4	18.0	38.7	13.3	2.91	0.18	30.7	12.7	26.0
96	188.3	0.520	54.6	4.6	6.70	7.199	28.189	25.377	43.3	18.0	38.7	13.4	2.90	0.18	30.7	12.7	26.1
97	188.0	0.524	54.6	4.6	6.70	7.267	28.133	25.307	43.3	18.0	38.7	13.4	2.89	0.18	30.6	12.7	26.1
98	188.5	0.529	54.6	4.5	6.71	7.344	28.226	25.371	43.3	18.0	38.8	13.4	2.89	0.18	30.7	12.7	26.1
99	189.1	0.533	54.5	4.5	6.71	7.412	28.318	25.437	43.4	18.0	38.9	13.5	2.89	0.18	30.7	12.7	26.2
100	188.5	0.537	54.5	4.4	6.72	7.479	28.226	25.332	43.3	18.0	38.9	13.5	2.87	0.18	30.6	12.7	26.2

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	188.9	0.541	54.4	4.4	6.72	7.547	28.281	25.365	43.3	18.0	38.9	13.6	2.87	0.17	30.6	12.7	26.2
102	189.8	0.545	54.4	4.4	6.73	7.624	28.429	25.480	43.4	18.0	39.1	13.6	2.87	0.17	30.7	12.7	26.3
103	190.0	0.549	54.4	4.3	6.73	7.692	28.466	25.495	43.5	18.0	39.1	13.6	2.87	0.17	30.7	12.7	26.4
104	190.0	0.554	54.3	4.3	6.74	7.769	28.466	25.473	43.4	18.0	39.2	13.7	2.86	0.17	30.7	12.7	26.4
105	190.6	0.558	54.3	4.3	6.74	7.837	28.559	25.539	43.5	18.0	39.2	13.7	2.87	0.17	30.7	12.8	26.5
106	190.0	0.563	54.3	4.2	6.75	7.914	28.466	25.431	43.4	18.0	39.2	13.7	2.85	0.17	30.7	12.7	26.4
107	190.2	0.567	54.2	4.2	6.75	7.991	28.485	25.426	43.4	18.0	39.2	13.8	2.85	0.17	30.7	12.7	26.5
108	190.0	0.571	54.2	4.2	6.76	8.059	28.466	25.390	43.4	18.0	39.2	13.8	2.84	0.16	30.7	12.7	26.5
109	190.6	0.576	54.2	4.1	6.77	8.146	28.559	25.450	43.4	18.0	39.3	13.8	2.84	0.16	30.7	12.7	26.6
110	191.0	0.581	54.2	4.1	6.77	8.223	28.614	25.479	43.4	18.0	39.3	13.8	2.84	0.16	30.7	12.7	26.6
111	191.1	0.586	54.1	4.1	6.78	8.301	28.633	25.474	43.4	18.0	39.4	13.9	2.83	0.16	30.7	12.7	26.6
112	189.9	0.590	54.1	4.1	6.78	8.378	28.448	25.282	43.2	18.0	39.2	13.9	2.82	0.16	30.6	12.6	26.5
113	190.3	0.595	54.1	4.0	6.79	8.465	28.503	25.309	43.3	18.0	39.2	13.9	2.82	0.16	30.6	12.7	26.6
114	190.3	0.601	54.0	4.0	6.80	8.552	28.503	25.284	43.3	18.0	39.2	14.0	2.81	0.16	30.6	12.6	26.6
115	190.3	0.605	54.0	4.0	6.80	8.629	28.503	25.262	43.2	18.0	39.2	14.0	2.81	0.16	30.6	12.6	26.6
116	188.7	0.610	54.0	4.0	6.81	8.707	28.244	25.003	43.0	18.0	39.0	14.0	2.79	0.16	30.5	12.5	26.5
117	189.4	0.615	54.0	4.0	6.81	8.794	28.355	25.080	43.0	18.0	39.1	14.0	2.79	0.16	30.5	12.5	26.5
118	189.5	0.619	54.0	3.9	6.82	8.871	28.374	25.075	43.0	18.0	39.1	14.0	2.79	0.16	30.5	12.5	26.6
119	189.4	0.624	54.0	3.9	6.83	8.948	28.355	25.036	43.0	18.0	39.1	14.0	2.78	0.16	30.5	12.5	26.6
120	189.6	0.629	54.0	3.9	6.83	9.025	28.392	25.048	43.0	18.0	39.1	14.0	2.78	0.16	30.5	12.5	26.6
121	190.0	0.633	53.9	3.9	6.84	9.093	28.466	25.096	43.1	18.0	39.2	14.1	2.78	0.15	30.5	12.5	26.6
122	189.9	0.637	53.9	3.9	6.84	9.170	28.448	25.057	43.0	18.0	39.1	14.1	2.78	0.15	30.5	12.5	26.6
123	189.7	0.642	53.9	3.8	6.85	9.248	28.411	25.001	43.0	18.0	39.1	14.1	2.77	0.15	30.5	12.5	26.6
124	189.7	0.646	53.9	3.8	6.85	9.325	28.411	24.979	42.9	18.0	39.1	14.1	2.77	0.15	30.5	12.5	26.6
125	190.4	0.651	53.9	3.8	6.86	9.402	28.522	25.058	43.0	18.0	39.2	14.1	2.77	0.15	30.5	12.5	26.7
126	190.0	0.656	53.8	3.8	6.87	9.480	28.466	24.986	43.0	18.0	39.1	14.2	2.76	0.15	30.5	12.5	26.7
127	189.6	0.660	53.8	3.8	6.87	9.557	28.392	24.897	42.9	18.0	39.1	14.2	2.76	0.15	30.4	12.4	26.6
128	189.8	0.665	53.8	3.8	6.88	9.644	28.429	24.906	42.9	18.0	39.1	14.2	2.75	0.15	30.4	12.5	26.7
129	189.9	0.669	53.8	3.8	6.88	9.712	28.448	24.903	42.9	18.0	39.1	14.2	2.75	0.15	30.4	12.5	26.7
130	189.6	0.675	53.8	3.8	6.89	9.798	28.392	24.828	42.8	18.0	39.0	14.2	2.75	0.15	30.4	12.4	26.6
131	189.2	0.679	53.8	3.8	6.90	9.876	28.337	24.756	42.7	18.0	39.0	14.2	2.74	0.15	30.3	12.4	26.6
132	189.2	0.684	53.8	3.8	6.90	9.963	28.337	24.732	42.7	18.0	38.9	14.2	2.75	0.15	30.3	12.4	26.5
133	189.1	0.689	53.8	3.7	6.91	10.040	28.318	24.693	42.7	18.0	38.9	14.2	2.73	0.15	30.3	12.3	26.6
134	189.4	0.693	53.8	3.7	6.91	10.117	28.355	24.704	42.7	18.0	38.9	14.2	2.73	0.15	30.3	12.4	26.6
135	189.4	0.697	53.8	3.7	6.92	10.185	28.355	24.685	42.7	18.0	38.9	14.2	2.73	0.15	30.3	12.3	26.6
136	189.8	0.701	53.8	3.8	6.93	10.253	28.429	24.732	42.7	18.0	38.9	14.2	2.74	0.15	30.3	12.4	26.6
137	190.3	0.705	53.8	3.8	6.93	10.320	28.503	24.780	42.7	18.0	39.0	14.2	2.74	0.15	30.4	12.4	26.6
138	190.4	0.710	53.8	3.8	6.94	10.398	28.522	24.774	42.7	18.0	39.0	14.2	2.74	0.15	30.4	12.4	26.6
139	190.7	0.714	53.8	3.8	6.94	10.465	28.577	24.805	42.8	18.0	39.0	14.2	2.75	0.15	30.4	12.4	26.6
140	191.4	0.719	53.8	3.7	6.95	10.543	28.689	24.882	42.8	18.0	39.1	14.2	2.75	0.15	30.4	12.4	26.7
141	192.0	0.723	53.8	3.7	6.95	10.610	28.781	24.945	42.9	18.0	39.2	14.2	2.75	0.15	30.4	12.5	26.7

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	192.9	0.727	53.8	3.7	6.96	10.678	28.929	25.058	43.0	18.0	39.3	14.2	2.76	0.15	30.5	12.5	26.8
143	193.6	0.731	53.8	3.7	6.96	10.745	29.040	25.138	43.1	18.0	39.4	14.2	2.76	0.15	30.5	12.6	26.8
144	194.0	0.735	53.8	3.7	6.97	10.813	29.096	25.168	43.1	18.0	39.4	14.2	2.77	0.15	30.6	12.6	26.8
145	194.8	0.739	53.8	3.7	6.97	10.881	29.226	25.264	43.2	18.0	39.5	14.2	2.77	0.15	30.6	12.6	26.9
146	195.0	0.743	53.8	3.7	6.98	10.958	29.263	25.274	43.2	18.0	39.5	14.2	2.77	0.15	30.6	12.6	26.9
147	195.5	0.747	53.8	3.7	6.99	11.026	29.337	25.320	43.3	18.0	39.6	14.2	2.78	0.15	30.6	12.7	26.9
148	196.0	0.751	53.8	3.7	6.99	11.093	29.429	25.383	43.3	18.0	39.6	14.2	2.78	0.15	30.7	12.7	26.9
149	196.4	0.756	53.7	3.7	7.00	11.171	29.485	25.409	43.4	18.0	39.7	14.3	2.78	0.14	30.7	12.7	27.0
150	196.9	0.761	53.7	3.7	7.00	11.248	29.578	25.469	43.4	18.0	39.8	14.3	2.78	0.14	30.7	12.7	27.0
151	196.7	0.765	53.7	3.7	7.01	11.325	29.541	25.413	43.4	18.0	39.7	14.3	2.78	0.14	30.7	12.7	27.0
152	197.5	0.770	53.7	3.7	7.01	11.403	29.670	25.505	43.5	18.0	39.8	14.3	2.79	0.14	30.7	12.8	27.0
153	197.4	0.774	53.7	3.7	7.02	11.480	29.652	25.466	43.4	18.0	39.7	14.3	2.78	0.14	30.7	12.7	27.0
154	197.3	0.779	53.7	3.7	7.03	11.557	29.633	25.426	43.4	18.0	39.7	14.3	2.78	0.14	30.7	12.7	27.0
155	196.3	0.784	53.7	3.7	7.03	11.644	29.466	25.253	43.2	18.0	39.5	14.3	2.77	0.15	30.6	12.6	26.9
156	197.2	0.789	53.7	3.7	7.04	11.731	29.615	25.358	43.3	18.0	39.6	14.3	2.78	0.15	30.6	12.7	27.0
157	197.4	0.794	53.7	3.6	7.05	11.808	29.652	25.368	43.3	18.0	39.7	14.3	2.77	0.14	30.7	12.7	27.0
158	197.1	0.799	53.7	3.6	7.05	11.895	29.596	25.293	43.3	18.0	39.6	14.3	2.77	0.14	30.6	12.6	27.0
159	197.8	0.804	53.7	3.6	7.06	11.973	29.707	25.368	43.3	18.0	39.7	14.3	2.77	0.14	30.7	12.7	27.0
160	197.5	0.809	53.7	3.6	7.07	12.060	29.670	25.310	43.3	18.0	39.6	14.3	2.77	0.14	30.6	12.7	27.0
161	197.4	0.813	53.7	3.6	7.07	12.137	29.652	25.271	43.2	18.0	39.6	14.3	2.76	0.14	30.6	12.6	27.0
162	196.4	0.818	53.7	3.6	7.08	12.214	29.485	25.102	43.1	18.0	39.4	14.3	2.75	0.15	30.5	12.6	26.9
163	197.3	0.822	53.7	3.6	7.09	12.292	29.633	25.209	43.2	18.0	39.5	14.3	2.76	0.14	30.6	12.6	26.9
164	197.6	0.827	53.7	3.6	7.09	12.369	29.689	25.234	43.2	18.0	39.6	14.3	2.76	0.14	30.6	12.6	26.9
165	197.4	0.831	53.7	3.6	7.10	12.437	29.652	25.182	43.1	18.0	39.5	14.3	2.76	0.14	30.6	12.6	26.9
166	198.0	0.836	53.6	3.6	7.10	12.514	29.744	25.240	43.2	18.0	39.6	14.4	2.76	0.14	30.6	12.6	27.0
167	198.4	0.840	53.6	3.6	7.11	12.591	29.818	25.282	43.2	18.0	39.6	14.4	2.76	0.14	30.6	12.6	27.0
168	198.4	0.845	53.6	3.6	7.12	12.668	29.818	25.259	43.2	18.0	39.6	14.4	2.76	0.14	30.6	12.6	27.0
169	195.5	0.849	53.6	3.6	7.12	12.736	29.337	24.818	42.8	18.0	39.2	14.4	2.72	0.14	30.4	12.4	26.8
170	198.6	0.853	53.6	3.6	7.13	12.813	29.837	25.232	43.2	18.0	39.6	14.4	2.76	0.14	30.6	12.6	27.0
171	198.8	0.858	53.6	3.6	7.13	12.891	29.874	25.241	43.2	18.0	39.6	14.4	2.75	0.14	30.6	12.6	27.0
172	198.7	0.861	53.6	3.6	7.14	12.949	29.855	25.207	43.2	18.0	39.6	14.4	2.75	0.14	30.6	12.6	27.0
173	199.3	0.866	53.6	3.6	7.15	13.016	29.948	25.268	43.2	18.0	39.7	14.4	2.75	0.14	30.6	12.6	27.0
174	199.8	0.870	53.6	3.6	7.15	13.094	30.041	25.325	43.3	18.0	39.7	14.4	2.76	0.14	30.6	12.7	27.1
175	199.9	0.874	53.6	3.6	7.16	13.161	30.059	25.321	43.3	18.0	39.7	14.4	2.76	0.14	30.6	12.7	27.1
176	200.1	0.879	53.6	3.6	7.16	13.248	30.078	25.311	43.3	18.0	39.7	14.4	2.76	0.14	30.6	12.7	27.1
177	200.1	0.884	53.6	3.5	7.17	13.326	30.078	25.288	43.3	18.0	39.7	14.4	2.75	0.14	30.6	12.6	27.1
178	200.3	0.888	53.6	3.5	7.18	13.403	30.115	25.296	43.3	18.0	39.7	14.4	2.75	0.14	30.6	12.6	27.1
179	200.7	0.892	53.6	3.5	7.18	13.461	30.189	25.343	43.3	18.0	39.8	14.4	2.75	0.14	30.6	12.7	27.1
180	201.7	0.896	53.6	3.5	7.19	13.528	30.337	25.451	43.4	18.0	39.9	14.4	2.76	0.14	30.7	12.7	27.2
181	201.2	0.900	53.5	3.5	7.19	13.596	30.263	25.366	43.3	18.0	39.9	14.5	2.75	0.14	30.6	12.7	27.2
182	202.7	0.905	53.5	3.5	7.20	13.673	30.504	25.551	43.5	18.0	40.0	14.5	2.76	0.14	30.7	12.8	27.3

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	203.2	0.909	53.5	3.4	7.21	13.741	30.578	25.594	43.6	18.0	40.1	14.5	2.76	0.13	30.8	12.8	27.3
184	203.2	0.913	53.5	3.4	7.21	13.809	30.578	25.573	43.5	18.0	40.1	14.5	2.76	0.13	30.8	12.8	27.3
185	203.7	0.917	53.5	3.4	7.22	13.886	30.670	25.629	43.6	18.0	40.2	14.5	2.76	0.13	30.8	12.8	27.3
186	204.1	0.921	53.5	3.4	7.22	13.954	30.726	25.656	43.6	18.0	40.2	14.5	2.77	0.13	30.8	12.8	27.4
187	205.1	0.925	53.4	3.4	7.23	14.021	30.893	25.779	43.7	18.0	40.3	14.6	2.77	0.13	30.9	12.9	27.5
188	204.4	0.929	53.4	3.4	7.23	14.089	30.781	25.663	43.6	18.0	40.2	14.6	2.76	0.13	30.8	12.8	27.4
189	205.7	0.934	53.4	3.4	7.24	14.166	30.985	25.814	43.8	18.0	40.4	14.6	2.77	0.13	30.9	12.9	27.5
190	206.0	0.938	53.4	3.4	7.25	14.234	31.041	25.840	43.8	18.0	40.4	14.6	2.77	0.13	30.9	12.9	27.5
191	206.3	0.942	53.4	3.3	7.25	14.311	31.078	25.848	43.8	18.0	40.5	14.6	2.77	0.13	30.9	12.9	27.6
192	207.2	0.946	53.4	3.3	7.26	14.379	31.226	25.954	43.9	18.0	40.6	14.6	2.77	0.13	30.9	13.0	27.6
193	206.7	0.951	53.4	3.3	7.27	14.456	31.152	25.866	43.8	18.0	40.5	14.6	2.77	0.13	30.9	12.9	27.6
194	206.6	0.956	53.3	3.3	7.27	14.533	31.133	25.826	43.8	18.0	40.5	14.7	2.76	0.13	30.9	12.9	27.6
195	206.6	0.960	53.3	3.3	7.28	14.611	31.133	25.802	43.8	18.0	40.5	14.7	2.76	0.13	30.9	12.9	27.6
196	206.3	0.965	53.3	3.2	7.29	14.688	31.078	25.731	43.7	18.0	40.5	14.7	2.75	0.13	30.8	12.9	27.6
197	207.3	0.969	53.3	3.2	7.29	14.765	31.244	25.849	43.8	18.0	40.6	14.7	2.76	0.13	30.9	12.9	27.6
198	207.9	0.974	53.2	3.2	7.30	14.852	31.337	25.901	43.9	18.0	40.7	14.8	2.75	0.12	30.9	13.0	27.7
199	208.5	0.979	53.2	3.2	7.31	14.930	31.430	25.955	43.9	18.0	40.7	14.8	2.76	0.12	30.9	13.0	27.7
200	208.0	0.984	53.2	3.2	7.31	15.007	31.356	25.868	43.8	18.0	40.7	14.8	2.75	0.12	30.9	12.9	27.7
201	207.9	0.989	53.2	3.2	7.32	15.094	31.337	25.825	43.8	18.0	40.6	14.8	2.74	0.12	30.9	12.9	27.7
202	207.7	0.993	53.2	3.1	7.33	15.171	31.300	25.769	43.7	18.0	40.6	14.8	2.74	0.12	30.9	12.9	27.7
203	206.8	0.998	53.2	3.1	7.33	15.249	31.170	25.635	43.6	18.0	40.5	14.8	2.73	0.12	30.8	12.8	27.7
204	206.5	1.003	53.1	3.1	7.34	15.326	31.115	25.564	43.5	18.0	40.4	14.9	2.72	0.12	30.7	12.8	27.7
205	206.6	1.007	53.1	3.1	7.35	15.403	31.133	25.556	43.5	18.0	40.4	14.9	2.72	0.12	30.7	12.8	27.7
206	207.1	1.012	53.1	3.0	7.35	15.480	31.207	25.594	43.6	18.0	40.5	14.9	2.71	0.12	30.8	12.8	27.7
207	207.7	1.016	53.0	3.0	7.36	15.558	31.300	25.648	43.6	18.0	40.6	15.0	2.71	0.12	30.8	12.8	27.8
208	206.0	1.020	53.0	3.0	7.37	15.625	31.041	25.408	43.4	18.0	40.4	15.0	2.69	0.12	30.7	12.7	27.7
209	205.8	1.025	53.0	3.0	7.37	15.703	31.004	25.353	43.3	18.0	40.4	15.0	2.69	0.12	30.6	12.7	27.7
210	205.8	1.030	53.0	2.9	7.38	15.780	31.004	25.329	43.3	18.0	40.4	15.0	2.68	0.12	30.6	12.7	27.7
211	206.4	1.034	53.0	2.9	7.39	15.857	31.096	25.383	43.3	18.0	40.4	15.0	2.69	0.12	30.7	12.7	27.7
212	206.7	1.038	52.9	2.9	7.39	15.925	31.152	25.409	43.4	18.0	40.5	15.1	2.68	0.11	30.7	12.7	27.8
213	206.5	1.043	52.9	2.9	7.40	16.002	31.115	25.354	43.3	18.0	40.4	15.1	2.68	0.11	30.6	12.7	27.8
214	206.4	1.047	52.9	2.8	7.41	16.080	31.096	25.314	43.3	18.0	40.4	15.1	2.67	0.11	30.6	12.7	27.8
215	204.8	1.052	52.9	2.9	7.41	16.157	30.837	25.073	43.0	18.0	40.2	15.1	2.66	0.11	30.5	12.5	27.6
216	205.0	1.056	52.8	2.8	7.42	16.234	30.874	25.080	43.0	18.0	40.2	15.2	2.65	0.11	30.5	12.5	27.7
217	205.5	1.062	52.8	2.8	7.43	16.321	30.948	25.115	43.1	18.0	40.3	15.2	2.65	0.11	30.5	12.6	27.8
218	205.8	1.066	52.8	2.8	7.43	16.398	31.004	25.137	43.1	18.0	40.3	15.2	2.65	0.11	30.5	12.6	27.8
219	205.6	1.071	52.8	2.7	7.44	16.476	30.967	25.083	43.0	18.0	40.3	15.2	2.65	0.11	30.5	12.5	27.8
220	206.0	1.075	52.8	2.7	7.45	16.553	31.041	25.120	43.1	18.0	40.4	15.2	2.65	0.11	30.5	12.6	27.8
221	205.5	1.081	52.7	2.7	7.46	16.640	30.948	25.016	43.0	18.0	40.3	15.3	2.64	0.11	30.5	12.5	27.8
222	205.7	1.085	52.7	2.7	7.46	16.717	30.985	25.023	43.0	18.0	40.3	15.3	2.64	0.11	30.5	12.5	27.8
223	203.5	1.089	52.7	2.6	7.47	16.775	30.633	24.712	42.7	18.0	40.0	15.3	2.61	0.11	30.3	12.4	27.7

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	204.9	1.093	52.7	2.6	7.47	16.843	30.855	24.876	42.8	18.0	40.2	15.3	2.62	0.11	30.4	12.4	27.8
225	205.8	1.097	52.6	2.6	7.48	16.911	31.004	24.979	42.9	18.0	40.3	15.4	2.63	0.10	30.5	12.5	27.9
226	205.9	1.101	52.6	2.6	7.49	16.988	31.022	24.970	42.9	18.0	40.3	15.4	2.63	0.10	30.5	12.5	27.8
227	206.8	1.105	52.6	2.6	7.49	17.056	31.170	25.072	43.0	18.0	40.5	15.4	2.63	0.10	30.5	12.5	27.9
228	207.2	1.109	52.6	2.6	7.50	17.123	31.226	25.097	43.1	18.0	40.5	15.4	2.63	0.10	30.5	12.5	28.0
229	206.6	1.114	52.6	2.6	7.51	17.200	31.133	24.996	43.0	18.0	40.4	15.4	2.62	0.10	30.5	12.5	27.9
230	207.0	1.118	52.6	2.5	7.51	17.268	31.189	25.021	43.0	18.0	40.5	15.4	2.62	0.10	30.5	12.5	28.0
231	207.4	1.122	52.6	2.5	7.52	17.345	31.263	25.058	43.0	18.0	40.5	15.4	2.62	0.10	30.5	12.5	28.0
232	208.2	1.126	52.5	2.5	7.53	17.413	31.393	25.144	43.1	18.0	40.6	15.5	2.62	0.10	30.5	12.6	28.1
233	208.7	1.130	52.5	2.5	7.53	17.481	31.467	25.184	43.2	18.0	40.7	15.5	2.63	0.10	30.6	12.6	28.1
234	209.2	1.134	52.5	2.5	7.54	17.548	31.541	25.224	43.2	18.0	40.7	15.5	2.63	0.10	30.6	12.6	28.1
235	207.7	1.139	52.5	2.5	7.54	17.626	31.300	25.001	43.0	18.0	40.5	15.5	2.61	0.10	30.5	12.5	28.0
236	209.0	1.143	52.5	2.4	7.55	17.693	31.522	25.163	43.1	18.0	40.7	15.5	2.62	0.10	30.5	12.6	28.1
237	210.1	1.148	52.5	2.4	7.56	17.771	31.689	25.276	43.2	18.0	40.8	15.5	2.63	0.10	30.6	12.6	28.2
238	210.3	1.152	52.5	2.4	7.57	17.848	31.726	25.281	43.2	18.0	40.8	15.5	2.63	0.10	30.6	12.6	28.2
239	210.4	1.157	52.5	2.4	7.57	17.925	31.744	25.272	43.2	18.0	40.8	15.5	2.63	0.10	30.6	12.6	28.2
240	211.0	1.161	52.4	2.4	7.58	18.003	31.837	25.324	43.3	18.0	40.9	15.6	2.63	0.09	30.6	12.7	28.2
241	211.2	1.166	52.4	2.4	7.59	18.080	31.874	25.329	43.3	18.0	40.9	15.6	2.63	0.09	30.6	12.7	28.2
242	210.3	1.171	52.5	2.4	7.59	18.157	31.726	25.183	43.2	18.0	40.7	15.5	2.62	0.10	30.6	12.6	28.1
243	210.1	1.175	52.4	2.4	7.60	18.234	31.689	25.129	43.1	18.0	40.7	15.6	2.61	0.10	30.5	12.6	28.1
244	211.1	1.180	52.4	2.4	7.61	18.312	31.856	25.240	43.2	18.0	40.8	15.6	2.62	0.09	30.6	12.6	28.2
245	211.2	1.184	52.4	2.4	7.62	18.389	31.874	25.231	43.2	18.0	40.8	15.6	2.62	0.09	30.6	12.6	28.2
246	211.0	1.189	52.4	2.3	7.62	18.466	31.837	25.176	43.1	18.0	40.8	15.6	2.61	0.09	30.6	12.6	28.2
247	211.3	1.194	52.4	2.4	7.63	18.553	31.893	25.193	43.2	18.0	40.8	15.6	2.61	0.09	30.6	12.6	28.2
248	211.7	1.199	52.4	2.4	7.64	18.631	31.948	25.214	43.2	18.0	40.8	15.6	2.62	0.09	30.6	12.6	28.2
249	211.0	1.203	52.4	2.3	7.64	18.698	31.837	25.102	43.1	18.0	40.7	15.6	2.60	0.09	30.5	12.6	28.2
250	210.0	1.207	52.4	2.3	7.65	18.776	31.670	24.942	42.9	18.0	40.6	15.6	2.59	0.09	30.4	12.5	28.1
251	210.2	1.212	52.4	2.4	7.66	18.853	31.707	24.948	42.9	18.0	40.6	15.6	2.60	0.09	30.4	12.5	28.1
252	210.4	1.217	52.4	2.3	7.67	18.930	31.744	24.953	42.9	18.0	40.6	15.6	2.59	0.09	30.4	12.5	28.1
253	211.2	1.221	52.4	2.3	7.67	19.008	31.874	25.034	43.0	18.0	40.7	15.6	2.60	0.09	30.5	12.5	28.2
254	211.5	1.226	52.4	2.3	7.68	19.085	31.911	25.039	43.0	18.0	40.7	15.6	2.60	0.09	30.5	12.5	28.2
255	212.1	1.230	52.4	2.3	7.69	19.162	32.022	25.104	43.1	18.0	40.7	15.6	2.60	0.09	30.5	12.6	28.2
256	212.6	1.235	52.4	2.3	7.70	19.239	32.096	25.139	43.1	18.0	40.8	15.6	2.61	0.09	30.5	12.6	28.2
257	213.1	1.239	52.4	2.3	7.70	19.317	32.170	25.174	43.1	18.0	40.8	15.6	2.61	0.09	30.6	12.6	28.2
258	213.8	1.244	52.4	2.3	7.71	19.394	32.282	25.239	43.2	18.0	40.9	15.6	2.61	0.09	30.6	12.6	28.3
259	213.6	1.249	52.4	2.3	7.72	19.471	32.263	25.199	43.2	18.0	40.8	15.6	2.61	0.09	30.6	12.6	28.2
260	213.9	1.253	52.3	2.3	7.73	19.549	32.300	25.204	43.2	18.0	40.9	15.7	2.61	0.09	30.6	12.6	28.3
261	213.1	1.258	52.3	2.3	7.73	19.626	32.170	25.075	43.0	18.0	40.8	15.7	2.60	0.09	30.5	12.5	28.2
262	212.9	1.263	52.3	2.3	7.74	19.713	32.152	25.032	43.0	18.0	40.7	15.7	2.60	0.09	30.5	12.5	28.2
263	213.5	1.268	52.3	2.3	7.75	19.790	32.245	25.081	43.0	18.0	40.8	15.7	2.60	0.09	30.5	12.5	28.2
264	214.6	1.271	52.3	2.3	7.75	19.848	32.411	25.196	43.2	18.0	40.9	15.7	2.61	0.09	30.6	12.6	28.3

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
265	214.0	1.276	52.3	2.3	7.76	19.926	32.319	25.097	43.1	18.0	40.8	15.7	2.60	0.09	30.5	12.5	28.2
266	214.8	1.280	52.3	2.3	7.77	20.003	32.448	25.176	43.1	18.0	40.9	15.7	2.61	0.09	30.6	12.6	28.3
267	215.0	1.281	52.3	2.3	7.77	20.012	32.485	25.202	43.2	18.0	40.9	15.7	2.61	0.09	30.6	12.6	28.3

Specimen C Shear Data

CU Triaxial Test

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File Location
T-5789.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B (T-5789)
Client: T-5789
Sample Location: Guilford County (Sta. 403+45)
Sample Description: Tannish colored clayey silt
Remarks: 30° shear plane with slicken side.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.881
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.839	2.775	
Height (in)	6.028	5.906	
Weight (grams)	1206.00		1218.00
Moisture (%)	28.71		29.99
Dry Density (pcf)	93.51	99.90	
Saturation (%)	89.58	100.00	
Void Ratio	0.918	0.800	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 86.600
Effective Confining Stress (psi): 36.0
Corrected Peak Deviator Stress (psi): 23.487 at reading number: 29

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	39.5	0.148	50.6	0.0	6.05	0.000	0.000	0.000	36.0	36.0	36.0	36.0	1.00	0.00	36.0	0.0	36.0
1	81.6	0.154	52.1	1.5	6.06	0.097	6.954	6.909	42.9	36.0	41.4	34.5	1.20	0.21	39.4	3.5	37.9
2	115.8	0.159	54.1	3.4	6.06	0.184	12.601	12.505	48.5	36.0	45.0	32.5	1.38	0.28	42.2	6.3	38.8
3	139.0	0.164	55.8	5.1	6.07	0.271	16.448	16.296	52.3	36.0	47.1	30.8	1.53	0.31	44.1	8.1	39.0
4	151.8	0.170	56.9	6.3	6.07	0.358	18.551	18.343	54.3	36.0	48.0	29.7	1.62	0.34	45.1	9.2	38.9
5	160.1	0.174	57.9	7.3	6.08	0.435	19.934	19.675	55.6	36.0	48.4	28.7	1.69	0.37	45.8	9.8	38.5
6	165.8	0.179	58.6	8.0	6.08	0.512	20.863	20.553	56.5	36.0	48.5	28.0	1.74	0.39	46.2	10.3	38.2
7	169.9	0.183	59.2	8.6	6.09	0.590	21.545	21.184	57.1	36.0	48.5	27.4	1.77	0.41	46.6	10.6	38.0
8	173.2	0.188	59.7	9.1	6.09	0.677	22.094	21.677	57.6	36.0	48.6	26.9	1.81	0.42	46.8	10.8	37.7
9	175.8	0.193	60.1	9.5	6.10	0.754	22.530	22.062	58.0	36.0	48.5	26.5	1.83	0.43	47.0	11.0	37.5
10	178.1	0.198	60.4	9.8	6.10	0.831	22.909	22.389	58.3	36.0	48.5	26.2	1.86	0.44	47.2	11.2	37.4
11	180.0	0.202	60.8	10.1	6.11	0.909	23.212	22.641	58.6	36.0	48.5	25.8	1.88	0.45	47.3	11.3	37.2
12	181.5	0.207	61.0	10.4	6.11	0.986	23.459	22.837	58.8	36.0	48.4	25.6	1.89	0.45	47.4	11.4	37.0
13	182.7	0.212	61.2	10.5	6.12	1.073	23.667	22.988	58.9	36.0	48.4	25.4	1.90	0.46	47.5	11.5	36.9
14	183.4	0.216	61.3	10.7	6.12	1.150	23.781	23.051	59.0	36.0	48.3	25.3	1.91	0.46	47.5	11.5	36.8
15	184.2	0.221	61.5	10.9	6.12	1.228	23.914	23.133	59.1	36.0	48.2	25.1	1.92	0.47	47.5	11.6	36.6
16	184.8	0.226	61.6	11.0	6.13	1.305	24.008	23.178	59.1	36.0	48.2	25.0	1.93	0.47	47.5	11.6	36.6
17	185.4	0.230	61.7	11.0	6.13	1.382	24.103	23.222	59.2	36.0	48.1	24.9	1.93	0.48	47.6	11.6	36.5
18	186.0	0.235	61.8	11.2	6.14	1.460	24.217	23.285	59.2	36.0	48.1	24.8	1.94	0.48	47.6	11.6	36.4

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	186.5	0.239	61.8	11.2	6.14	1.537	24.292	23.310	59.3	36.0	48.1	24.8	1.94	0.48	47.6	11.7	36.4
20	186.9	0.244	61.9	11.3	6.15	1.624	24.349	23.310	59.3	36.0	48.0	24.7	1.94	0.48	47.6	11.7	36.3
21	187.4	0.249	62.0	11.4	6.15	1.701	24.444	23.354	59.3	36.0	48.0	24.6	1.95	0.49	47.6	11.7	36.3
22	187.9	0.253	62.0	11.4	6.16	1.779	24.520	23.379	59.3	36.0	47.9	24.6	1.95	0.49	47.6	11.7	36.2
23	188.2	0.259	62.0	11.4	6.16	1.866	24.577	23.379	59.3	36.0	47.9	24.6	1.95	0.49	47.6	11.7	36.2
24	188.6	0.263	62.1	11.4	6.17	1.943	24.634	23.385	59.3	36.0	47.9	24.5	1.95	0.49	47.7	11.7	36.2
25	188.8	0.268	62.1	11.5	6.17	2.020	24.671	23.380	59.3	36.0	47.9	24.5	1.96	0.49	47.7	11.7	36.2
26	189.0	0.272	62.2	11.5	6.18	2.098	24.709	23.398	59.4	36.0	47.8	24.4	1.96	0.49	47.7	11.7	36.1
27	189.6	0.277	62.2	11.5	6.18	2.175	24.804	23.472	59.4	36.0	47.9	24.4	1.96	0.49	47.7	11.7	36.2
28	189.8	0.282	62.2	11.6	6.19	2.262	24.842	23.487	59.4	36.0	47.9	24.4	1.96	0.49	47.7	11.7	36.1
29	189.9	0.287	62.2	11.6	6.19	2.339	24.861	23.487	59.4	36.0	47.9	24.4	1.96	0.49	47.7	11.7	36.1
30	189.6	0.291	62.2	11.6	6.20	2.417	24.804	23.412	59.4	36.0	47.8	24.4	1.96	0.49	47.7	11.7	36.1
31	189.9	0.296	62.2	11.6	6.20	2.494	24.861	23.448	59.4	36.0	47.8	24.4	1.96	0.49	47.7	11.7	36.1
32	190.1	0.300	62.2	11.6	6.21	2.571	24.880	23.447	59.4	36.0	47.8	24.4	1.96	0.49	47.7	11.7	36.1
33	190.3	0.305	62.2	11.6	6.21	2.658	24.918	23.463	59.4	36.0	47.9	24.4	1.96	0.49	47.7	11.7	36.1
34	190.3	0.310	62.2	11.6	6.22	2.736	24.918	23.443	59.4	36.0	47.8	24.4	1.96	0.49	47.7	11.7	36.1
35	190.3	0.315	62.2	11.6	6.22	2.813	24.918	23.424	59.4	36.0	47.8	24.4	1.96	0.49	47.7	11.7	36.1
36	190.3	0.319	62.2	11.6	6.23	2.890	24.918	23.405	59.4	36.0	47.8	24.4	1.96	0.49	47.7	11.7	36.1
37	190.4	0.324	62.2	11.6	6.23	2.968	24.937	23.404	59.4	36.0	47.8	24.4	1.96	0.49	47.7	11.7	36.1
38	190.6	0.329	62.2	11.6	6.24	3.055	24.975	23.419	59.4	36.0	47.8	24.4	1.96	0.49	47.7	11.7	36.1
39	191.1	0.333	62.2	11.6	6.24	3.122	25.050	23.476	59.4	36.0	47.9	24.4	1.96	0.49	47.7	11.7	36.1
40	191.1	0.338	62.2	11.6	6.25	3.209	25.050	23.454	59.4	36.0	47.9	24.4	1.96	0.49	47.7	11.7	36.1
41	191.2	0.343	62.2	11.6	6.26	3.287	25.069	23.453	59.4	36.0	47.9	24.4	1.96	0.49	47.7	11.7	36.1
42	191.1	0.347	62.2	11.5	6.26	3.364	25.050	23.415	59.4	36.0	47.9	24.4	1.96	0.49	47.7	11.7	36.1
43	190.9	0.352	62.2	11.5	6.27	3.441	25.013	23.359	59.3	36.0	47.8	24.4	1.96	0.49	47.6	11.7	36.1
44	190.9	0.356	62.2	11.5	6.27	3.519	25.013	23.340	59.3	36.0	47.8	24.4	1.95	0.49	47.6	11.7	36.1
45	191.0	0.361	62.1	11.5	6.28	3.596	25.032	23.339	59.3	36.0	47.8	24.5	1.95	0.49	47.6	11.7	36.1
46	191.3	0.365	62.1	11.5	6.28	3.673	25.088	23.374	59.3	36.0	47.9	24.5	1.95	0.49	47.6	11.7	36.2
47	191.2	0.371	62.1	11.4	6.29	3.760	25.069	23.334	59.3	36.0	47.9	24.5	1.95	0.49	47.6	11.7	36.2
48	191.1	0.375	62.1	11.4	6.29	3.838	25.050	23.296	59.3	36.0	47.8	24.5	1.95	0.49	47.6	11.6	36.2
49	191.3	0.380	62.1	11.4	6.30	3.915	25.088	23.313	59.3	36.0	47.8	24.5	1.95	0.49	47.6	11.7	36.2
50	191.6	0.384	62.0	11.4	6.30	3.992	25.126	23.330	59.3	36.0	47.9	24.6	1.95	0.49	47.6	11.7	36.2
51	191.9	0.389	62.0	11.4	6.31	4.070	25.183	23.366	59.3	36.0	47.9	24.6	1.95	0.49	47.6	11.7	36.2
52	191.9	0.394	62.0	11.4	6.31	4.157	25.183	23.344	59.3	36.0	47.9	24.6	1.95	0.49	47.6	11.7	36.3
53	192.2	0.399	62.0	11.3	6.32	4.234	25.240	23.379	59.3	36.0	48.0	24.6	1.95	0.48	47.6	11.7	36.3
54	192.6	0.403	62.0	11.3	6.32	4.311	25.297	23.413	59.4	36.0	48.1	24.6	1.95	0.48	47.7	11.7	36.3
55	192.9	0.408	62.0	11.3	6.33	4.389	25.354	23.448	59.4	36.0	48.1	24.6	1.95	0.48	47.7	11.7	36.4
56	192.7	0.412	61.9	11.3	6.33	4.466	25.316	23.392	59.4	36.0	48.1	24.7	1.95	0.48	47.7	11.7	36.4
57	192.7	0.417	61.9	11.2	6.34	4.543	25.316	23.373	59.3	36.0	48.1	24.7	1.95	0.48	47.6	11.7	36.4
58	192.1	0.422	61.8	11.2	6.34	4.630	25.221	23.260	59.2	36.0	48.0	24.8	1.94	0.48	47.6	11.6	36.4
59	192.2	0.426	61.8	11.2	6.35	4.708	25.240	23.259	59.2	36.0	48.0	24.8	1.94	0.48	47.6	11.6	36.4

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	192.2	0.431	61.8	11.2	6.35	4.785	25.240	23.240	59.2	36.0	48.0	24.8	1.94	0.48	47.6	11.6	36.4
61	192.2	0.436	61.8	11.2	6.36	4.862	25.240	23.220	59.2	36.0	48.0	24.8	1.94	0.48	47.6	11.6	36.4
62	192.0	0.440	61.8	11.1	6.36	4.940	25.202	23.164	59.1	36.0	48.0	24.8	1.93	0.48	47.5	11.6	36.4
63	191.9	0.445	61.7	11.1	6.37	5.017	25.183	23.127	59.1	36.0	48.0	24.9	1.93	0.48	47.5	11.6	36.4
64	191.3	0.450	61.7	11.1	6.37	5.104	25.088	23.015	59.0	36.0	47.9	24.9	1.93	0.48	47.5	11.5	36.4
65	191.3	0.454	61.7	11.1	6.38	5.181	25.088	22.996	59.0	36.0	47.9	24.9	1.92	0.48	47.5	11.5	36.4
66	191.2	0.459	61.7	11.0	6.39	5.259	25.069	22.958	58.9	36.0	47.9	24.9	1.92	0.48	47.4	11.5	36.4
67	191.4	0.464	61.6	11.0	6.39	5.336	25.107	22.975	58.9	36.0	47.9	25.0	1.92	0.48	47.4	11.5	36.4
68	191.7	0.468	61.6	11.0	6.40	5.413	25.145	22.991	59.0	36.0	48.0	25.0	1.92	0.48	47.5	11.5	36.5
69	191.2	0.473	61.6	11.0	6.40	5.491	25.069	22.900	58.9	36.0	47.9	25.0	1.92	0.48	47.4	11.5	36.4
70	190.4	0.478	61.6	11.0	6.41	5.578	24.937	22.753	58.7	36.0	47.7	25.0	1.91	0.48	47.3	11.4	36.3
71	190.6	0.482	61.6	11.0	6.41	5.645	24.975	22.772	58.7	36.0	47.8	25.0	1.91	0.48	47.3	11.4	36.4
72	190.5	0.487	61.6	11.0	6.42	5.732	24.956	22.732	58.7	36.0	47.7	25.0	1.91	0.48	47.3	11.4	36.4
73	190.1	0.492	61.6	10.9	6.42	5.810	24.880	22.642	58.6	36.0	47.7	25.0	1.90	0.48	47.3	11.3	36.4
74	190.2	0.496	61.6	10.9	6.43	5.877	24.899	22.643	58.6	36.0	47.7	25.0	1.90	0.48	47.3	11.3	36.4
75	190.6	0.501	61.6	10.9	6.43	5.964	24.975	22.692	58.7	36.0	47.7	25.0	1.91	0.48	47.3	11.3	36.4
76	190.5	0.505	61.5	10.9	6.44	6.042	24.956	22.655	58.6	36.0	47.7	25.1	1.90	0.48	47.3	11.3	36.4
77	190.3	0.510	61.5	10.8	6.44	6.119	24.918	22.600	58.6	36.0	47.7	25.1	1.90	0.48	47.3	11.3	36.4
78	190.2	0.514	61.5	10.8	6.45	6.196	24.899	22.563	58.5	36.0	47.7	25.1	1.90	0.48	47.2	11.3	36.4
79	190.2	0.519	61.5	10.9	6.45	6.274	24.899	22.544	58.5	36.0	47.6	25.1	1.90	0.48	47.2	11.3	36.4
80	190.1	0.524	61.5	10.8	6.46	6.351	24.880	22.507	58.5	36.0	47.6	25.1	1.90	0.48	47.2	11.3	36.4
81	190.2	0.529	61.5	10.8	6.47	6.438	24.899	22.503	58.5	36.0	47.6	25.1	1.90	0.48	47.2	11.3	36.4
82	190.2	0.533	61.4	10.8	6.47	6.506	24.899	22.486	58.4	36.0	47.6	25.2	1.89	0.48	47.2	11.2	36.4
83	190.2	0.538	61.4	10.8	6.48	6.602	24.899	22.462	58.4	36.0	47.6	25.2	1.89	0.48	47.2	11.2	36.4
84	190.1	0.542	61.4	10.8	6.48	6.670	24.880	22.428	58.4	36.0	47.6	25.2	1.89	0.48	47.2	11.2	36.4
85	190.3	0.547	61.4	10.8	6.49	6.747	24.918	22.444	58.4	36.0	47.6	25.2	1.89	0.48	47.2	11.2	36.4
86	190.4	0.552	61.4	10.8	6.49	6.825	24.937	22.442	58.4	36.0	47.6	25.2	1.89	0.48	47.2	11.2	36.4
87	190.2	0.556	61.4	10.8	6.50	6.902	24.899	22.388	58.3	36.0	47.6	25.2	1.89	0.48	47.2	11.2	36.4
88	190.2	0.561	61.4	10.7	6.50	6.979	24.899	22.368	58.3	36.0	47.6	25.2	1.89	0.48	47.1	11.2	36.4
89	190.6	0.565	61.4	10.7	6.51	7.057	24.975	22.420	58.4	36.0	47.7	25.2	1.89	0.48	47.2	11.2	36.4
90	190.3	0.570	61.4	10.7	6.51	7.134	24.918	22.347	58.3	36.0	47.6	25.2	1.89	0.48	47.1	11.2	36.4
91	190.1	0.574	61.3	10.7	6.52	7.211	24.880	22.293	58.3	36.0	47.6	25.3	1.88	0.48	47.1	11.1	36.4
92	190.4	0.580	61.3	10.7	6.53	7.298	24.937	22.324	58.3	36.0	47.6	25.3	1.88	0.48	47.1	11.2	36.4
93	190.1	0.584	61.3	10.6	6.53	7.376	24.880	22.252	58.2	36.0	47.6	25.3	1.88	0.48	47.1	11.1	36.4
94	190.2	0.589	61.3	10.6	6.54	7.453	24.899	22.250	58.2	36.0	47.6	25.3	1.88	0.48	47.1	11.1	36.4
95	190.4	0.593	61.3	10.6	6.54	7.530	24.937	22.266	58.2	36.0	47.6	25.3	1.88	0.48	47.1	11.1	36.5
96	190.3	0.598	61.2	10.6	6.55	7.617	24.918	22.227	58.2	36.0	47.6	25.4	1.88	0.48	47.1	11.1	36.5
97	189.9	0.603	61.2	10.6	6.55	7.695	24.861	22.155	58.1	36.0	47.5	25.4	1.87	0.48	47.0	11.1	36.4
98	189.9	0.607	61.2	10.6	6.56	7.762	24.861	22.138	58.1	36.0	47.5	25.4	1.87	0.48	47.0	11.1	36.4
99	189.7	0.611	61.2	10.6	6.56	7.840	24.823	22.084	58.0	36.0	47.4	25.4	1.87	0.48	47.0	11.0	36.4
100	189.8	0.617	61.2	10.6	6.57	7.927	24.842	22.080	58.0	36.0	47.4	25.4	1.87	0.48	47.0	11.0	36.4

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	189.5	0.621	61.2	10.6	6.58	8.004	24.785	22.009	58.0	36.0	47.4	25.4	1.87	0.48	47.0	11.0	36.4
102	189.3	0.626	61.2	10.5	6.58	8.081	24.747	21.955	57.9	36.0	47.4	25.4	1.86	0.48	46.9	11.0	36.4
103	189.6	0.630	61.2	10.6	6.59	8.159	24.804	21.988	57.9	36.0	47.4	25.4	1.87	0.48	47.0	11.0	36.4
104	189.9	0.635	61.2	10.5	6.59	8.236	24.861	22.021	58.0	36.0	47.5	25.4	1.87	0.48	47.0	11.0	36.5
105	190.1	0.639	61.2	10.5	6.60	8.313	24.880	22.019	58.0	36.0	47.5	25.4	1.87	0.48	47.0	11.0	36.4
106	189.6	0.645	61.1	10.5	6.60	8.400	24.804	21.928	57.9	36.0	47.4	25.5	1.86	0.48	46.9	11.0	36.4
107	190.4	0.649	61.2	10.5	6.61	8.478	24.937	22.030	58.0	36.0	47.5	25.4	1.87	0.48	47.0	11.0	36.5
108	190.6	0.654	61.1	10.5	6.62	8.555	24.975	22.045	58.0	36.0	47.5	25.5	1.87	0.48	47.0	11.0	36.5
109	191.1	0.658	61.1	10.5	6.62	8.632	25.050	22.095	58.1	36.0	47.6	25.5	1.87	0.47	47.0	11.0	36.5
110	191.3	0.663	61.1	10.4	6.63	8.710	25.088	22.111	58.1	36.0	47.6	25.5	1.87	0.47	47.0	11.1	36.6
111	191.0	0.667	61.0	10.4	6.63	8.787	25.032	22.039	58.0	36.0	47.6	25.6	1.86	0.47	47.0	11.0	36.6
112	190.5	0.672	61.0	10.4	6.64	8.864	24.956	21.951	57.9	36.0	47.5	25.6	1.86	0.47	46.9	11.0	36.5
113	190.5	0.677	61.0	10.4	6.64	8.942	24.956	21.932	57.9	36.0	47.5	25.6	1.86	0.47	46.9	11.0	36.6
114	190.6	0.681	61.0	10.4	6.65	9.019	24.975	21.929	57.9	36.0	47.5	25.6	1.86	0.47	46.9	11.0	36.6
115	190.7	0.686	61.0	10.4	6.66	9.106	24.994	21.925	57.9	36.0	47.5	25.6	1.86	0.47	46.9	11.0	36.6
116	190.7	0.691	61.0	10.3	6.66	9.183	24.994	21.906	57.9	36.0	47.5	25.6	1.85	0.47	46.9	11.0	36.6
117	191.3	0.695	61.0	10.3	6.67	9.261	25.088	21.972	57.9	36.0	47.6	25.6	1.86	0.47	46.9	11.0	36.6
118	190.9	0.700	61.0	10.3	6.67	9.338	25.013	21.884	57.8	36.0	47.5	25.6	1.85	0.47	46.9	10.9	36.6
119	191.0	0.705	60.9	10.3	6.68	9.415	25.032	21.882	57.8	36.0	47.6	25.7	1.85	0.47	46.9	10.9	36.6
120	190.9	0.709	60.9	10.3	6.68	9.493	25.013	21.845	57.8	36.0	47.5	25.7	1.85	0.47	46.9	10.9	36.6
121	191.1	0.714	60.9	10.2	6.69	9.570	25.050	21.860	57.8	36.0	47.6	25.7	1.85	0.47	46.9	10.9	36.7
122	191.1	0.718	60.9	10.3	6.70	9.647	25.050	21.841	57.8	36.0	47.5	25.7	1.85	0.47	46.9	10.9	36.6
123	191.4	0.723	60.9	10.2	6.70	9.734	25.107	21.871	57.8	36.0	47.6	25.7	1.85	0.47	46.9	10.9	36.7
124	191.6	0.728	60.9	10.2	6.71	9.812	25.126	21.868	57.8	36.0	47.6	25.7	1.85	0.47	46.9	10.9	36.7
125	191.8	0.733	60.8	10.2	6.71	9.889	25.164	21.883	57.8	36.0	47.6	25.8	1.85	0.47	46.9	10.9	36.7
126	192.1	0.737	60.8	10.2	6.72	9.966	25.221	21.915	57.9	36.0	47.7	25.8	1.85	0.46	46.9	11.0	36.8
127	192.4	0.742	60.8	10.2	6.73	10.044	25.259	21.929	57.9	36.0	47.7	25.8	1.85	0.46	46.9	11.0	36.8
128	192.8	0.746	60.8	10.1	6.73	10.121	25.335	21.978	57.9	36.0	47.8	25.8	1.85	0.46	46.9	11.0	36.8
129	193.2	0.751	60.8	10.2	6.74	10.198	25.392	22.009	58.0	36.0	47.8	25.8	1.85	0.46	47.0	11.0	36.8
130	193.3	0.756	60.8	10.2	6.74	10.285	25.410	22.004	58.0	36.0	47.8	25.8	1.85	0.46	47.0	11.0	36.8
131	193.3	0.760	60.7	10.1	6.75	10.363	25.410	21.985	57.9	36.0	47.9	25.9	1.85	0.46	47.0	11.0	36.9
132	193.3	0.765	60.7	10.1	6.75	10.440	25.410	21.965	57.9	36.0	47.8	25.9	1.85	0.46	46.9	11.0	36.9
133	193.6	0.770	60.7	10.1	6.76	10.517	25.467	21.996	58.0	36.0	47.9	25.9	1.85	0.46	47.0	11.0	36.9
134	194.0	0.774	60.7	10.0	6.77	10.595	25.524	22.027	58.0	36.0	47.9	25.9	1.85	0.46	47.0	11.0	36.9
135	194.0	0.779	60.6	10.0	6.77	10.672	25.524	22.008	58.0	36.0	48.0	26.0	1.85	0.45	47.0	11.0	37.0
136	194.2	0.784	60.6	10.0	6.78	10.759	25.562	22.019	58.0	36.0	48.0	26.0	1.85	0.45	47.0	11.0	37.0
137	194.0	0.788	60.6	10.0	6.78	10.836	25.524	21.966	57.9	36.0	48.0	26.0	1.84	0.45	46.9	11.0	37.0
138	194.3	0.793	60.6	10.0	6.79	10.914	25.581	21.996	58.0	36.0	48.0	26.0	1.85	0.45	47.0	11.0	37.0
139	194.2	0.798	60.6	9.9	6.80	10.991	25.562	21.960	57.9	36.0	48.0	26.0	1.84	0.45	46.9	11.0	37.0
140	194.3	0.802	60.6	9.9	6.80	11.068	25.581	21.957	57.9	36.0	48.0	26.0	1.84	0.45	46.9	11.0	37.0
141	194.8	0.807	60.5	9.9	6.81	11.146	25.657	22.004	58.0	36.0	48.1	26.1	1.84	0.45	47.0	11.0	37.1

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	195.0	0.811	60.5	9.8	6.81	11.223	25.695	22.018	58.0	36.0	48.1	26.1	1.84	0.45	47.0	11.0	37.1
143	194.9	0.816	60.4	9.8	6.82	11.300	25.676	21.982	57.9	36.0	48.1	26.2	1.84	0.45	47.0	11.0	37.2
144	195.3	0.820	60.5	9.8	6.83	11.378	25.752	22.029	58.0	36.0	48.1	26.1	1.84	0.45	47.0	11.0	37.1
145	195.2	0.825	60.4	9.8	6.83	11.455	25.733	21.992	58.0	36.0	48.2	26.2	1.84	0.45	47.0	11.0	37.2
146	195.2	0.830	60.4	9.8	6.84	11.532	25.733	21.972	57.9	36.0	48.2	26.2	1.84	0.44	46.9	11.0	37.2
147	195.4	0.834	60.4	9.8	6.84	11.610	25.771	21.986	57.9	36.0	48.2	26.2	1.84	0.44	47.0	11.0	37.2
148	195.9	0.839	60.4	9.8	6.85	11.687	25.846	22.033	58.0	36.0	48.2	26.2	1.84	0.44	47.0	11.0	37.2
149	196.0	0.843	60.4	9.7	6.86	11.764	25.865	22.030	58.0	36.0	48.3	26.2	1.84	0.44	47.0	11.0	37.3
150	196.1	0.848	60.4	9.7	6.86	11.842	25.884	22.026	58.0	36.0	48.3	26.2	1.84	0.44	47.0	11.0	37.3
151	196.5	0.853	60.3	9.7	6.87	11.929	25.941	22.054	58.0	36.0	48.3	26.3	1.84	0.44	47.0	11.0	37.3
152	196.6	0.858	60.3	9.6	6.88	12.006	25.960	22.051	58.0	36.0	48.4	26.3	1.84	0.44	47.0	11.0	37.3
153	196.7	0.862	60.3	9.6	6.88	12.083	25.979	22.047	58.0	36.0	48.4	26.3	1.84	0.44	47.0	11.0	37.3
154	196.7	0.867	60.2	9.6	6.89	12.161	25.979	22.027	58.0	36.0	48.4	26.4	1.84	0.44	47.0	11.0	37.4
155	197.3	0.871	60.2	9.6	6.89	12.238	26.074	22.090	58.1	36.0	48.5	26.4	1.84	0.43	47.0	11.0	37.4
156	197.4	0.876	60.2	9.6	6.90	12.325	26.093	22.084	58.0	36.0	48.5	26.4	1.84	0.43	47.0	11.0	37.4
157	197.3	0.880	60.2	9.6	6.91	12.393	26.074	22.050	58.0	36.0	48.4	26.4	1.84	0.43	47.0	11.0	37.4
158	197.2	0.885	60.0	9.4	6.91	12.470	26.055	22.013	58.0	36.0	48.6	26.6	1.83	0.43	47.0	11.0	37.6
159	197.5	0.890	60.2	9.5	6.92	12.557	26.112	22.040	58.0	36.0	48.5	26.4	1.83	0.43	47.0	11.0	37.5
160	196.9	0.895	60.2	9.5	6.92	12.634	26.017	21.937	57.9	36.0	48.4	26.4	1.83	0.43	46.9	11.0	37.4
161	196.8	0.900	59.8	9.1	6.93	12.721	25.998	21.898	57.9	36.0	48.7	26.8	1.82	0.42	46.9	10.9	37.8
162	197.5	0.904	60.1	9.4	6.94	12.799	26.112	21.977	57.9	36.0	48.5	26.5	1.83	0.43	46.9	11.0	37.5
163	198.1	0.909	60.1	9.4	6.94	12.876	26.206	22.039	58.0	36.0	48.6	26.5	1.83	0.43	47.0	11.0	37.5
164	199.2	0.914	60.2	9.5	6.95	12.953	26.396	22.184	58.1	36.0	48.6	26.4	1.84	0.43	47.1	11.1	37.5
165	199.9	0.917	60.1	9.5	6.96	13.021	26.510	22.265	58.2	36.0	48.7	26.5	1.84	0.43	47.1	11.1	37.6
166	200.0	0.923	60.1	9.4	6.96	13.108	26.528	22.258	58.2	36.0	48.8	26.5	1.84	0.42	47.1	11.1	37.6
167	200.3	0.927	60.0	9.4	6.97	13.185	26.566	22.271	58.2	36.0	48.8	26.6	1.84	0.42	47.1	11.1	37.7
168	200.7	0.932	60.1	9.4	6.97	13.263	26.642	22.316	58.3	36.0	48.8	26.5	1.84	0.42	47.1	11.2	37.7
169	200.8	0.936	60.1	9.4	6.98	13.340	26.661	22.312	58.3	36.0	48.8	26.5	1.84	0.42	47.1	11.2	37.7
170	201.1	0.941	59.9	9.3	6.99	13.417	26.699	22.324	58.3	36.0	49.0	26.7	1.84	0.42	47.1	11.2	37.8
171	201.6	0.945	60.0	9.3	6.99	13.495	26.794	22.385	58.3	36.0	49.0	26.6	1.84	0.42	47.2	11.2	37.8
172	201.6	0.950	60.0	9.3	7.00	13.572	26.794	22.365	58.3	36.0	49.0	26.6	1.84	0.42	47.1	11.2	37.8
173	202.0	0.955	60.0	9.3	7.01	13.649	26.851	22.393	58.4	36.0	49.0	26.6	1.84	0.42	47.2	11.2	37.8
174	202.1	0.959	59.9	9.3	7.01	13.727	26.870	22.389	58.3	36.0	49.1	26.7	1.84	0.41	47.2	11.2	37.9
175	202.6	0.964	59.9	9.2	7.02	13.804	26.945	22.433	58.4	36.0	49.2	26.7	1.84	0.41	47.2	11.2	37.9
176	202.7	0.968	59.8	9.2	7.02	13.881	26.964	22.429	58.4	36.0	49.2	26.8	1.84	0.41	47.2	11.2	38.0
177	202.8	0.973	59.8	9.2	7.03	13.959	26.983	22.424	58.4	36.0	49.2	26.8	1.84	0.41	47.2	11.2	38.0
178	202.7	0.977	59.8	9.2	7.04	14.036	26.964	22.387	58.3	36.0	49.1	26.8	1.84	0.41	47.2	11.2	38.0
179	202.9	0.982	59.8	9.2	7.04	14.113	27.002	22.399	58.4	36.0	49.2	26.8	1.84	0.41	47.2	11.2	38.0
180	203.0	0.987	59.8	9.2	7.05	14.200	27.021	22.391	58.4	36.0	49.2	26.8	1.84	0.41	47.2	11.2	38.0
181	203.8	0.992	59.8	9.2	7.06	14.278	27.154	22.484	58.4	36.0	49.3	26.8	1.84	0.41	47.2	11.2	38.0
182	203.9	0.996	59.8	9.2	7.06	14.355	27.173	22.479	58.4	36.0	49.2	26.8	1.84	0.41	47.2	11.2	38.0

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	204.0	1.001	59.8	9.2	7.07	14.432	27.192	22.475	58.4	36.0	49.2	26.8	1.84	0.41	47.2	11.2	38.0
184	203.9	1.005	59.8	9.2	7.08	14.510	27.173	22.437	58.4	36.0	49.2	26.8	1.84	0.41	47.2	11.2	38.0
185	204.4	1.010	59.8	9.1	7.08	14.587	27.249	22.481	58.4	36.0	49.3	26.8	1.84	0.41	47.2	11.2	38.1
186	204.3	1.015	59.8	9.1	7.09	14.665	27.230	22.444	58.4	36.0	49.3	26.8	1.84	0.41	47.2	11.2	38.1
187	204.4	1.019	59.8	9.2	7.10	14.742	27.249	22.439	58.4	36.0	49.2	26.8	1.84	0.41	47.2	11.2	38.0
188	204.5	1.024	59.8	9.1	7.10	14.829	27.267	22.431	58.4	36.0	49.3	26.8	1.84	0.41	47.2	11.2	38.1
189	204.7	1.029	59.7	9.1	7.11	14.906	27.305	22.442	58.4	36.0	49.3	26.9	1.83	0.40	47.2	11.2	38.1
190	205.0	1.033	59.7	9.1	7.12	14.984	27.343	22.454	58.4	36.0	49.3	26.9	1.84	0.40	47.2	11.2	38.1
191	205.3	1.038	59.7	9.0	7.12	15.061	27.400	22.481	58.4	36.0	49.4	26.9	1.84	0.40	47.2	11.2	38.2
192	205.5	1.043	59.7	9.1	7.13	15.138	27.438	22.492	58.5	36.0	49.4	26.9	1.84	0.40	47.2	11.2	38.1
193	205.5	1.047	59.7	9.1	7.14	15.216	27.438	22.470	58.4	36.0	49.4	26.9	1.84	0.40	47.2	11.2	38.1
194	205.7	1.052	59.6	9.0	7.14	15.293	27.457	22.465	58.4	36.0	49.4	27.0	1.83	0.40	47.2	11.2	38.2
195	206.0	1.056	59.6	9.0	7.15	15.370	27.514	22.492	58.5	36.0	49.5	27.0	1.83	0.40	47.2	11.2	38.2
196	206.3	1.061	59.6	9.0	7.15	15.448	27.571	22.519	58.5	36.0	49.5	27.0	1.83	0.40	47.2	11.3	38.3
197	206.5	1.065	59.6	9.0	7.16	15.525	27.590	22.514	58.5	36.0	49.5	27.0	1.84	0.40	47.2	11.3	38.2
198	206.9	1.070	59.6	9.0	7.17	15.602	27.665	22.556	58.5	36.0	49.6	27.0	1.84	0.40	47.2	11.3	38.3
199	207.1	1.075	59.6	9.0	7.17	15.680	27.703	22.567	58.5	36.0	49.6	27.0	1.84	0.40	47.2	11.3	38.3
200	207.1	1.079	59.6	8.9	7.18	15.757	27.703	22.545	58.5	36.0	49.6	27.0	1.83	0.40	47.2	11.3	38.3
201	207.0	1.084	59.6	8.9	7.19	15.834	27.684	22.508	58.5	36.0	49.5	27.0	1.83	0.40	47.2	11.3	38.3
202	207.3	1.088	59.6	8.9	7.19	15.912	27.722	22.519	58.5	36.0	49.6	27.0	1.83	0.40	47.2	11.3	38.3
203	207.4	1.093	59.6	8.9	7.20	15.999	27.741	22.510	58.5	36.0	49.6	27.0	1.83	0.40	47.2	11.3	38.3
204	207.3	1.098	59.5	8.9	7.21	16.076	27.722	22.473	58.4	36.0	49.6	27.1	1.83	0.40	47.2	11.2	38.3
205	207.4	1.102	59.5	8.9	7.22	16.153	27.741	22.467	58.4	36.0	49.5	27.1	1.83	0.40	47.2	11.2	38.3
206	207.1	1.107	59.5	8.8	7.22	16.231	27.703	22.414	58.4	36.0	49.5	27.1	1.83	0.39	47.2	11.2	38.3
207	207.5	1.112	59.5	8.9	7.23	16.308	27.760	22.440	58.4	36.0	49.5	27.1	1.83	0.40	47.2	11.2	38.3
208	207.4	1.116	59.5	8.8	7.24	16.385	27.741	22.403	58.4	36.0	49.5	27.1	1.83	0.39	47.2	11.2	38.3
209	207.9	1.121	59.4	8.8	7.24	16.463	27.836	22.461	58.4	36.0	49.6	27.2	1.83	0.39	47.2	11.2	38.4
210	208.1	1.125	59.4	8.8	7.25	16.540	27.855	22.455	58.4	36.0	49.6	27.2	1.83	0.39	47.2	11.2	38.4
211	208.5	1.130	59.4	8.8	7.26	16.617	27.931	22.497	58.5	36.0	49.7	27.2	1.83	0.39	47.2	11.2	38.4
212	208.7	1.134	59.4	8.8	7.26	16.695	27.969	22.507	58.5	36.0	49.7	27.2	1.83	0.39	47.2	11.3	38.5
213	208.9	1.140	59.4	8.8	7.27	16.782	27.988	22.498	58.5	36.0	49.7	27.2	1.83	0.39	47.2	11.2	38.4
214	208.6	1.144	59.4	8.8	7.28	16.859	27.950	22.445	58.4	36.0	49.6	27.2	1.83	0.39	47.2	11.2	38.4
215	208.6	1.149	59.4	8.7	7.28	16.936	27.950	22.423	58.4	36.0	49.7	27.2	1.82	0.39	47.2	11.2	38.5
216	209.8	1.153	59.3	8.7	7.29	17.014	28.139	22.559	58.5	36.0	49.8	27.3	1.83	0.38	47.2	11.3	38.6
217	210.4	1.158	59.3	8.7	7.30	17.091	28.234	22.616	58.6	36.0	49.9	27.3	1.83	0.38	47.3	11.3	38.6
218	211.4	1.162	59.3	8.7	7.30	17.168	28.404	22.735	58.7	36.0	50.0	27.3	1.83	0.38	47.3	11.4	38.6
219	212.1	1.167	59.3	8.6	7.31	17.246	28.518	22.807	58.8	36.0	50.1	27.3	1.83	0.38	47.4	11.4	38.7
220	212.4	1.172	59.3	8.6	7.32	17.323	28.575	22.832	58.8	36.0	50.2	27.3	1.84	0.38	47.4	11.4	38.7
221	212.1	1.176	59.3	8.6	7.32	17.400	28.518	22.763	58.7	36.0	50.1	27.3	1.83	0.38	47.3	11.4	38.7
222	212.4	1.181	59.3	8.6	7.33	17.487	28.575	22.785	58.7	36.0	50.1	27.3	1.83	0.38	47.4	11.4	38.7
223	213.1	1.185	59.2	8.6	7.34	17.555	28.689	22.860	58.8	36.0	50.2	27.4	1.84	0.38	47.4	11.4	38.8

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	213.2	1.190	59.2	8.6	7.35	17.642	28.708	22.850	58.8	36.0	50.3	27.4	1.83	0.37	47.4	11.4	38.8
225	213.3	1.195	59.2	8.6	7.35	17.719	28.727	22.844	58.8	36.0	50.2	27.4	1.83	0.37	47.4	11.4	38.8
226	213.4	1.200	59.2	8.6	7.36	17.806	28.745	22.834	58.8	36.0	50.2	27.4	1.83	0.37	47.4	11.4	38.8
227	213.9	1.204	59.2	8.6	7.37	17.874	28.821	22.877	58.8	36.0	50.2	27.4	1.84	0.38	47.4	11.4	38.8
228	214.4	1.209	59.2	8.6	7.37	17.951	28.897	22.917	58.9	36.0	50.3	27.4	1.84	0.37	47.4	11.5	38.9
229	214.2	1.213	59.2	8.5	7.38	18.029	28.878	22.879	58.8	36.0	50.3	27.4	1.83	0.37	47.4	11.4	38.9
230	214.1	1.218	59.2	8.5	7.39	18.116	28.859	22.838	58.8	36.0	50.3	27.4	1.83	0.37	47.4	11.4	38.9
231	214.1	1.222	59.1	8.5	7.39	18.183	28.859	22.819	58.8	36.0	50.3	27.5	1.83	0.37	47.4	11.4	38.9
232	214.5	1.227	59.1	8.5	7.40	18.261	28.916	22.843	58.8	36.0	50.3	27.5	1.83	0.37	47.4	11.4	38.9
233	214.7	1.232	59.1	8.4	7.41	18.338	28.954	22.852	58.8	36.0	50.4	27.5	1.83	0.37	47.4	11.4	38.9
234	215.1	1.237	59.1	8.4	7.42	18.425	29.011	22.873	58.8	36.0	50.4	27.5	1.83	0.37	47.4	11.4	39.0
235	215.4	1.241	59.0	8.4	7.42	18.502	29.068	22.897	58.9	36.0	50.5	27.6	1.83	0.37	47.4	11.4	39.0
236	215.6	1.246	59.0	8.4	7.43	18.580	29.106	22.905	58.9	36.0	50.5	27.6	1.83	0.37	47.4	11.5	39.0
237	215.5	1.250	59.0	8.4	7.44	18.657	29.087	22.867	58.8	36.0	50.4	27.6	1.83	0.37	47.4	11.4	39.0
238	216.0	1.255	59.0	8.4	7.44	18.734	29.162	22.906	58.9	36.0	50.5	27.6	1.83	0.37	47.4	11.5	39.0
239	215.9	1.259	59.0	8.4	7.45	18.812	29.143	22.868	58.8	36.0	50.5	27.6	1.83	0.37	47.4	11.4	39.0
240	216.2	1.264	59.0	8.4	7.46	18.889	29.200	22.892	58.9	36.0	50.5	27.6	1.83	0.37	47.4	11.4	39.0
241	216.3	1.269	59.0	8.3	7.47	18.966	29.219	22.885	58.8	36.0	50.5	27.6	1.83	0.36	47.4	11.4	39.1
242	216.7	1.273	59.0	8.3	7.47	19.044	29.276	22.908	58.9	36.0	50.5	27.6	1.83	0.36	47.4	11.5	39.1
243	216.7	1.278	58.9	8.3	7.48	19.121	29.276	22.886	58.8	36.0	50.6	27.7	1.83	0.36	47.4	11.4	39.1
244	216.7	1.282	58.9	8.2	7.49	19.198	29.276	22.863	58.8	36.0	50.6	27.7	1.82	0.36	47.4	11.4	39.2
245	217.0	1.287	58.9	8.2	7.49	19.276	29.333	22.886	58.8	36.0	50.6	27.7	1.83	0.36	47.4	11.4	39.2
246	217.1	1.291	58.8	8.2	7.50	19.353	29.352	22.879	58.8	36.0	50.6	27.8	1.82	0.36	47.4	11.4	39.2
247	217.2	1.296	58.9	8.2	7.51	19.430	29.371	22.871	58.8	36.0	50.6	27.7	1.83	0.36	47.4	11.4	39.2
248	217.1	1.301	58.8	8.2	7.52	19.508	29.352	22.833	58.8	36.0	50.6	27.8	1.82	0.36	47.4	11.4	39.2
249	217.7	1.305	58.8	8.2	7.52	19.585	29.447	22.887	58.8	36.0	50.7	27.8	1.82	0.36	47.4	11.4	39.2
250	217.6	1.310	58.8	8.1	7.53	19.672	29.428	22.846	58.8	36.0	50.7	27.8	1.82	0.36	47.4	11.4	39.3
251	217.6	1.315	58.8	8.1	7.54	19.749	29.428	22.823	58.8	36.0	50.7	27.8	1.82	0.36	47.4	11.4	39.3
252	217.9	1.319	58.7	8.1	7.54	19.817	29.484	22.849	58.8	36.0	50.7	27.9	1.82	0.35	47.4	11.4	39.3
253	218.0	1.324	58.7	8.0	7.55	19.904	29.503	22.838	58.8	36.0	50.8	27.9	1.82	0.35	47.4	11.4	39.3
254	218.4	1.329	58.7	8.0	7.56	19.981	29.560	22.861	58.8	36.0	50.8	27.9	1.82	0.35	47.4	11.4	39.4
255	218.4	1.330	58.7	8.0	7.56	20.001	29.560	22.855	58.8	36.0	50.8	27.9	1.82	0.35	47.4	11.4	39.3

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)

Photographs of Sample Failures

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. U-2412 B

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project 39406.1.1 **County** GUILFORD **Owner**

Date: Sampled 3/1/13 **Received** 12/6/13 **Reported** 12/16/13

Sampled from RDWY **By** N ROBERSON

Submitted by M HURT 1995 **Standard Specifications**

788691 TO 788691
12/19/13

TEST RESULTS

Proj. Sample No.		ST-25 # 1					
Lab. Sample No.		788691					
Retained #4 Sieve	%	-					
Passing #10 Sieve	%	100					
Passing #40 Sieve	%	95					
Passing #200 Sieve	%	65					

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	12.9					
Fine Sand Ret - #270	%	30.9					
Silt 0.05 - 0.005 mm	%	44.0					
Clay < 0.005 mm	%	12.1					
T-#		T-5790					
Specific Gravity		2.913					

L. L.		34					
P. I.		6					
AASHTO Classification		A-4(3)					
Station		403+45					
Offset		3 FT RT					
Alignment		L					
Location							
Depth (Ft)		44.6 FT					
	to	45.6 FT					
Final Moisture Content	%	16.79					

cc: N ROBERSON
SURIYATI BS

Soils Engineer

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	14.91	17.72	**Plastic Limits:**	0	
Dry Density (pcf):	116.32	121.63	**Plasticity Index (%):**	0	
Saturation (%):	74.89	100.89			
Void Ratio:	0.5871	0.5177	**Specific Gravity:**	2.962	Measured

Soil Description:	Tannish orange colored silt		
Project Number:	39406.1.1	**Depth:** 44.6 - 45.6 ft.	**Remarks:**
Sample Number:	ST-25	**Boring Number:**	Solid Height is 0.63068 inches; Blows/ft = NA
Project:	U-2412B		
Client:	T-5790		
Location:	Guilford County (Sta. 403+45)		

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	14.91	17.72	**Plastic Limits:**	0	
Dry Density (pcf):	116.32	121.63	**Plasticity Index (%):**	0	
Saturation (%):	74.89	100.89			
Void Ratio:	0.5871	0.5177	**Specific Gravity:**	2.962	Measured

Soil Description: Tannish orange colored silt

Project Number: 39406.1.1 **Depth:** 44.6 - 45.6 ft.

Sample Number: ST-25 **Boring Number:**

Project: U-2412B

Client: T-5790

Location: Guilford County (Sta. 403+45)

Remarks: Solid Height is 0.63068 inches; Blows/ft = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	14.91	17.72	**Plastic Limits:**	0	
Dry Density (pcf):	116.32	121.63	**Plasticity Index (%):**	0	
Saturation (%):	74.89	100.89			
Void Ratio:	0.5871	0.5177	**Specific Gravity:**	2.962	Measured

Soil Description: Tannish orange colored silt

Project Number: 39406.1.1 **Depth:** 44.6 - 45.6 ft.

Sample Number: ST-25 **Boring Number:**

Project: U-2412B

Client: T-5790

Location: Guilford County (Sta. 403+45)

Remarks: Solid Height is 0.63068 inches; Blows/ft = NA

Consolidation Test Results
Summary

Project: U-2412B
Location: Guilford County (Sta. 403+45)
Job Number: T-5790

Project Number: 39406.1.1

Sample Number: ST-25
Boring Number:
Depth: 44.6 - 45.6 ft.
Sample Type: Undisturbed

Soil Description:
Tannish orange colored silt
Remarks:
Solid Height is 0.63068 inches; Blows/ft = NA

Test Number:
Test Date:

Index	Load Sequence (tsf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	0.9999	0.3699	0.00	0.5871	0.000		0.000	
1	0.031	0.0008	0.9991	0.3691	0.08	0.5858	0.069		11161.961	
2	0.063	0.0020	0.9979	0.3679	0.20	0.5839	0.111		6941.922	
3	0.125	0.0043	0.9956	0.3656	0.43	0.5802	0.175		4382.888	
4	0.250	0.0083	0.9916	0.3616	0.83	0.5739	0.166		4583.461	
5	0.500	0.0137	0.9862	0.3562	1.37	0.5653	0.156		4824.297	
6	1.000	0.0209	0.9790	0.3490	2.09	0.5539	0.160		4635.260	
7	2.000	0.0281	0.9718	0.3418	2.81	0.5425	0.132		5536.158	
8	4.000	0.0388	0.9611	0.3311	3.88	0.5255	0.106		6768.647	
9	2.000	0.0370	0.9629	0.3329	3.70	0.5283	0.000		0.000	
10	1.000	0.0343	0.9656	0.3356	3.43	0.5326	0.000		0.000	
11	0.500	0.0308	0.9691	0.3391	3.08	0.5382	0.000		0.000	
12	1.000	0.0321	0.9678	0.3378	3.21	0.5361	0.000		0.000	
13	2.000	0.0350	0.9649	0.3349	3.50	0.5315	0.000		0.000	
14	4.000	0.0399	0.9600	0.3300	3.99	0.5237	0.000		0.000	
15	8.000	0.0535	0.9464	0.3164	5.35	0.5021	0.111		6243.889	
16	16.000	0.0758	0.9241	0.2941	7.58	0.4668	0.100		6614.562	
17	4.000	0.0705	0.9294	0.2994	7.05	0.4752	0.000		0.000	
18	0.016	0.0437	0.9562	0.3262	4.37	0.5177	0.000		0.000	

Tested By:

Checked By:

Consolidation Test
Consolidation Specimen Information

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County (Sta. 403+45)
Job Number: T-5790 **Test Date:**

Sample Number: ST-25 **Soil Description:**
Boring Number: Tannish orange colored silt
Depth: 44.6 - 45.6 ft. **Remarks:**
Sample Type: Undisturbed Solid Height is 0.63068 inches; Blows/ft = NA

Test Number:
Liquid Limit: 0.0000 **Initial Void Ratio:** 0.5871 **Initial Height (in):** 0.9999
Plastic Limit: 0.0000 **Plasticity Index (%):** 0.0000 **Initial Diameter (in):** 2.4998
Specific Gravity: 2.9620 Measured **Weight of Ring (g):** 106.4900

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	172.18	176.39
Dry Soil + Container (g)	149.84	149.84
Weight of Container (g)	0.00	0.00
Moisture Content (%)	14.91	17.72
Void Ratio	0.5871	0.5177
Saturation (%)	74.89	100.89
Dry Density (pcf)	116.32	121.63

Tested By: **Checked By:**

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Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date

Tested By:

Effective Stress at Maximum Deviator Stress Criterion

Deviator Stress Vs. Axial Strain

Initial	Specimen A	B	C	D
Water Content (%)	15.6	15.6	15.6	
Dry Density (pcf)	123.6	126.1	125.8	
Saturation (%)	96.53	102.84	102.05	
Void Ratio	0.467	0.438	0.441	
Diameter (in)	2.857	2.915	3.042	
Height (in)	6.072	5.715	5.263	
Specific Gravity	2.91	2.91	2.91	
Liquid Limit	0	0	0	
Plastic Limit	0	0	0	
After Consolidation	**A**	**B**	**C**	**D**
B-Value	0.00	0.00	0.00	
Water Content (%)	16.1	16.0	15.9	
Dry Density (pcf)	126.69	127.11	126.52	
Saturation (%)	100.00	100.00	100.00	
Void Ratio	0.306	0.301	0.308	
Effective Stress (psi)	9.0	18.0	36.0	
Back Press. (psi)	50.5	50.5	50.4	
Rate of Strain	0.009	0.009	0.009	

Maximium Deviator Stress Criterion		After Shear	A	B	C	D
C (psi)	0.0	σ'1 at Failure (psi)	55.54	52.76	90.03	
C' (psi)	0.0	σ'3 at Failure (psi)	8.28	19.41	43.49	
Ø (deg)	0.0					
Ø' (deg)	0.0					

		A	B	C	D
Project:	U-2412B	N/A	N/A	N/A	N/A
Location:	Guilford County (Sta. 403+45)				
Project Number:	39406.1.1 (T-5790)				
Boring Number:					
Sample Number:	ST-25				
Depth:	44.6 - 45.6 ft				
Sample Type:	Undisturbed	Failure Photographs			
Description:	Tan colored silt				
Test Type	Consolidated Undrained				
Remarks	Multi-Stage. 25° shear plane.				

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Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date:

Tested By:

Deviator Stress vs. Axial Strain

Principal Stress Ratio vs. Axial Strain

Change in Pore Pressure vs. Axial Strain
Change in Pore Pressure (psi)
9.0
4.0
-1.0
-6.0
-11.0
-16.0
-21.0
-26.0
-31.0
0.000
5.000
10.000
15.000
20.000
25.000
Axial Strain (%)
Specimen A
Specimen B
Specimen C
Specimen D

Mohr Stress Circles at Maximum Deviator Stress Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at Maximum Principal Stress Ratio Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at 15% Axial Strain Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)
Q (psi)
P' (psi)
100.0
80.0
60.0
40.0
20.0
0.0
0.0
20.0
40.0
60.0
80.0
100.0
Specimen A
Specimen B
Specimen C
Specimen D
Tangent Line

Stress Paths (Total)
(C' = 0.0 Ø' = 0.0)
Q (psi)
P (psi)
80.0
60.0
40.0
20.0
0.0
0.0
20.0
40.0
60.0
80.0

Specimen A Shear Data

CU Triaxial Test

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File Location
T-5790.HSD

Project Information

Project No. 39406.1.1 (T-5790)
Project Name: U-2412B
Client: T-5790
Sample Location: Guilford County (Sta. 403+45)
Sample Description: Tan colored silt
Remarks: 25° shear plane.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.9130001
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.856	2.833	
Height (in)	6.072	6.026	
Weight (grams)	1460.00		1475.00
Moisture (%)	15.60		16.79
Dry Density (pcf)	123.64	126.69	
Saturation (%)	96.53	100.00	
Void Ratio	0.467	0.306	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 59.500
Effective Confining Stress (psi): 9.0
Corrected Peak Deviator Stress (psi): 47.265 at reading number: 48

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	28.5	0.084	50.5	0.0	6.30	0.000	0.000	0.000	9.0	9.0	9.0	9.0	1.00	0.00	9.0	0.0	9.0
1	50.1	0.088	51.5	1.0	6.31	0.076	3.420	3.388	12.4	9.0	11.4	8.0	1.42	0.30	10.7	1.7	9.7
2	58.2	0.093	52.1	1.6	6.31	0.152	4.711	4.645	13.6	9.0	12.0	7.4	1.63	0.35	11.3	2.3	9.7
3	64.3	0.098	52.6	2.1	6.32	0.227	5.675	5.574	14.6	9.0	12.5	6.9	1.81	0.37	11.8	2.8	9.7
4	69.9	0.103	52.9	2.5	6.32	0.313	6.566	6.425	15.4	9.0	13.0	6.6	1.98	0.38	12.2	3.2	9.8
5	75.3	0.108	53.2	2.7	6.33	0.398	7.421	7.237	16.2	9.0	13.5	6.3	2.15	0.38	12.6	3.6	9.9
6	80.5	0.112	53.5	3.0	6.33	0.474	8.240	8.017	17.0	9.0	14.0	6.0	2.33	0.37	13.0	4.0	10.0
7	85.3	0.118	53.7	3.2	6.34	0.559	9.004	8.737	17.7	9.0	14.5	5.8	2.51	0.37	13.4	4.4	10.2
8	90.0	0.123	53.9	3.4	6.34	0.644	9.750	9.437	18.4	9.0	15.0	5.6	2.69	0.36	13.7	4.7	10.3
9	94.8	0.127	54.1	3.6	6.35	0.720	10.514	10.158	19.2	9.0	15.6	5.4	2.87	0.35	14.1	5.1	10.5
10	99.7	0.132	54.2	3.7	6.35	0.805	11.296	10.892	19.9	9.0	16.2	5.3	3.05	0.34	14.4	5.4	10.8
11	104.7	0.137	54.3	3.8	6.36	0.881	12.078	11.629	20.6	9.0	16.9	5.2	3.23	0.32	14.8	5.8	11.0
12	109.7	0.142	54.4	3.9	6.36	0.966	12.878	12.379	21.4	9.0	17.5	5.1	3.41	0.31	15.2	6.2	11.3
13	115.0	0.147	54.4	3.9	6.37	1.042	13.715	13.167	22.2	9.0	18.2	5.1	3.60	0.30	15.6	6.6	11.6
14	120.1	0.152	54.5	4.0	6.37	1.127	14.534	13.932	22.9	9.0	18.9	5.0	3.80	0.29	16.0	7.0	11.9
15	126.1	0.156	54.6	4.1	6.38	1.203	15.479	14.826	23.8	9.0	19.8	4.9	4.00	0.27	16.4	7.4	12.4
16	131.9	0.162	54.6	4.1	6.38	1.289	16.407	15.695	24.7	9.0	20.6	4.9	4.20	0.26	16.8	7.8	12.8
17	138.1	0.166	54.6	4.1	6.39	1.364	17.389	16.622	25.6	9.0	21.5	4.9	4.39	0.25	17.3	8.3	13.2
18	144.1	0.171	54.6	4.1	6.39	1.450	18.335	17.507	26.5	9.0	22.4	4.9	4.57	0.23	17.8	8.8	13.7

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	150.6	0.176	54.6	4.1	6.40	1.525	19.372	18.484	27.5	9.0	23.3	4.9	4.80	0.22	18.2	9.2	14.1
20	157.5	0.180	54.6	4.1	6.40	1.601	20.463	19.514	28.5	9.0	24.4	4.9	5.01	0.21	18.8	9.8	14.6
21	164.4	0.185	54.6	4.1	6.41	1.677	21.555	20.542	29.5	9.0	25.4	4.9	5.19	0.20	19.3	10.3	15.2
22	171.8	0.190	54.6	4.1	6.42	1.762	22.737	21.652	30.7	9.0	26.6	4.9	5.38	0.19	19.8	10.8	15.8
23	179.6	0.195	54.5	4.0	6.42	1.838	23.974	22.820	31.8	9.0	27.8	5.0	5.58	0.18	20.4	11.4	16.4
24	187.4	0.200	54.5	4.0	6.43	1.923	25.211	23.979	33.0	9.0	29.0	5.0	5.77	0.17	21.0	12.0	17.0
25	196.0	0.204	54.4	3.9	6.43	1.999	26.575	25.268	34.3	9.0	30.3	5.1	5.99	0.16	21.6	12.6	17.7
26	204.3	0.209	54.4	3.9	6.44	2.075	27.885	26.530	35.5	9.0	31.6	5.1	6.20	0.15	22.3	13.3	18.4
27	213.6	0.214	54.3	3.8	6.44	2.151	29.358	27.950	37.0	9.0	33.1	5.2	6.39	0.14	23.0	14.0	19.2
28	222.0	0.218	54.2	3.7	6.45	2.226	30.704	29.244	38.2	9.0	34.5	5.3	6.55	0.13	23.6	14.6	19.9
29	231.0	0.223	54.1	3.6	6.45	2.302	32.123	30.607	39.6	9.0	36.0	5.4	6.68	0.12	24.3	15.3	20.7
30	240.2	0.227	54.0	3.5	6.46	2.378	33.578	32.003	41.0	9.0	37.5	5.5	6.81	0.11	25.0	16.0	21.5
31	249.4	0.232	53.9	3.4	6.46	2.454	35.052	33.415	42.4	9.0	39.0	5.6	6.98	0.10	25.7	16.7	22.3
32	258.3	0.237	53.8	3.3	6.47	2.539	36.452	34.750	43.8	9.0	40.5	5.7	7.09	0.09	26.4	17.4	23.1
33	267.2	0.242	53.7	3.2	6.47	2.615	37.871	36.104	45.1	9.0	41.9	5.8	7.20	0.09	27.1	18.1	23.9
34	274.8	0.246	53.5	3.0	6.48	2.691	39.072	37.244	46.2	9.0	43.2	6.0	7.22	0.08	27.6	18.6	24.6
35	281.9	0.251	53.4	2.9	6.48	2.766	40.199	38.311	47.3	9.0	44.5	6.1	7.23	0.07	28.2	19.2	25.3
36	288.3	0.255	53.2	2.7	6.49	2.842	41.218	39.270	48.3	9.0	45.6	6.3	7.22	0.07	28.6	19.6	25.9
37	293.3	0.260	53.0	2.5	6.49	2.928	42.018	40.012	49.0	9.0	46.5	6.5	7.15	0.06	29.0	20.0	26.5
38	299.5	0.265	52.8	2.3	6.50	3.003	43.001	40.932	49.9	9.0	47.6	6.7	7.14	0.06	29.5	20.5	27.1
39	306.1	0.269	52.7	2.2	6.50	3.079	44.037	41.905	50.9	9.0	48.7	6.8	7.13	0.05	30.0	21.0	27.8
40	311.3	0.275	52.5	2.0	6.51	3.164	44.874	42.677	51.7	9.0	49.7	7.0	7.07	0.05	30.3	21.3	28.4
41	316.7	0.279	52.3	1.8	6.51	3.231	45.729	43.475	52.5	9.0	50.7	7.2	7.01	0.04	30.7	21.7	29.0
42	321.3	0.284	52.1	1.6	6.52	3.316	46.457	44.139	53.1	9.0	51.6	7.4	6.94	0.04	31.1	22.1	29.5
43	326.0	0.288	51.9	1.4	6.52	3.392	47.202	44.825	53.8	9.0	52.4	7.6	6.90	0.03	31.4	22.4	30.0
44	330.5	0.293	51.7	1.2	6.53	3.468	47.912	45.474	54.5	9.0	53.2	7.8	6.86	0.03	31.7	22.7	30.5
45	334.5	0.297	51.6	1.1	6.53	3.543	48.548	46.051	55.1	9.0	54.0	7.9	6.82	0.02	32.0	23.0	30.9
46	338.4	0.303	51.4	0.9	6.54	3.629	49.167	46.606	55.6	9.0	54.7	8.1	6.77	0.02	32.3	23.3	31.4
47	342.1	0.307	51.3	0.8	6.54	3.704	49.749	47.129	56.1	9.0	55.4	8.2	6.72	0.02	32.6	23.6	31.8
48	343.0	0.308	51.2	0.7	6.55	3.714	49.894	47.265	56.3	9.0	55.5	8.3	6.71	0.02	32.6	23.6	31.9

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)

Specimen B Shear Data

CU Triaxial Test

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File Location
T-5790.HSD

Project Information

Project No. 39406.1.1 (T-5790)
Project Name: U-2412B
Client: T-5790
Sample Location: Guilford County (Sta. 403+45)
Sample Description: Same as specimen A
Remarks: Same as Specimen A

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.9130001
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.915	2.906	
Height (in)	5.715	5.706	
Weight (grams)	1460.00		1475.00
Moisture (%)	15.60		16.79
Dry Density (pcf)	126.12	127.11	
Saturation (%)	102.84	100.00	
Void Ratio	0.438	0.301	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 68.500
Effective Confining Stress (psi): 18.0
Corrected Peak Deviator Stress (psi): 33.350 at reading number: 27

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	334.0	0.320	50.5	0.0	6.63	0.000	0.000	0.000	18.0	18.0	18.0	18.0	1.00	0.00	18.0	0.0	18.0
1	410.4	0.324	52.2	1.7	6.64	0.070	11.509	11.475	29.5	18.0	27.8	16.3	1.70	0.15	23.8	5.7	22.1
2	433.5	0.329	52.4	2.0	6.64	0.150	15.000	14.921	33.0	18.0	31.0	16.1	1.93	0.13	25.5	7.5	23.5
3	449.0	0.333	52.6	2.1	6.65	0.230	17.333	17.206	35.2	18.0	33.1	15.9	2.08	0.12	26.6	8.6	24.5
4	461.9	0.338	52.8	2.3	6.65	0.310	19.269	19.092	37.1	18.0	34.8	15.7	2.22	0.12	27.6	9.5	25.3
5	471.5	0.343	52.9	2.5	6.66	0.390	20.720	20.492	38.5	18.0	36.1	15.6	2.31	0.12	28.3	10.2	25.8
6	480.1	0.348	52.8	2.4	6.67	0.480	22.017	21.729	39.8	18.0	37.4	15.7	2.39	0.11	28.9	10.9	26.5
7	488.0	0.352	52.5	2.0	6.67	0.550	23.209	22.873	40.9	18.0	38.9	16.0	2.43	0.09	29.5	11.4	27.4
8	494.8	0.356	52.1	1.6	6.68	0.630	24.229	23.837	41.9	18.0	40.2	16.4	2.45	0.07	30.0	11.9	28.3
9	500.8	0.361	52.0	1.5	6.68	0.710	25.144	24.697	42.7	18.0	41.2	16.5	2.50	0.06	30.4	12.3	28.9
10	506.3	0.365	51.9	1.5	6.69	0.790	25.974	25.470	43.5	18.0	42.0	16.6	2.54	0.06	30.8	12.7	29.3
11	512.5	0.370	51.9	1.4	6.69	0.870	26.907	26.343	44.4	18.0	42.9	16.6	2.59	0.05	31.2	13.2	29.8
12	517.9	0.375	51.8	1.4	6.70	0.951	27.719	27.096	45.1	18.0	43.8	16.7	2.62	0.05	31.6	13.5	30.2
13	522.7	0.379	51.3	0.9	6.70	1.031	28.445	27.762	45.8	18.0	44.9	17.2	2.62	0.03	31.9	13.9	31.0
14	527.0	0.384	51.1	0.6	6.71	1.111	29.085	28.341	46.4	18.0	45.7	17.4	2.63	0.02	32.2	14.2	31.6
15	531.6	0.388	50.9	0.5	6.71	1.191	29.776	28.971	47.0	18.0	46.5	17.6	2.65	0.02	32.5	14.5	32.0
16	535.7	0.393	50.8	0.4	6.72	1.271	30.398	29.531	47.6	18.0	47.2	17.7	2.67	0.01	32.8	14.8	32.4
17	539.7	0.397	50.7	0.2	6.72	1.351	31.003	30.073	48.1	18.0	47.9	17.8	2.69	0.01	33.1	15.0	32.8
18	543.7	0.402	50.6	0.1	6.73	1.431	31.608	30.614	48.7	18.0	48.5	17.9	2.71	0.00	33.3	15.3	33.2

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	546.3	0.407	50.3	-0.2	6.74	1.511	32.005	30.950	49.0	18.0	49.2	18.2	2.70	-0.01	33.5	15.5	33.7
20	549.8	0.412	50.1	-0.4	6.74	1.601	32.524	31.397	49.4	18.0	49.8	18.4	2.70	-0.01	33.7	15.7	34.1
21	552.6	0.416	49.9	-0.6	6.75	1.681	32.956	31.765	49.8	18.0	50.4	18.6	2.71	-0.02	33.9	15.9	34.5
22	556.1	0.421	49.8	-0.7	6.75	1.761	33.474	32.218	50.3	18.0	50.9	18.7	2.72	-0.02	34.2	16.1	34.8
23	558.7	0.425	49.7	-0.8	6.76	1.841	33.872	32.551	50.6	18.0	51.4	18.8	2.73	-0.02	34.3	16.3	35.1
24	561.2	0.430	49.5	-1.0	6.76	1.931	34.252	32.859	50.9	18.0	51.9	19.0	2.73	-0.03	34.5	16.4	35.4
25	563.1	0.435	49.3	-1.2	6.77	2.011	34.528	33.077	51.1	18.0	52.3	19.2	2.72	-0.04	34.6	16.5	35.8
26	564.8	0.440	49.1	-1.4	6.77	2.091	34.788	33.303	51.3	18.0	52.7	19.4	2.72	-0.04	34.7	16.7	36.1
27	565.1	0.440	49.1	-1.4	6.78	2.101	34.839	33.350	51.4	18.0	52.8	19.4	2.72	-0.04	34.7	16.7	36.1

Specimen C Shear Data

CU Triaxial Test

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File Location
T-5790.HSD

Project Information

Project No. 39406.1.1 (T-5790)
Project Name: U-2412B
Client: T-5790
Sample Location: Guilford County (Sta. 403+45)
Sample Description: Same as Specimen A
Remarks: Same as Specimen A

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.9130001
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	3.042	3.035	
Height (in)	5.263	5.256	
Weight (grams)	1460.00		1475.00
Moisture (%)	15.60		16.79
Dry Density (pcf)	125.82	126.52	
Saturation (%)	102.05	100.00	
Void Ratio	0.441	0.308	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 86.400
Effective Confining Stress (psi): 36.0
Corrected Peak Deviator Stress (psi): 46.540 at reading number: 55

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	574.1	0.451	50.4	0.0	7.23	0.000	0.000	0.000	36.0	36.0	36.0	36.0	1.00	0.00	36.0	0.0	36.0
1	681.3	0.455	53.2	2.8	7.24	0.076	14.815	14.776	50.8	36.0	48.0	33.2	1.44	0.19	43.4	7.4	40.6
2	707.4	0.460	54.0	3.5	7.25	0.163	18.428	18.339	54.3	36.0	50.8	32.4	1.57	0.19	45.2	9.2	41.6
3	723.8	0.464	54.3	3.9	7.25	0.250	20.694	20.551	56.5	36.0	52.6	32.1	1.64	0.19	46.3	10.3	42.4
4	735.8	0.469	54.5	4.1	7.26	0.337	22.357	22.160	58.1	36.0	54.0	31.9	1.70	0.18	47.1	11.1	43.0
5	744.8	0.473	54.6	4.2	7.27	0.424	23.593	23.340	59.3	36.0	55.1	31.8	1.73	0.18	47.7	11.7	43.5
6	752.5	0.478	54.6	4.2	7.27	0.511	24.655	24.344	60.3	36.0	56.1	31.8	1.77	0.17	48.2	12.2	43.9
7	758.9	0.482	54.6	4.2	7.28	0.597	25.542	25.173	61.2	36.0	56.9	31.8	1.79	0.17	48.6	12.6	44.3
8	765.1	0.487	54.5	4.1	7.28	0.684	26.398	25.969	62.0	36.0	57.9	31.9	1.81	0.16	49.0	13.0	44.9
9	771.1	0.492	54.4	4.0	7.29	0.771	27.238	26.748	62.7	36.0	58.8	32.0	1.84	0.15	49.4	13.4	45.4
10	776.8	0.496	54.3	3.9	7.30	0.858	28.014	27.463	63.4	36.0	59.5	32.1	1.86	0.14	49.7	13.7	45.8
11	781.3	0.501	54.2	3.8	7.30	0.945	28.648	28.035	64.0	36.0	60.2	32.2	1.87	0.13	50.0	14.0	46.2
12	786.3	0.505	54.1	3.7	7.31	1.032	29.329	28.653	64.6	36.0	60.9	32.3	1.89	0.13	50.3	14.3	46.6
13	790.2	0.510	54.0	3.5	7.32	1.119	29.868	29.128	65.1	36.0	61.6	32.4	1.90	0.12	50.5	14.6	47.0
14	794.3	0.514	53.8	3.4	7.32	1.206	30.438	29.634	65.6	36.0	62.2	32.6	1.91	0.11	50.8	14.8	47.4
15	798.6	0.519	53.6	3.1	7.33	1.293	31.040	30.171	66.2	36.0	63.0	32.8	1.92	0.10	51.1	15.1	47.9
16	803.6	0.524	53.4	3.0	7.34	1.380	31.722	30.784	66.8	36.0	63.8	33.0	1.93	0.10	51.4	15.4	48.4
17	808.3	0.528	53.2	2.8	7.34	1.466	32.371	31.365	67.3	36.0	64.5	33.2	1.95	0.09	51.7	15.7	48.9
18	812.3	0.533	53.1	2.7	7.35	1.553	32.926	31.852	67.8	36.0	65.2	33.3	1.96	0.08	51.9	15.9	49.3

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	816.6	0.537	52.9	2.5	7.36	1.640	33.528	32.384	68.4	36.0	65.9	33.5	1.97	0.08	52.2	16.2	49.7
20	820.2	0.542	52.6	2.2	7.36	1.727	34.019	32.806	68.8	36.0	66.6	33.8	1.97	0.07	52.4	16.4	50.2
21	825.0	0.546	52.4	2.0	7.37	1.814	34.685	33.398	69.4	36.0	67.4	34.0	1.98	0.06	52.7	16.7	50.7
22	828.8	0.551	52.2	1.8	7.37	1.901	35.208	33.849	69.8	36.0	68.0	34.2	1.99	0.05	52.9	16.9	51.1
23	832.8	0.556	52.0	1.6	7.38	1.988	35.762	34.331	70.3	36.0	68.7	34.4	2.00	0.05	53.1	17.2	51.5
24	836.5	0.561	51.8	1.4	7.39	2.086	36.269	34.788	70.8	36.0	69.4	34.6	2.01	0.04	53.4	17.4	52.0
25	840.5	0.565	51.6	1.2	7.40	2.172	36.824	35.299	71.3	36.0	70.1	34.8	2.02	0.03	53.6	17.6	52.4
26	844.2	0.570	51.4	1.0	7.40	2.259	37.331	35.763	71.7	36.0	70.8	35.0	2.02	0.03	53.9	17.9	52.9
27	848.4	0.574	51.1	0.7	7.41	2.346	37.917	36.303	72.3	36.0	71.6	35.3	2.03	0.02	54.1	18.2	53.4
28	851.7	0.579	50.9	0.5	7.42	2.433	38.377	36.718	72.7	36.0	72.2	35.5	2.04	0.01	54.3	18.4	53.8
29	855.0	0.583	50.7	0.3	7.42	2.520	38.836	37.133	73.1	36.0	72.8	35.7	2.04	0.01	54.5	18.6	54.2
30	858.3	0.588	50.5	0.1	7.43	2.607	39.280	37.531	73.5	36.0	73.4	35.9	2.05	0.00	54.7	18.8	54.6
31	862.5	0.593	50.3	-0.2	7.43	2.694	39.866	38.067	74.0	36.0	74.2	36.1	2.05	0.00	55.0	19.0	55.2
32	866.2	0.598	50.0	-0.4	7.44	2.792	40.373	38.521	74.5	36.0	74.9	36.4	2.06	-0.01	55.2	19.3	55.6
33	869.8	0.602	49.8	-0.6	7.45	2.878	40.880	38.979	75.0	36.0	75.6	36.6	2.06	-0.02	55.5	19.5	56.1
34	873.7	0.607	49.5	-0.9	7.46	2.965	41.419	39.466	75.4	36.0	76.3	36.9	2.07	-0.02	55.7	19.7	56.6
35	876.9	0.611	49.3	-1.1	7.46	3.052	41.863	39.860	75.8	36.0	76.9	37.1	2.08	-0.03	55.9	19.9	57.0
36	881.2	0.617	49.1	-1.3	7.47	3.150	42.449	40.387	76.4	36.0	77.7	37.3	2.08	-0.03	56.2	20.2	57.5
37	884.7	0.621	48.8	-1.6	7.48	3.237	42.940	40.825	76.8	36.0	78.4	37.6	2.09	-0.04	56.4	20.4	58.0
38	888.6	0.626	48.4	-2.0	7.48	3.324	43.479	41.309	77.3	36.0	79.3	38.0	2.09	-0.05	56.6	20.7	58.7
39	891.7	0.630	48.2	-2.2	7.49	3.411	43.907	41.684	77.7	36.0	79.9	38.2	2.09	-0.05	56.8	20.8	59.1
40	894.9	0.635	47.9	-2.5	7.50	3.498	44.350	42.074	78.1	36.0	80.5	38.5	2.09	-0.06	57.0	21.0	59.5
41	897.9	0.639	47.6	-2.8	7.50	3.585	44.762	42.433	78.4	36.0	81.2	38.8	2.09	-0.07	57.2	21.2	60.0
42	900.8	0.643	47.4	-3.0	7.51	3.661	45.158	42.780	78.8	36.0	81.8	39.0	2.10	-0.07	57.4	21.4	60.4
43	903.7	0.649	47.1	-3.3	7.52	3.758	45.555	43.118	79.1	36.0	82.4	39.3	2.10	-0.08	57.5	21.6	60.9
44	906.3	0.653	46.8	-3.7	7.52	3.834	45.919	43.433	79.4	36.0	83.1	39.6	2.10	-0.08	57.7	21.7	61.4
45	908.7	0.658	46.5	-3.9	7.53	3.932	46.252	43.708	79.7	36.0	83.6	39.9	2.10	-0.09	57.8	21.9	61.7
46	911.8	0.662	46.2	-4.2	7.54	4.008	46.679	44.084	80.1	36.0	84.2	40.2	2.10	-0.09	58.0	22.0	62.2
47	914.4	0.666	46.0	-4.5	7.54	4.095	47.044	44.393	80.4	36.0	84.8	40.4	2.10	-0.10	58.2	22.2	62.6
48	917.8	0.671	45.7	-4.7	7.55	4.182	47.503	44.792	80.8	36.0	85.5	40.7	2.10	-0.11	58.4	22.4	63.1
49	920.6	0.675	45.3	-5.1	7.56	4.269	47.900	45.130	81.1	36.0	86.2	41.1	2.10	-0.11	58.5	22.6	63.6
50	923.6	0.680	45.0	-5.5	7.56	4.356	48.312	45.482	81.5	36.0	86.9	41.4	2.10	-0.12	58.7	22.7	64.2
51	926.6	0.685	44.6	-5.8	7.57	4.454	48.724	45.829	81.8	36.0	87.6	41.8	2.10	-0.13	58.9	22.9	64.7
52	928.8	0.689	44.3	-6.1	7.58	4.530	49.025	46.079	82.1	36.0	88.2	42.1	2.09	-0.13	59.0	23.0	65.2
53	930.7	0.694	43.9	-6.5	7.58	4.616	49.294	46.293	82.3	36.0	88.8	42.5	2.09	-0.14	59.1	23.1	65.7
54	932.3	0.699	43.4	-7.0	7.59	4.714	49.516	46.457	82.4	36.0	89.4	43.0	2.08	-0.15	59.2	23.2	66.2
55	933.2	0.703	42.9	-7.5	7.60	4.790	49.643	46.540	82.5	36.0	90.0	43.5	2.07	-0.16	59.3	23.3	66.8
56	933.0	0.707	42.3	-8.1	7.61	4.877	49.611	46.466	82.4	36.0	90.6	44.1	2.05	-0.17	59.2	23.2	67.3
57	929.8	0.713	41.7	-8.7	7.61	4.975	49.167	45.996	82.0	36.0	90.7	44.7	2.03	-0.19	59.0	23.0	67.7
58	921.6	0.717	41.0	-9.4	7.62	5.062	48.042	44.886	80.9	36.0	90.3	45.4	1.99	-0.21	58.4	22.4	67.8
59	907.5	0.722	40.4	-10.0	7.63	5.160	46.093	42.990	79.0	36.0	89.0	46.0	1.93	-0.23	57.5	21.5	67.5

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	891.2	0.727	39.9	-10.6	7.64	5.246	43.827	40.803	76.8	36.0	87.4	46.5	1.88	-0.26	56.4	20.4	66.9
61	879.3	0.731	39.4	-11.0	7.64	5.333	42.195	39.220	75.2	36.0	86.2	47.0	1.83	-0.28	55.6	19.6	66.6
62	863.1	0.736	39.0	-11.4	7.65	5.420	39.945	37.055	73.0	36.0	84.4	47.4	1.78	-0.31	54.5	18.5	65.9
63	856.7	0.741	38.7	-11.7	7.66	5.518	39.058	36.178	72.2	36.0	83.9	47.7	1.76	-0.32	54.1	18.1	65.8
64	852.2	0.746	38.4	-12.1	7.66	5.605	38.440	35.561	71.5	36.0	83.6	48.0	1.74	-0.34	53.8	17.8	65.8
65	847.6	0.750	38.1	-12.3	7.67	5.692	37.806	34.930	70.9	36.0	83.2	48.3	1.72	-0.35	53.4	17.5	65.8
66	844.3	0.755	37.8	-12.6	7.68	5.779	37.347	34.464	70.4	36.0	83.1	48.6	1.71	-0.37	53.2	17.2	65.8
67	840.9	0.760	37.5	-12.9	7.69	5.876	36.887	33.995	70.0	36.0	82.9	48.9	1.70	-0.38	53.0	17.0	65.9
68	838.2	0.764	37.3	-13.1	7.69	5.963	36.507	33.605	69.6	36.0	82.7	49.1	1.68	-0.39	52.8	16.8	65.9
69	835.9	0.769	37.0	-13.4	7.70	6.050	36.190	33.276	69.3	36.0	82.6	49.4	1.67	-0.40	52.6	16.6	66.0
70	832.2	0.774	36.8	-13.6	7.71	6.137	35.683	32.768	68.7	36.0	82.4	49.6	1.66	-0.42	52.4	16.4	66.0
71	831.7	0.778	36.6	-13.9	7.71	6.224	35.604	32.663	68.6	36.0	82.5	49.8	1.66	-0.42	52.3	16.3	66.2
72	830.6	0.783	36.3	-14.1	7.72	6.311	35.461	32.498	68.5	36.0	82.6	50.1	1.65	-0.43	52.2	16.2	66.3
73	828.8	0.787	36.1	-14.3	7.73	6.398	35.208	32.230	68.2	36.0	82.6	50.3	1.64	-0.44	52.1	16.1	66.4
74	824.6	0.792	35.8	-14.6	7.74	6.496	34.621	31.648	67.6	36.0	82.2	50.6	1.63	-0.46	51.8	15.8	66.4
75	825.7	0.796	35.6	-14.8	7.74	6.572	34.780	31.769	67.8	36.0	82.5	50.8	1.63	-0.47	51.9	15.9	66.7
76	825.4	0.802	35.4	-15.0	7.75	6.669	34.732	31.691	67.7	36.0	82.7	51.0	1.62	-0.47	51.8	15.8	66.8
77	825.0	0.806	35.2	-15.2	7.76	6.745	34.685	31.620	67.6	36.0	82.8	51.2	1.62	-0.48	51.8	15.8	67.0
78	823.8	0.811	35.0	-15.4	7.77	6.843	34.511	31.424	67.4	36.0	82.8	51.4	1.61	-0.49	51.7	15.7	67.1
79	821.9	0.815	34.7	-15.7	7.77	6.930	34.257	31.158	67.1	36.0	82.8	51.7	1.60	-0.50	51.6	15.6	67.3
80	821.2	0.819	34.5	-15.9	7.78	7.006	34.162	31.044	67.0	36.0	83.0	51.9	1.60	-0.51	51.5	15.5	67.5
81	818.0	0.824	34.3	-16.1	7.79	7.093	33.718	30.602	66.6	36.0	82.7	52.1	1.59	-0.53	51.3	15.3	67.4
82	816.3	0.829	34.1	-16.3	7.80	7.191	33.481	30.348	66.3	36.0	82.6	52.3	1.58	-0.54	51.2	15.2	67.5
83	812.5	0.834	34.0	-16.4	7.80	7.278	32.958	29.834	65.8	36.0	82.2	52.4	1.57	-0.55	50.9	14.9	67.3
84	812.7	0.838	33.8	-16.6	7.81	7.354	32.989	29.839	65.8	36.0	82.5	52.6	1.57	-0.56	50.9	14.9	67.5
85	810.0	0.843	33.6	-16.8	7.82	7.451	32.609	29.454	65.4	36.0	82.3	52.8	1.56	-0.57	50.7	14.7	67.5
86	809.0	0.847	33.4	-17.0	7.82	7.538	32.466	29.294	65.3	36.0	82.3	53.0	1.55	-0.58	50.6	14.6	67.7
87	806.3	0.852	33.2	-17.2	7.83	7.625	32.102	28.929	64.9	36.0	82.1	53.2	1.54	-0.60	50.4	14.5	67.7
88	803.9	0.857	33.0	-17.4	7.84	7.723	31.769	28.591	64.6	36.0	82.0	53.4	1.54	-0.61	50.3	14.3	67.7
89	803.5	0.862	32.8	-17.6	7.85	7.810	31.706	28.505	64.5	36.0	82.1	53.6	1.53	-0.62	50.2	14.3	67.8
90	802.1	0.866	32.6	-17.8	7.85	7.897	31.516	28.302	64.3	36.0	82.1	53.8	1.53	-0.63	50.1	14.2	67.9
91	798.2	0.871	32.4	-18.0	7.86	7.984	30.977	27.779	63.8	36.0	81.8	54.0	1.51	-0.65	49.9	13.9	67.9
92	799.8	0.875	32.2	-18.2	7.87	8.071	31.199	27.956	63.9	36.0	82.1	54.2	1.52	-0.65	50.0	14.0	68.2
93	797.8	0.880	32.1	-18.4	7.88	8.168	30.930	27.678	63.7	36.0	82.0	54.3	1.51	-0.66	49.8	13.8	68.2
94	798.5	0.885	31.9	-18.5	7.89	8.255	31.025	27.739	63.7	36.0	82.2	54.5	1.51	-0.67	49.9	13.9	68.4
95	795.8	0.890	31.7	-18.7	7.89	8.342	30.644	27.363	63.3	36.0	82.0	54.7	1.50	-0.68	49.7	13.7	68.3
96	795.3	0.894	31.5	-18.9	7.90	8.429	30.581	27.278	63.3	36.0	82.2	54.9	1.50	-0.69	49.6	13.6	68.5
97	793.5	0.899	31.3	-19.1	7.91	8.516	30.327	27.020	63.0	36.0	82.1	55.1	1.49	-0.71	49.5	13.5	68.6
98	793.5	0.904	31.2	-19.2	7.92	8.614	30.327	26.990	63.0	36.0	82.2	55.2	1.49	-0.71	49.5	13.5	68.7
99	792.1	0.908	31.0	-19.4	7.92	8.690	30.137	26.794	62.8	36.0	82.2	55.4	1.48	-0.72	49.4	13.4	68.8
100	790.4	0.913	30.9	-19.5	7.93	8.788	29.900	26.547	62.5	36.0	82.1	55.5	1.48	-0.74	49.3	13.3	68.8

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	790.9	0.918	30.7	-19.7	7.94	8.885	29.963	26.576	62.6	36.0	82.3	55.7	1.48	-0.74	49.3	13.3	69.0
102	789.6	0.922	30.5	-19.9	7.95	8.961	29.789	26.394	62.4	36.0	82.3	55.9	1.47	-0.75	49.2	13.2	69.1
103	787.6	0.927	30.3	-20.1	7.95	9.048	29.519	26.123	62.1	36.0	82.2	56.1	1.47	-0.77	49.0	13.1	69.1
104	787.0	0.931	30.1	-20.3	7.96	9.135	29.424	26.011	62.0	36.0	82.3	56.3	1.46	-0.78	49.0	13.0	69.3
105	784.2	0.935	30.0	-20.4	7.97	9.211	29.044	25.644	61.6	36.0	82.0	56.4	1.45	-0.80	48.8	12.8	69.2
106	781.2	0.940	29.9	-20.5	7.98	9.298	28.632	25.245	61.2	36.0	81.8	56.5	1.45	-0.81	48.6	12.6	69.1
107	780.0	0.945	29.7	-20.7	7.98	9.396	28.458	25.059	61.0	36.0	81.7	56.7	1.44	-0.83	48.5	12.5	69.2
108	778.1	0.949	29.6	-20.9	7.99	9.483	28.204	24.805	60.8	36.0	81.6	56.8	1.44	-0.84	48.4	12.4	69.2
109	775.5	0.954	29.4	-21.0	8.00	9.570	27.840	24.451	60.4	36.0	81.4	57.0	1.43	-0.86	48.2	12.2	69.2
110	775.0	0.959	29.4	-21.1	8.01	9.657	27.776	24.369	60.4	36.0	81.4	57.0	1.43	-0.86	48.2	12.2	69.2
111	773.9	0.963	29.2	-21.2	8.02	9.743	27.618	24.202	60.2	36.0	81.4	57.2	1.42	-0.87	48.1	12.1	69.3
112	772.1	0.968	29.1	-21.3	8.02	9.830	27.364	23.950	59.9	36.0	81.2	57.3	1.42	-0.89	48.0	12.0	69.2
113	771.3	0.972	29.0	-21.4	8.03	9.917	27.253	23.826	59.8	36.0	81.2	57.4	1.42	-0.90	47.9	11.9	69.3
114	770.8	0.976	28.8	-21.6	8.04	9.993	27.190	23.748	59.7	36.0	81.3	57.6	1.41	-0.91	47.9	11.9	69.4
115	770.6	0.981	28.8	-21.7	8.05	10.091	27.158	23.693	59.7	36.0	81.3	57.6	1.41	-0.91	47.8	11.8	69.5
116	770.2	0.986	28.6	-21.9	8.05	10.178	27.111	23.627	59.6	36.0	81.5	57.8	1.41	-0.93	47.8	11.8	69.6
117	770.8	0.991	28.5	-21.9	8.06	10.265	27.190	23.674	59.7	36.0	81.6	57.9	1.41	-0.93	47.8	11.8	69.8
118	771.4	0.995	28.4	-22.1	8.07	10.352	27.269	23.722	59.7	36.0	81.8	58.0	1.41	-0.93	47.8	11.9	69.9
119	771.8	1.000	28.2	-22.2	8.08	10.439	27.333	23.755	59.7	36.0	81.9	58.2	1.41	-0.93	47.9	11.9	70.0
120	773.3	1.004	28.0	-22.4	8.09	10.525	27.539	23.915	59.9	36.0	82.3	58.4	1.41	-0.94	47.9	12.0	70.3
121	773.5	1.009	27.9	-22.5	8.09	10.623	27.570	23.917	59.9	36.0	82.4	58.5	1.41	-0.94	47.9	12.0	70.4
122	774.5	1.014	27.7	-22.7	8.10	10.710	27.697	24.006	60.0	36.0	82.7	58.7	1.41	-0.95	48.0	12.0	70.7
123	776.1	1.019	27.6	-22.9	8.11	10.797	27.919	24.180	60.2	36.0	83.0	58.8	1.41	-0.95	48.1	12.1	70.9
124	778.6	1.023	27.4	-23.0	8.12	10.884	28.268	24.466	60.4	36.0	83.5	59.0	1.41	-0.94	48.2	12.2	71.2
125	780.3	1.028	27.2	-23.2	8.13	10.982	28.505	24.650	60.6	36.0	83.9	59.2	1.42	-0.94	48.3	12.3	71.5
126	781.3	1.033	27.0	-23.4	8.14	11.069	28.648	24.752	60.7	36.0	84.1	59.4	1.42	-0.94	48.4	12.4	71.7
127	782.6	1.037	26.9	-23.5	8.14	11.155	28.822	24.882	60.9	36.0	84.4	59.5	1.42	-0.94	48.4	12.4	71.9
128	783.6	1.042	26.8	-23.7	8.15	11.242	28.965	24.984	61.0	36.0	84.6	59.6	1.42	-0.95	48.5	12.5	72.1
129	785.5	1.047	26.6	-23.8	8.16	11.340	29.218	25.180	61.2	36.0	85.0	59.8	1.42	-0.95	48.6	12.6	72.4
130	786.4	1.052	26.5	-23.9	8.17	11.427	29.345	25.267	61.2	36.0	85.2	59.9	1.42	-0.95	48.6	12.6	72.6
131	787.5	1.056	26.3	-24.1	8.18	11.514	29.503	25.382	61.4	36.0	85.5	60.1	1.42	-0.95	48.7	12.7	72.8
132	789.1	1.061	26.0	-24.4	8.18	11.601	29.725	25.552	61.5	36.0	85.9	60.4	1.42	-0.95	48.8	12.8	73.1
133	782.3	1.065	20.2	-30.2	8.19	11.688	28.775	24.687	60.7	36.0	90.8	66.2	1.37	-1.22	48.3	12.3	78.5
134	781.2	1.070	20.0	-30.4	8.20	11.775	28.632	24.536	60.5	36.0	90.9	66.4	1.37	-1.24	48.2	12.3	78.7
135	782.1	1.075	21.1	-29.3	8.21	11.862	28.759	24.623	60.6	36.0	89.9	65.3	1.38	-1.19	48.3	12.3	77.6
136	796.0	1.079	35.2	-15.2	8.22	11.948	30.676	26.286	62.3	36.0	77.5	51.2	1.51	-0.58	49.1	13.1	64.3
137	799.9	1.084	34.8	-15.6	8.22	12.035	31.215	26.733	62.7	36.0	78.3	51.6	1.52	-0.58	49.3	13.4	64.9
138	800.8	1.088	34.9	-15.5	8.23	12.122	31.341	26.817	62.8	36.0	78.3	51.5	1.52	-0.58	49.4	13.4	64.9
139	800.3	1.093	35.0	-15.5	8.24	12.209	31.262	26.721	62.7	36.0	78.2	51.4	1.52	-0.58	49.3	13.4	64.8
140	800.9	1.097	35.0	-15.4	8.25	12.296	31.357	26.777	62.8	36.0	78.2	51.4	1.52	-0.58	49.4	13.4	64.8
141	800.5	1.102	35.0	-15.4	8.26	12.383	31.294	26.694	62.7	36.0	78.1	51.4	1.52	-0.58	49.3	13.3	64.8

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	798.8	1.106	35.0	-15.5	8.27	12.470	31.056	26.459	62.4	36.0	77.9	51.4	1.51	-0.58	49.2	13.2	64.7
143	800.7	1.111	34.9	-15.5	8.27	12.557	31.326	26.667	62.6	36.0	78.2	51.5	1.52	-0.58	49.3	13.3	64.8
144	800.3	1.116	34.9	-15.5	8.28	12.644	31.262	26.585	62.6	36.0	78.1	51.5	1.52	-0.58	49.3	13.3	64.8
145	800.1	1.120	35.0	-15.5	8.29	12.731	31.246	26.544	62.5	36.0	78.0	51.4	1.52	-0.58	49.3	13.3	64.7
146	798.8	1.125	35.0	-15.5	8.30	12.817	31.056	26.351	62.3	36.0	77.8	51.4	1.51	-0.59	49.2	13.2	64.6
147	797.3	1.129	35.0	-15.4	8.31	12.904	30.850	26.144	62.1	36.0	77.6	51.4	1.51	-0.59	49.1	13.1	64.5
148	797.2	1.134	35.0	-15.4	8.31	12.991	30.834	26.104	62.1	36.0	77.5	51.4	1.51	-0.59	49.0	13.1	64.4
149	796.1	1.138	35.0	-15.4	8.32	13.078	30.692	25.953	61.9	36.0	77.3	51.4	1.51	-0.59	49.0	13.0	64.3
150	795.6	1.143	35.2	-15.3	8.33	13.165	30.613	25.858	61.8	36.0	77.1	51.2	1.50	-0.59	48.9	12.9	64.2
151	796.1	1.148	35.2	-15.2	8.34	13.252	30.692	25.900	61.9	36.0	77.1	51.2	1.51	-0.59	48.9	12.9	64.2
152	796.9	1.152	35.4	-15.1	8.35	13.339	30.803	25.969	62.0	36.0	77.0	51.0	1.51	-0.58	49.0	13.0	64.0
153	796.9	1.157	35.4	-15.0	8.36	13.426	30.803	25.942	61.9	36.0	76.9	51.0	1.51	-0.58	49.0	13.0	64.0
154	797.6	1.161	35.4	-15.0	8.36	13.513	30.898	25.998	62.0	36.0	77.0	51.0	1.51	-0.58	49.0	13.0	64.0
155	798.0	1.166	35.5	-14.9	8.37	13.599	30.945	26.012	62.0	36.0	76.9	50.9	1.51	-0.57	49.0	13.0	63.9
156	798.1	1.170	35.6	-14.9	8.38	13.686	30.961	25.999	62.0	36.0	76.8	50.8	1.51	-0.57	49.0	13.0	63.8
157	798.1	1.175	35.6	-14.8	8.39	13.773	30.961	25.972	62.0	36.0	76.7	50.8	1.51	-0.57	49.0	13.0	63.8
158	798.8	1.180	35.7	-14.7	8.40	13.860	31.056	26.027	62.0	36.0	76.7	50.7	1.51	-0.56	49.0	13.0	63.7
159	798.2	1.185	35.8	-14.7	8.41	13.958	30.977	25.928	61.9	36.0	76.6	50.6	1.51	-0.57	48.9	13.0	63.6
160	796.8	1.189	35.8	-14.6	8.42	14.045	30.787	25.738	61.7	36.0	76.3	50.6	1.51	-0.57	48.9	12.9	63.5
161	796.4	1.194	35.9	-14.5	8.43	14.132	30.724	25.657	61.6	36.0	76.2	50.5	1.51	-0.57	48.8	12.8	63.4
162	795.6	1.198	36.0	-14.5	8.43	14.219	30.613	25.535	61.5	36.0	76.0	50.4	1.51	-0.57	48.7	12.8	63.2
163	794.4	1.202	36.1	-14.3	8.44	14.295	30.454	25.376	61.4	36.0	75.7	50.3	1.50	-0.56	48.7	12.7	63.0
164	793.0	1.208	36.2	-14.2	8.45	14.392	30.264	25.183	61.2	36.0	75.4	50.2	1.50	-0.56	48.6	12.6	62.8
165	791.4	1.212	36.3	-14.1	8.46	14.479	30.042	24.967	60.9	36.0	75.1	50.1	1.50	-0.57	48.5	12.5	62.6
166	789.5	1.217	36.3	-14.1	8.47	14.577	29.773	24.708	60.7	36.0	74.8	50.1	1.49	-0.57	48.3	12.4	62.4
167	790.2	1.222	36.5	-13.9	8.48	14.664	29.868	24.763	60.7	36.0	74.7	49.9	1.50	-0.56	48.4	12.4	62.3
168	789.1	1.226	36.6	-13.8	8.49	14.751	29.725	24.616	60.6	36.0	74.4	49.8	1.49	-0.56	48.3	12.3	62.1
169	789.1	1.231	36.8	-13.7	8.50	14.838	29.725	24.590	60.6	36.0	74.2	49.6	1.50	-0.56	48.3	12.3	61.9
170	789.5	1.236	36.9	-13.5	8.50	14.925	29.773	24.604	60.6	36.0	74.1	49.5	1.50	-0.55	48.3	12.3	61.8
171	791.3	1.240	37.0	-13.5	8.51	15.012	30.026	24.794	60.8	36.0	74.2	49.4	1.50	-0.54	48.4	12.4	61.8
172	792.1	1.245	37.0	-13.4	8.52	15.098	30.137	24.862	60.8	36.0	74.2	49.4	1.50	-0.54	48.4	12.4	61.8
173	792.3	1.249	37.2	-13.3	8.53	15.185	30.169	24.863	60.8	36.0	74.1	49.2	1.50	-0.53	48.4	12.4	61.7
174	792.0	1.253	37.3	-13.1	8.54	15.261	30.121	24.800	60.8	36.0	73.9	49.1	1.50	-0.53	48.4	12.4	61.5
175	791.5	1.258	37.4	-13.1	8.55	15.348	30.058	24.720	60.7	36.0	73.8	49.0	1.50	-0.53	48.3	12.4	61.4
176	791.3	1.263	37.5	-12.9	8.56	15.446	30.026	24.664	60.6	36.0	73.6	48.9	1.50	-0.52	48.3	12.3	61.2
177	790.7	1.267	37.5	-12.9	8.57	15.533	29.947	24.571	60.6	36.0	73.4	48.9	1.50	-0.52	48.3	12.3	61.2
178	790.3	1.272	37.6	-12.8	8.57	15.620	29.884	24.491	60.5	36.0	73.3	48.8	1.50	-0.52	48.2	12.2	61.0
179	789.7	1.276	37.7	-12.7	8.58	15.696	29.805	24.402	60.4	36.0	73.1	48.7	1.50	-0.52	48.2	12.2	60.9
180	789.5	1.281	37.8	-12.6	8.59	15.794	29.773	24.346	60.3	36.0	72.9	48.6	1.50	-0.52	48.2	12.2	60.8
181	790.0	1.286	37.9	-12.5	8.60	15.881	29.852	24.387	60.4	36.0	72.9	48.5	1.50	-0.51	48.2	12.2	60.7
182	790.5	1.290	38.0	-12.5	8.61	15.967	29.915	24.414	60.4	36.0	72.8	48.4	1.50	-0.51	48.2	12.2	60.6

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	790.3	1.295	38.0	-12.5	8.62	16.065	29.884	24.358	60.3	36.0	72.8	48.4	1.50	-0.51	48.2	12.2	60.6
184	790.9	1.299	38.0	-12.4	8.63	16.141	29.963	24.402	60.4	36.0	72.8	48.4	1.50	-0.51	48.2	12.2	60.6
185	790.4	1.305	38.1	-12.3	8.64	16.239	29.900	24.319	60.3	36.0	72.6	48.3	1.50	-0.51	48.1	12.2	60.4
186	790.9	1.309	38.2	-12.2	8.65	16.326	29.963	24.346	60.3	36.0	72.5	48.2	1.51	-0.50	48.2	12.2	60.4
187	790.4	1.314	38.3	-12.1	8.66	16.413	29.900	24.267	60.2	36.0	72.4	48.1	1.50	-0.50	48.1	12.1	60.2
188	790.2	1.319	38.3	-12.1	8.67	16.511	29.868	24.212	60.2	36.0	72.3	48.1	1.50	-0.50	48.1	12.1	60.2
189	790.6	1.323	38.4	-12.1	8.67	16.597	29.931	24.239	60.2	36.0	72.3	48.0	1.50	-0.50	48.1	12.1	60.2
190	791.2	1.328	38.4	-12.0	8.68	16.684	30.011	24.279	60.3	36.0	72.3	48.0	1.51	-0.49	48.1	12.1	60.1
191	790.9	1.333	38.5	-11.9	8.69	16.771	29.963	24.213	60.2	36.0	72.1	47.9	1.51	-0.49	48.1	12.1	60.0
192	790.4	1.337	38.6	-11.9	8.70	16.858	29.900	24.134	60.1	36.0	72.0	47.8	1.50	-0.49	48.0	12.1	59.9
193	790.0	1.342	38.6	-11.8	8.71	16.956	29.852	24.066	60.0	36.0	71.8	47.8	1.50	-0.49	48.0	12.0	59.8
194	790.9	1.347	38.7	-11.7	8.72	17.043	29.963	24.132	60.1	36.0	71.8	47.7	1.51	-0.49	48.0	12.1	59.8
195	791.2	1.351	38.7	-11.7	8.73	17.130	30.011	24.145	60.1	36.0	71.9	47.7	1.51	-0.49	48.1	12.1	59.8
196	790.6	1.356	38.8	-11.7	8.74	17.217	29.931	24.053	60.0	36.0	71.7	47.6	1.50	-0.48	48.0	12.0	59.7
197	790.0	1.361	38.8	-11.6	8.75	17.303	29.852	23.962	59.9	36.0	71.5	47.6	1.50	-0.48	48.0	12.0	59.5
198	789.9	1.365	38.9	-11.5	8.76	17.390	29.836	23.923	59.9	36.0	71.4	47.5	1.50	-0.48	47.9	12.0	59.4
199	790.3	1.370	39.0	-11.4	8.77	17.477	29.884	23.936	59.9	36.0	71.3	47.4	1.51	-0.48	47.9	12.0	59.4
200	789.5	1.374	39.0	-11.4	8.78	17.564	29.773	23.819	59.8	36.0	71.2	47.4	1.50	-0.48	47.9	11.9	59.3
201	788.7	1.378	39.0	-11.4	8.78	17.640	29.662	23.705	59.7	36.0	71.1	47.4	1.50	-0.48	47.8	11.9	59.2
202	788.0	1.383	39.1	-11.3	8.79	17.727	29.567	23.601	59.6	36.0	70.9	47.3	1.50	-0.48	47.8	11.8	59.1
203	788.4	1.387	39.2	-11.2	8.80	17.814	29.630	23.627	59.6	36.0	70.8	47.2	1.50	-0.47	47.8	11.8	59.0
204	788.8	1.392	39.3	-11.1	8.81	17.901	29.678	23.640	59.6	36.0	70.7	47.1	1.50	-0.47	47.8	11.8	58.9
205	788.0	1.396	39.4	-11.0	8.82	17.977	29.567	23.527	59.5	36.0	70.6	47.0	1.50	-0.47	47.7	11.8	58.8
206	788.7	1.401	39.4	-11.0	8.83	18.064	29.662	23.579	59.6	36.0	70.6	47.0	1.50	-0.47	47.8	11.8	58.8
207	788.8	1.405	39.4	-11.0	8.84	18.151	29.678	23.566	59.5	36.0	70.6	47.0	1.50	-0.47	47.8	11.8	58.8
208	789.5	1.410	39.5	-10.9	8.85	18.238	29.773	23.618	59.6	36.0	70.5	46.9	1.50	-0.46	47.8	11.8	58.7
209	790.6	1.414	39.6	-10.8	8.86	18.325	29.931	23.722	59.7	36.0	70.6	46.8	1.51	-0.46	47.8	11.9	58.7
210	791.0	1.419	39.6	-10.8	8.87	18.411	29.979	23.734	59.7	36.0	70.5	46.8	1.51	-0.46	47.8	11.9	58.7
211	791.3	1.423	39.7	-10.8	8.88	18.487	30.026	23.750	59.7	36.0	70.5	46.7	1.51	-0.45	47.9	11.9	58.6
212	790.7	1.428	39.7	-10.8	8.89	18.585	29.947	23.657	59.6	36.0	70.4	46.7	1.51	-0.46	47.8	11.8	58.6
213	790.2	1.432	39.7	-10.7	8.90	18.672	29.868	23.566	59.5	36.0	70.3	46.7	1.50	-0.46	47.8	11.8	58.5
214	791.4	1.437	39.8	-10.6	8.91	18.759	30.042	23.682	59.7	36.0	70.3	46.6	1.51	-0.45	47.8	11.8	58.5
215	792.2	1.442	39.9	-10.6	8.91	18.846	30.153	23.746	59.7	36.0	70.3	46.5	1.51	-0.44	47.9	11.9	58.4
216	791.7	1.447	39.9	-10.5	8.93	18.944	30.074	23.652	59.6	36.0	70.2	46.5	1.51	-0.45	47.8	11.8	58.3
217	792.0	1.451	39.9	-10.5	8.93	19.020	30.121	23.668	59.6	36.0	70.1	46.5	1.51	-0.44	47.8	11.8	58.3
218	791.7	1.456	39.9	-10.5	8.94	19.117	30.074	23.600	59.6	36.0	70.1	46.5	1.51	-0.44	47.8	11.8	58.3
219	791.4	1.460	39.9	-10.5	8.95	19.204	30.042	23.548	59.5	36.0	70.1	46.5	1.51	-0.45	47.8	11.8	58.3
220	790.7	1.466	40.0	-10.4	8.97	19.302	29.947	23.442	59.4	36.0	69.9	46.4	1.50	-0.45	47.7	11.7	58.1
221	790.4	1.470	40.0	-10.4	8.97	19.389	29.900	23.377	59.4	36.0	69.8	46.4	1.50	-0.45	47.7	11.7	58.1
222	791.7	1.475	40.1	-10.4	8.98	19.476	30.074	23.492	59.5	36.0	69.8	46.3	1.51	-0.44	47.7	11.7	58.1
223	790.6	1.480	40.1	-10.3	9.00	19.574	29.931	23.348	59.3	36.0	69.7	46.3	1.50	-0.44	47.7	11.7	58.0

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	792.1	1.484	40.1	-10.3	9.01	19.661	30.137	23.487	59.5	36.0	69.8	46.3	1.51	-0.44	47.7	11.7	58.0
225	791.8	1.489	40.1	-10.3	9.01	19.747	30.090	23.423	59.4	36.0	69.7	46.3	1.51	-0.44	47.7	11.7	58.0
226	792.1	1.494	40.2	-10.2	9.02	19.834	30.137	23.435	59.4	36.0	69.7	46.2	1.51	-0.44	47.7	11.7	57.9
227	793.5	1.498	40.2	-10.2	9.03	19.921	30.327	23.561	59.5	36.0	69.7	46.2	1.51	-0.43	47.8	11.8	58.0
228	792.8	1.503	40.3	-10.1	9.04	20.008	30.232	23.459	59.4	36.0	69.6	46.1	1.51	-0.43	47.7	11.7	57.8

Photograph of Sample Failures

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. U-2412B

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project 39406.1.1 **County** GUILFORD **Owner**

Date: Sampled 3/13/14 **Received** 1/16/14 **Reported** 1/20/14

Sampled from ROADWAY **By** N ROBERSON

Submitted by MASON HURT 1995 **Standard Specifications**

789464 TO 789465
2/18/14

TEST RESULTS

Proj. Sample No.		ST-27#1	ST-27#2				
Lab. Sample No.		789464	789465				
Retained #4 Sieve	%	-	-				
Passing #10 Sieve	%	100	100				
Passing #40 Sieve	%	91	87				
Passing #200 Sieve	%	67	58				

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	16.2	22.2				
Fine Sand Ret - #270	%	24.0	27.8				
Silt 0.05 - 0.005 mm	%	47.8	38.0				
Clay < 0.005 mm	%	12.0	12.0				
T-#		T-5791	T-5791				
Specific Gravity		2.664	2.664				

L. L.		40	39				
P. I.		8	9				
AASHTO Classification		A-4(5)	A-4(4)				
Station		404+50	404+50				
Offset		94' RT	94' RT				
Alignment		L	L				
Location							
Depth (Ft)		10.30	10.30				
	to	12.30	12.30				
Final Moisture Content	%	31.42	29.24				

cc: N ROBERSON
MASON HURT

Soils Engineer

North Carolina Department of Transportation
Division of Highways

Materials & Tests Unit

NCDOT

Test for Determining Coefficient of Permability
Falling Head - Rising Tail Method C (ASTM D5084)

Project :	39406.1.1	**Station :**	404+50	**Lab No. :**	T-5791
County:	Guilford	**Sample No.:**	ST-27 #1	**Depth Sample :**	10.3' - 12.3'
Cell No. :	1	**Tip #:**	U-2412B	**Date :**	1/14/2014

Cell Pressure (psi) : 76

Hydraulic Gradient : 2

Sample Information		
	Length (cm) :	15.41
	Diameter (cm) :	7.30
	Areas (cm2) :	41.81
	Specific Gravity:	2.664
	AASHTO Class:	A-4 (5)

Backpressure (psi)	
Base	**Top**
70.0	70.0

Tested By: Suriyati B S

Time (sec)	Outflow	h1 (cm)	h2 (cm)	k (cm/sec)
34.0	0.28	30.99	28.245	0.00009895
37.0	0.30	30.99	28.042	0.00009801
64.0	0.46	30.99	26.416	0.00009053
84.0	0.58	30.99	25.197	0.00008940
107.0	0.72	30.99	23.774	0.00008989

K avg =	0.000093357
Ft/day =	0.264634231
m/day =	0.080713440

Project	39406.1.1	**Lab. No.**	T-5791		
County	Guilford	**Station**	404+50	**Test Type**	Permeability
Sample No.	ST-27 #1	**Depth**	10.3' - 12.3'	**Sp. Gr.**	2.664
AASHTO Class.	A-4 (5)	**L.L.**	40	**P.I.**	8
Remarks	Tannish colored silt				

EST. BLOWS /FT

	Specimen Number	**Spec. 1**
Pretest	**Water Content, %**	1.66
Pretest	**Dry Density, PCF**	104.91
Pretest	**Saturation**	7.55
Pretest	**Void Ratio**	0.5887
Pretest	**Diameter, (in)**	2.873
Pretest	**Height (in)**	6.066
	(o1-o3)max., min.	0
Post test	**Water Content, %**	21.79
Post test	**Dry Density, PCF**	105.28
Post test	**Saturation %**	100
Post test	**Void Ratio**	0.5833
Post test	**Strain Rate, (in./min.)**	0

PRE-Test *Specimen Conditions* No. 1

Post test *Failure Mode* No. 1

Tannish colored silt

North Carolina Department of Transportation
Division of Highways

Materials & Tests Unit

NCDOT

Test for Determining Coefficient of Permability
Falling Head - Rising Tail Method C (ASTM D5084)

Project :	39406.1.1	**Station :**	404+50	**Lab No. :**	T-5791
County:	Guilford	**Sample No.:**	ST-27 #2	**Depth Sample :**	10.3' - 12.3'
Cell No. :	5	**Tip #:**	U-2412B	**Date :**	1/14/2014

Cell Pressure (psi) : 82

Hydraulic Gradient : 2

Sample Information	Length (cm) :	15.32
	Diameter (cm) :	7.21
	Areas (cm2) :	40.83
	Specific Gravity:	2.664
	AASHTO Class:	A-4 (4)

Backpressure (psi)	
Base	**Top**
70.0	70.0

Tested By: Suriyati B S

Time (sec)	Outflow	h1 (cm)	h2 (cm)	k (cm/sec)
20.0	0.12	30.48	29.261	0.00007545
39.0	0.18	30.48	28.651	0.00005865
64.0	0.26	30.48	27.838	0.00005236
97.0	0.38	30.48	26.721	0.00005016
112.0	0.50	30.48	25.400	0.00006018

K avg =	0.000059361
Ft/day =	0.168266542
m/day =	0.051321295

Project	39406.1.1	**Lab. No.**	T-5791		
County	Guilford	**Station**	404+50	**Test Type**	Permeability
Sample No.	ST-27 #2	**Depth**	10.3' - 12.3'	**Sp. Gr.**	2.664
AASHTO Class.	A-4 (4)	**L.L.**	39	**P.I.**	9
Remarks	Tannish white colored silt				

EST. BLOWS /FT

	Specimen Number	**Spec. 1**
Pretest	**Water Content, %**	20.22
Pretest	**Dry Density, PCF**	104.55
Pretest	**Saturation**	91.1
Pretest	**Void Ratio**	0.5942
Pretest	**Diameter, (in)**	2.858
Pretest	**Height (in)**	6.151
	(o1-o3)max., min.	0
Post test	**Water Content, %**	21.79
Post test	**Dry Density, PCF**	105.28
Post test	**Saturation %**	100
Post test	**Void Ratio**	0.5833
Post test	**Strain Rate, (in./min.)**	0

PRE-Test *Specimen Conditions* No. 1

Post test *Failure Mode* No. 1

Tannish white colored silt

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	22.14	26.15	**Plastic Limits:**	0	
Dry Density (pcf):	90.78	99.69	**Plasticity Index (%):**	0	
Saturation (%):	70.38	103.33			
Void Ratio:	0.8410	0.6765	**Specific Gravity:**	2.680	Measured

Soil Description: Tannish white colored silt

Project Number: 39406.1.1 **Depth:** 10.3 - 12.3 ft

Sample Number: ST-27 **Boring Number:**

Project: U-2412B

Client: T-5791

Location: Guilford County (Sta. 404+50)

Remarks:
Solid height is 0.54654 inch; Blows/ft = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	22.14	26.15	**Plastic Limits:**	0	
Dry Density (pcf):	90.78	99.69	**Plasticity Index (%):**	0	
Saturation (%):	70.38	103.33			
Void Ratio:	0.8410	0.6765	**Specific Gravity:**	2.680	Measured

Soil Description: Tannish white colored silt

Project Number: 39406.1.1 **Depth:** 10.3 - 12.3 ft

Sample Number: ST-27 **Boring Number:**

Project: U-2412B

Client: T-5791

Location: Guilford County (Sta. 404+50)

Remarks:
Solid height is 0.54654 inch; Blows/ft = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	22.14	26.15	**Plastic Limits:**	0	
Dry Density (pcf):	90.78	99.69	**Plasticity Index (%):**	0	
Saturation (%):	70.38	103.33			
Void Ratio:	0.8410	0.6765	**Specific Gravity:**	2.680	Measured

Soil Description: Tannish white colored silt

Project Number: 39406.1.1 **Depth:** 10.3 - 12.3 ft

Sample Number: ST-27 **Boring Number:**

Project: U-2412B

Client: T-5791

Location: Guilford County (Sta. 404+50)

Remarks:
Solid height is 0.54654 inch; Blows/ft = NA

Consolidation Test Results
Summary

Project: U-2412B
Location: Guilford County (Sta. 404+50)
Job Number: T-5791

Project Number: 39406.1.1

Sample Number: ST-27
Boring Number:
Depth: 10.3 - 12.3 ft
Sample Type: Undisturbed

Soil Description:
Tannish white colored silt
Remarks:
Solid height is 0.54654 inch; Blows/ft = NA

Test Number:
Test Date:

Index	Load Sequence (tsf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	1.0046	0.4589	0.00	0.8410	0.000		0.000	
1	0.031	0.0007	1.0039	0.4582	0.07	0.8398	0.100		7798.475	
2	0.063	0.0017	1.0029	0.4572	0.17	0.8379	0.085		9188.837	
3	0.125	0.0040	1.0006	0.4549	0.40	0.8337	0.250		3098.915	
4	0.250	0.0089	0.9957	0.4500	0.89	0.8247	0.391		1964.054	
5	0.500	0.0151	0.9895	0.4438	1.50	0.8134	0.212		3580.508	
6	1.000	0.0239	0.9807	0.4350	2.38	0.7972	0.230		3230.120	
7	2.000	0.0369	0.9677	0.4220	3.67	0.7734	0.640		1132.219	
8	4.000	0.0555	0.9491	0.4034	5.52	0.7393	1.063		655.721	
9	2.000	0.0535	0.9511	0.4054	5.33	0.7430	0.000		0.000	
10	1.000	0.0507	0.9539	0.4082	5.05	0.7481	0.000		0.000	
11	0.500	0.0467	0.9579	0.4122	4.65	0.7555	0.000		0.000	
12	1.000	0.0486	0.9560	0.4103	4.84	0.7520	0.000		0.000	
13	2.000	0.0523	0.9523	0.4066	5.21	0.7452	0.000		0.000	
14	4.000	0.0586	0.9460	0.4003	5.83	0.7337	0.000		0.000	
15	8.000	0.0905	0.9141	0.3684	9.01	0.6752	0.880		734.740	
16	16.000	0.1302	0.8744	0.3287	12.96	0.6024	0.343		1724.864	
17	4.000	0.1245	0.8801	0.3344	12.39	0.6129	0.000		0.000	
18	0.016	0.0898	0.9148	0.3691	8.94	0.6765	0.000		0.000	

Tested By:

Checked By:

Consolidation Test
Consolidation Specimen Information

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County (Sta. 404+50)
Job Number: T-5791 **Test Date:**

Sample Number: ST-27 **Soil Description:**
Boring Number: Tannish white colored silt
Depth: 10.3 - 12.3 ft **Remarks:**
Sample Type: Undisturbed Solid height is 0.54654 inch; Blows/ft = NA

Test Number:
Liquid Limit: 0.0000 **Initial Void Ratio:** 0.8410 **Initial Height (in):** 1.0046
Plastic Limit: 0.0000 **Plasticity Index (%):** 0.0000 **Initial Diameter (in):** 2.4999
Specific Gravity: 2.6800 Measured **Weight of Ring (g):** 107.3200

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	143.51	148.23
Dry Soil + Container (g)	117.50	117.50
Weight of Container (g)	0.00	0.00
Moisture Content (%)	22.14	26.15
Void Ratio	0.8410	0.6765
Saturation (%)	70.38	103.33
Dry Density (pcf)	90.78	99.69

Tested By: **Checked By:**

NCDOT

Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date :

Tested By:

Effective Stress at Maximum Deviator Stress Criterion

Deviator Stress Vs. Axial Strain

Initial	Specimen A	B	C	D
Water Content (%)	19.3	19.1		
Dry Density (pcf)	89.5	93.5		
Saturation (%)	59.79	65.37		
Void Ratio	0.854	0.774		
Diameter (in)	2.873	2.839		
Height (in)	6.066	6.032		
Specific Gravity	2.66	2.66		
Liquid Limit	0	0		
Plastic Limit	0	0		
After Consolidation	**A**	**B**	**C**	**D**
B-Value	0.00	0.00		
Water Content (%)	19.9	20.3		
Dry Density (pcf)	92.73	96.92		
Saturation (%)	100.00	100.00		
Void Ratio	0.793	0.716		
Effective Stress (psi)	6.0	12.0		
Back Press. (psi)	70.4	70.1		
Rate of Strain	0.009	0.009		

Maximium Deviator Stress Criterion		After Shear	A	B	C	D
C (psi)	0.0	σ'1 at Failure (psi)	33.60	43.09		
C' (psi)	0.0	σ'3 at Failure (psi)	8.50	12.80		
Ø (deg)	0.0					
Ø' (deg)	0.0					

		A	B	C	D
Project:	U-2412B	N/A	N/A	N/A	N/A
Location:	Guilford County (Sta. 404+50)				
Project Number:	39406.1.1				
Boring Number:	0				
Sample Number:	ST-27				
Depth:	10.3 - 12.3 ft				
Sample Type:	Undisturbed	Failure Photographs			
Description:					
Test Type	Consolidated Undrained				
Remarks	Tannish colored silt				

NCDOT

Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date:

Tested By:

Deviator Stress vs. Axial Strain

Principal Stress Ratio vs. Axial Strain

Change in Pore Pressure vs. Axial Strain
Change in Pore Pressure (psi)
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
0.000
5.000
10.000
15.000
20.000
25.000
Axial Strain (%)
Specimen A
Specimen B
Specimen C
Specimen D

Mohr Stress Circles at Maximum Deviator Stress Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at Maximum Principal Stress Ratio Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at 15% Axial Strain Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)
30.0
20.0
10.0
0.0
Q (psi)
0.0
10.0
20.0
30.0
P' (psi)
Specimen A
Specimen B
Specimen C
Specimen D
Tangent Line

Stress Paths (Total)
(C' = 0.0 Ø' = 0.0)
30.0
20.0
10.0
0.0
Q (psi)
0.0
10.0
20.0
30.0
P (psi)

Specimen A Shear Data

CU Triaxial Test

NCDOT

File Location
T-5791.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5791
Sample Location: Guilford County (Sta. 404+50)
Sample Description: Tannish colored silt
Remarks: 25° shear plane .

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.664
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.872	2.840	
Height (in)	6.066	5.986	
Weight (grams)	1101.00		1213.00
Moisture (%)	19.28		31.42
Dry Density (pcf)	89.46	92.73	
Saturation (%)	59.79	100.00	
Void Ratio	0.854	0.793	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 76.400
Effective Confining Stress (psi): 6.0
Corrected Peak Deviator Stress (psi): 25.093 at reading number: 122

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	33.7	0.136	70.4	0.0	6.33	0.000	0.000	0.000	6.0	6.0	6.0	6.0	1.00	0.00	6.0	0.0	6.0
1	44.4	0.138	70.9	0.5	6.34	0.031	1.682	1.669	7.7	6.0	7.2	5.5	1.30	0.30	6.8	0.8	6.3
2	50.5	0.142	71.2	0.8	6.34	0.092	2.651	2.612	8.6	6.0	7.8	5.2	1.50	0.29	7.3	1.3	6.5
3	54.4	0.145	71.3	0.9	6.34	0.154	3.272	3.208	9.2	6.0	8.3	5.1	1.63	0.28	7.6	1.6	6.7
4	57.3	0.149	71.4	1.0	6.35	0.208	3.729	3.641	9.6	6.0	8.6	5.0	1.73	0.27	7.8	1.8	6.8
5	61.0	0.152	71.5	1.1	6.35	0.269	4.314	4.198	10.2	6.0	9.1	4.9	1.86	0.26	8.1	2.1	7.0
6	65.0	0.157	71.6	1.2	6.36	0.346	4.936	4.785	10.8	6.0	9.6	4.8	2.00	0.26	8.4	2.4	7.2
7	68.4	0.161	71.7	1.3	6.36	0.415	5.484	5.301	11.3	6.0	10.0	4.7	2.13	0.24	8.6	2.7	7.4
8	71.9	0.165	71.7	1.3	6.37	0.484	6.033	5.816	11.8	6.0	10.5	4.7	2.25	0.23	8.9	2.9	7.6
9	74.8	0.170	71.8	1.4	6.37	0.561	6.490	6.236	12.2	6.0	10.8	4.6	2.36	0.22	9.1	3.1	7.7
10	77.4	0.174	71.9	1.5	6.37	0.630	6.892	6.604	12.6	6.0	11.1	4.5	2.46	0.22	9.3	3.3	7.8
11	80.6	0.178	71.9	1.5	6.38	0.700	7.404	7.081	13.1	6.0	11.6	4.5	2.56	0.21	9.5	3.5	8.1
12	84.7	0.182	71.9	1.5	6.38	0.769	8.043	7.684	13.7	6.0	12.2	4.5	2.69	0.19	9.8	3.8	8.4
13	86.5	0.186	71.9	1.5	6.39	0.838	8.336	7.941	13.9	6.0	12.4	4.5	2.77	0.19	10.0	4.0	8.4
14	89.1	0.191	71.9	1.5	6.39	0.915	8.738	8.304	14.3	6.0	12.8	4.5	2.86	0.18	10.1	4.2	8.6
15	91.7	0.195	71.9	1.5	6.40	0.984	9.159	8.687	14.7	6.0	13.2	4.5	2.93	0.17	10.3	4.3	8.8
16	93.8	0.199	71.9	1.5	6.40	1.053	9.488	8.980	15.0	6.0	13.5	4.5	2.99	0.17	10.5	4.5	9.0
17	96.1	0.203	71.9	1.5	6.41	1.122	9.853	9.308	15.3	6.0	13.8	4.5	3.07	0.16	10.6	4.7	9.2
18	98.9	0.208	71.9	1.5	6.41	1.199	10.292	9.704	15.7	6.0	14.2	4.5	3.14	0.15	10.8	4.9	9.4

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	101.1	0.212	71.8	1.4	6.42	1.269	10.639	10.013	16.0	6.0	14.6	4.6	3.19	0.14	11.0	5.0	9.6
20	102.4	0.216	71.8	1.4	6.42	1.338	10.840	10.177	16.2	6.0	14.8	4.6	3.22	0.14	11.1	5.1	9.7
21	104.6	0.220	71.8	1.4	6.43	1.407	11.188	10.485	16.5	6.0	15.1	4.6	3.27	0.13	11.2	5.2	9.9
22	106.8	0.225	71.7	1.3	6.43	1.484	11.535	10.789	16.8	6.0	15.4	4.7	3.32	0.12	11.4	5.4	10.0
23	109.0	0.229	71.7	1.3	6.43	1.553	11.882	11.096	17.1	6.0	15.8	4.7	3.37	0.12	11.5	5.5	10.2
24	109.9	0.234	71.7	1.3	6.44	1.630	12.029	11.201	17.2	6.0	15.9	4.7	3.38	0.11	11.6	5.6	10.3
25	112.0	0.238	71.7	1.3	6.44	1.699	12.358	11.490	17.5	6.0	16.2	4.7	3.42	0.11	11.7	5.7	10.5
26	113.3	0.243	71.6	1.2	6.45	1.776	12.559	11.648	17.6	6.0	16.4	4.8	3.43	0.10	11.8	5.8	10.6
27	114.8	0.247	71.6	1.2	6.45	1.845	12.796	11.846	17.8	6.0	16.7	4.8	3.45	0.10	11.9	5.9	10.7
28	117.1	0.251	71.5	1.1	6.46	1.922	13.162	12.165	18.2	6.0	17.0	4.9	3.49	0.09	12.1	6.1	11.0
29	118.2	0.255	71.5	1.1	6.46	1.991	13.345	12.308	18.3	6.0	17.2	4.9	3.50	0.09	12.1	6.2	11.1
30	120.0	0.260	71.5	1.1	6.47	2.068	13.619	12.563	18.6	6.0	17.5	4.9	3.54	0.08	12.3	6.3	11.2
31	120.9	0.264	71.4	1.0	6.47	2.137	13.765	12.696	18.7	6.0	17.7	5.0	3.54	0.08	12.3	6.3	11.3
32	123.0	0.269	71.4	1.0	6.48	2.214	14.094	13.008	19.0	6.0	18.0	5.0	3.59	0.07	12.5	6.5	11.5
33	124.4	0.273	71.3	0.9	6.48	2.283	14.314	13.212	19.2	6.0	18.3	5.1	3.60	0.07	12.6	6.6	11.7
34	125.5	0.277	71.3	0.8	6.49	2.360	14.496	13.380	19.4	6.0	18.5	5.1	3.60	0.06	12.7	6.7	11.8
35	127.1	0.282	71.2	0.8	6.49	2.437	14.752	13.618	19.6	6.0	18.8	5.2	3.63	0.06	12.8	6.8	12.0
36	128.8	0.287	71.2	0.8	6.50	2.514	15.008	13.856	19.9	6.0	19.1	5.2	3.66	0.06	12.9	6.9	12.1
37	129.3	0.291	71.2	0.8	6.50	2.583	15.100	13.935	19.9	6.0	19.2	5.2	3.66	0.05	13.0	7.0	12.2
38	131.2	0.295	71.1	0.7	6.51	2.660	15.392	14.208	20.2	6.0	19.5	5.3	3.68	0.05	13.1	7.1	12.4
39	132.2	0.300	71.1	0.7	6.51	2.737	15.557	14.356	20.4	6.0	19.7	5.3	3.70	0.05	13.2	7.2	12.5
40	134.3	0.304	71.0	0.6	6.52	2.806	15.886	14.665	20.7	6.0	20.0	5.4	3.73	0.04	13.3	7.3	12.7
41	135.4	0.309	71.0	0.6	6.52	2.883	16.050	14.813	20.8	6.0	20.3	5.4	3.72	0.04	13.4	7.4	12.8
42	137.6	0.313	71.0	0.6	6.53	2.952	16.398	15.139	21.1	6.0	20.6	5.4	3.78	0.04	13.6	7.6	13.0
43	137.8	0.317	70.9	0.5	6.53	3.021	16.434	15.163	21.2	6.0	20.7	5.5	3.76	0.03	13.6	7.6	13.1
44	138.4	0.322	70.9	0.5	6.54	3.098	16.526	15.239	21.2	6.0	20.8	5.5	3.76	0.03	13.6	7.6	13.1
45	139.7	0.326	70.8	0.4	6.54	3.168	16.727	15.422	21.4	6.0	21.0	5.6	3.78	0.03	13.7	7.7	13.3
46	141.5	0.330	70.8	0.4	6.55	3.237	17.019	15.694	21.7	6.0	21.3	5.6	3.80	0.02	13.8	7.8	13.5
47	142.4	0.335	70.8	0.4	6.55	3.314	17.165	15.822	21.8	6.0	21.5	5.6	3.80	0.02	13.9	7.9	13.6
48	143.6	0.339	70.7	0.3	6.56	3.383	17.348	15.987	22.0	6.0	21.7	5.7	3.80	0.02	14.0	8.0	13.7
49	144.6	0.343	70.7	0.3	6.56	3.452	17.513	16.134	22.1	6.0	21.9	5.7	3.82	0.02	14.1	8.1	13.8
50	146.5	0.347	70.6	0.2	6.57	3.529	17.805	16.402	22.4	6.0	22.2	5.8	3.85	0.01	14.2	8.2	14.0
51	147.2	0.352	70.6	0.2	6.57	3.598	17.915	16.496	22.5	6.0	22.3	5.8	3.83	0.01	14.2	8.2	14.1
52	148.0	0.356	70.6	0.1	6.58	3.667	18.043	16.607	22.6	6.0	22.5	5.8	3.84	0.01	14.3	8.3	14.2
53	149.4	0.360	70.5	0.1	6.58	3.736	18.262	16.805	22.8	6.0	22.7	5.9	3.85	0.01	14.4	8.4	14.3
54	150.2	0.364	70.5	0.1	6.59	3.813	18.390	16.914	22.9	6.0	22.8	5.9	3.85	0.00	14.5	8.5	14.4
55	151.7	0.369	70.4	0.0	6.59	3.890	18.628	17.129	23.1	6.0	23.1	6.0	3.86	0.00	14.6	8.6	14.6
56	152.6	0.373	70.4	0.0	6.60	3.959	18.774	17.256	23.2	6.0	23.3	6.0	3.87	0.00	14.6	8.6	14.7
57	154.7	0.377	70.3	-0.1	6.60	4.029	19.103	17.559	23.6	6.0	23.6	6.1	3.90	0.00	14.8	8.8	14.8
58	154.7	0.382	70.3	-0.1	6.61	4.106	19.103	17.544	23.5	6.0	23.6	6.1	3.88	0.00	14.8	8.8	14.9
59	156.2	0.386	70.3	-0.1	6.61	4.175	19.341	17.759	23.8	6.0	23.9	6.1	3.91	-0.01	14.9	8.9	15.0

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	157.6	0.391	70.2	-0.2	6.62	4.252	19.560	17.954	23.9	6.0	24.1	6.2	3.91	-0.01	15.0	9.0	15.1
61	158.5	0.395	70.2	-0.2	6.62	4.328	19.706	18.079	24.1	6.0	24.3	6.2	3.92	-0.01	15.0	9.0	15.2
62	159.8	0.399	70.1	-0.3	6.63	4.398	19.907	18.257	24.3	6.0	24.5	6.3	3.92	-0.01	15.1	9.1	15.4
63	161.0	0.404	70.1	-0.3	6.63	4.475	20.090	18.417	24.4	6.0	24.7	6.3	3.93	-0.02	15.2	9.2	15.5
64	162.2	0.409	70.1	-0.3	6.64	4.551	20.291	18.593	24.6	6.0	24.9	6.3	3.94	-0.02	15.3	9.3	15.6
65	163.0	0.413	70.1	-0.4	6.64	4.621	20.419	18.701	24.7	6.0	25.0	6.3	3.95	-0.02	15.3	9.4	15.7
66	164.1	0.417	70.0	-0.4	6.65	4.697	20.584	18.842	24.8	6.0	25.2	6.4	3.94	-0.02	15.4	9.4	15.8
67	164.9	0.422	70.0	-0.4	6.65	4.774	20.712	18.948	24.9	6.0	25.4	6.4	3.95	-0.02	15.5	9.5	15.9
68	166.8	0.426	69.9	-0.5	6.66	4.844	21.004	19.212	25.2	6.0	25.7	6.5	3.96	-0.03	15.6	9.6	16.1
69	167.6	0.431	69.9	-0.5	6.66	4.920	21.132	19.318	25.3	6.0	25.8	6.5	3.96	-0.03	15.7	9.7	16.2
70	168.6	0.435	69.8	-0.6	6.67	4.997	21.297	19.458	25.5	6.0	26.0	6.6	3.96	-0.03	15.7	9.7	16.3
71	169.6	0.439	69.8	-0.6	6.67	5.067	21.461	19.599	25.6	6.0	26.2	6.6	3.97	-0.03	15.8	9.8	16.4
72	170.8	0.444	69.8	-0.6	6.68	5.143	21.644	19.756	25.8	6.0	26.4	6.6	3.98	-0.03	15.9	9.9	16.5
73	171.6	0.448	69.7	-0.7	6.68	5.213	21.772	19.863	25.9	6.0	26.5	6.7	3.98	-0.03	15.9	9.9	16.6
74	173.1	0.453	69.7	-0.7	6.69	5.289	22.010	20.071	26.1	6.0	26.8	6.7	4.00	-0.03	16.0	10.0	16.7
75	174.0	0.457	69.6	-0.8	6.69	5.359	22.156	20.194	26.2	6.0	26.9	6.8	3.99	-0.04	16.1	10.1	16.8
76	175.1	0.462	69.6	-0.8	6.70	5.436	22.321	20.333	26.3	6.0	27.1	6.8	4.00	-0.04	16.2	10.2	16.9
77	176.4	0.466	69.6	-0.8	6.70	5.505	22.522	20.507	26.5	6.0	27.3	6.8	4.00	-0.04	16.2	10.3	17.1
78	176.8	0.470	69.5	-0.9	6.71	5.582	22.595	20.559	26.6	6.0	27.4	6.9	3.99	-0.04	16.3	10.3	17.1
79	178.3	0.475	69.5	-0.9	6.71	5.659	22.832	20.766	26.8	6.0	27.7	6.9	4.01	-0.04	16.4	10.4	17.3
80	179.6	0.479	69.5	-0.9	6.72	5.728	23.033	20.940	26.9	6.0	27.9	6.9	4.02	-0.04	16.5	10.5	17.4
81	180.5	0.484	69.4	-1.0	6.73	5.805	23.180	21.060	27.1	6.0	28.0	7.0	4.01	-0.05	16.5	10.5	17.5
82	181.1	0.488	69.4	-1.0	6.73	5.881	23.271	21.128	27.1	6.0	28.1	7.0	4.01	-0.05	16.6	10.6	17.6
83	182.2	0.492	69.4	-1.1	6.74	5.951	23.436	21.266	27.3	6.0	28.3	7.0	4.02	-0.05	16.6	10.6	17.7
84	183.1	0.497	69.3	-1.1	6.74	6.028	23.582	21.386	27.4	6.0	28.5	7.1	4.01	-0.05	16.7	10.7	17.8
85	185.1	0.502	69.3	-1.1	6.75	6.104	23.893	21.659	27.7	6.0	28.8	7.1	4.04	-0.05	16.8	10.8	18.0
86	185.6	0.506	69.2	-1.2	6.75	6.174	23.984	21.729	27.7	6.0	28.9	7.2	4.03	-0.05	16.9	10.9	18.0
87	186.7	0.510	69.2	-1.2	6.76	6.251	24.149	21.865	27.9	6.0	29.1	7.2	4.04	-0.05	16.9	10.9	18.1
88	187.5	0.514	69.2	-1.3	6.76	6.320	24.277	21.968	28.0	6.0	29.2	7.2	4.03	-0.06	17.0	11.0	18.2
89	188.6	0.519	69.1	-1.3	6.77	6.397	24.459	22.120	28.1	6.0	29.4	7.3	4.04	-0.06	17.1	11.1	18.3
90	189.7	0.523	69.1	-1.3	6.77	6.466	24.624	22.257	28.3	6.0	29.6	7.3	4.05	-0.06	17.1	11.1	18.4
91	190.4	0.528	69.0	-1.4	6.78	6.543	24.734	22.341	28.3	6.0	29.7	7.4	4.03	-0.06	17.2	11.2	18.5
92	191.0	0.532	69.0	-1.4	6.78	6.620	24.825	22.407	28.4	6.0	29.8	7.4	4.03	-0.06	17.2	11.2	18.6
93	191.8	0.537	69.0	-1.4	6.79	6.689	24.953	22.509	28.5	6.0	29.9	7.4	4.03	-0.06	17.2	11.3	18.7
94	193.3	0.541	68.9	-1.5	6.79	6.766	25.191	22.712	28.7	6.0	30.2	7.5	4.05	-0.06	17.3	11.4	18.8
95	194.2	0.546	68.9	-1.5	6.80	6.843	25.337	22.828	28.8	6.0	30.3	7.5	4.05	-0.07	17.4	11.4	18.9
96	194.8	0.550	68.9	-1.5	6.81	6.912	25.428	22.896	28.9	6.0	30.4	7.5	4.04	-0.07	17.4	11.4	19.0
97	195.4	0.555	68.8	-1.6	6.81	6.989	25.520	22.961	29.0	6.0	30.5	7.6	4.03	-0.07	17.5	11.5	19.1
98	196.5	0.559	68.8	-1.6	6.82	7.058	25.702	23.114	29.1	6.0	30.7	7.6	4.03	-0.07	17.6	11.6	19.2
99	197.9	0.563	68.7	-1.7	6.82	7.135	25.922	23.298	29.3	6.0	31.0	7.7	4.04	-0.07	17.6	11.6	19.3
100	198.8	0.567	68.7	-1.7	6.83	7.204	26.068	23.415	29.4	6.0	31.1	7.7	4.05	-0.07	17.7	11.7	19.4

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	200.0	0.572	68.7	-1.8	6.83	7.281	26.251	23.565	29.6	6.0	31.3	7.7	4.04	-0.07	17.8	11.8	19.5
102	201.3	0.576	68.6	-1.8	6.84	7.350	26.452	23.733	29.7	6.0	31.5	7.8	4.05	-0.08	17.9	11.9	19.6
103	201.5	0.581	68.6	-1.8	6.84	7.427	26.488	23.747	29.7	6.0	31.6	7.8	4.04	-0.08	17.9	11.9	19.7
104	202.9	0.585	68.5	-1.9	6.85	7.496	26.708	23.931	29.9	6.0	31.8	7.9	4.04	-0.08	18.0	12.0	19.8
105	204.2	0.590	68.5	-1.9	6.85	7.573	26.909	24.096	30.1	6.0	32.0	7.9	4.05	-0.08	18.0	12.0	19.9
106	204.9	0.594	68.5	-1.9	6.86	7.642	27.019	24.179	30.2	6.0	32.1	7.9	4.05	-0.08	18.1	12.1	20.0
107	205.7	0.598	68.4	-2.0	6.86	7.719	27.147	24.276	30.3	6.0	32.3	8.0	4.04	-0.08	18.1	12.1	20.1
108	205.4	0.602	68.4	-2.0	6.87	7.788	27.110	24.224	30.2	6.0	32.2	8.0	4.03	-0.08	18.1	12.1	20.1
109	206.0	0.607	68.4	-2.0	6.88	7.865	27.201	24.287	30.3	6.0	32.3	8.0	4.02	-0.08	18.1	12.1	20.2
110	206.0	0.612	68.3	-2.1	6.88	7.942	27.201	24.266	30.3	6.0	32.3	8.1	4.01	-0.09	18.1	12.1	20.2
111	206.7	0.616	68.3	-2.1	6.89	8.011	27.311	24.349	30.3	6.0	32.5	8.1	4.00	-0.09	18.2	12.2	20.3
112	208.6	0.620	68.2	-2.2	6.89	8.088	27.604	24.596	30.6	6.0	32.8	8.2	4.02	-0.09	18.3	12.3	20.5
113	208.6	0.624	68.2	-2.2	6.90	8.157	27.604	24.577	30.6	6.0	32.8	8.2	4.00	-0.09	18.3	12.3	20.5
114	209.3	0.629	68.2	-2.2	6.90	8.234	27.713	24.657	30.7	6.0	32.9	8.2	3.99	-0.09	18.3	12.3	20.6
115	209.7	0.633	68.2	-2.2	6.91	8.303	27.786	24.705	30.7	6.0	32.9	8.2	4.00	-0.09	18.3	12.4	20.6
116	210.1	0.638	68.1	-2.3	6.91	8.380	27.841	24.733	30.7	6.0	33.0	8.3	3.98	-0.09	18.4	12.4	20.7
117	210.9	0.642	68.1	-2.3	6.92	8.457	27.969	24.829	30.8	6.0	33.2	8.3	3.98	-0.09	18.4	12.4	20.7
118	212.0	0.647	68.0	-2.4	6.93	8.526	28.152	24.977	31.0	6.0	33.3	8.4	3.99	-0.09	18.5	12.5	20.8
119	212.8	0.651	68.0	-2.4	6.93	8.603	28.280	25.072	31.1	6.0	33.5	8.4	3.99	-0.10	18.5	12.5	20.9
120	212.8	0.656	68.0	-2.5	6.94	8.680	28.280	25.051	31.0	6.0	33.5	8.4	3.97	-0.10	18.5	12.5	21.0
121	213.1	0.660	67.9	-2.5	6.94	8.749	28.317	25.064	31.1	6.0	33.5	8.5	3.96	-0.10	18.5	12.5	21.0
122	213.4	0.665	67.9	-2.5	6.95	8.826	28.371	25.093	31.1	6.0	33.6	8.5	3.95	-0.10	18.5	12.5	21.1
123	213.4	0.669	67.9	-2.5	6.95	8.903	28.371	25.071	31.1	6.0	33.6	8.5	3.94	-0.10	18.5	12.5	21.1
124	213.3	0.674	67.8	-2.6	6.96	8.980	28.353	25.032	31.0	6.0	33.6	8.6	3.92	-0.10	18.5	12.5	21.1
125	212.1	0.678	67.8	-2.6	6.97	9.057	28.170	24.844	30.8	6.0	33.4	8.6	3.89	-0.10	18.4	12.4	21.0
126	212.4	0.683	67.8	-2.6	6.97	9.134	28.207	24.856	30.8	6.0	33.5	8.6	3.88	-0.11	18.4	12.4	21.0
127	212.7	0.687	67.7	-2.7	6.98	9.203	28.262	24.886	30.9	6.0	33.5	8.7	3.88	-0.11	18.4	12.4	21.1
128	213.4	0.691	67.7	-2.7	6.98	9.272	28.371	24.966	31.0	6.0	33.7	8.7	3.87	-0.11	18.5	12.5	21.2
129	213.2	0.696	67.7	-2.7	6.99	9.349	28.335	24.911	30.9	6.0	33.6	8.7	3.86	-0.11	18.4	12.5	21.2
130	213.5	0.700	67.7	-2.7	6.99	9.418	28.390	24.941	30.9	6.0	33.7	8.7	3.85	-0.11	18.5	12.5	21.2
131	213.1	0.705	67.6	-2.8	7.00	9.495	28.317	24.853	30.8	6.0	33.6	8.8	3.83	-0.11	18.4	12.4	21.2
132	213.9	0.709	67.6	-2.8	7.00	9.564	28.444	24.949	30.9	6.0	33.7	8.8	3.85	-0.11	18.5	12.5	21.2
133	213.4	0.713	67.6	-2.8	7.01	9.641	28.371	24.861	30.9	6.0	33.7	8.8	3.83	-0.11	18.4	12.4	21.2
134	212.5	0.717	67.6	-2.8	7.02	9.710	28.225	24.710	30.7	6.0	33.5	8.8	3.80	-0.11	18.3	12.4	21.2
135	212.7	0.722	67.6	-2.8	7.02	9.787	28.262	24.721	30.7	6.0	33.5	8.8	3.80	-0.11	18.4	12.4	21.2
136	212.7	0.726	67.5	-2.9	7.03	9.856	28.262	24.701	30.7	6.0	33.6	8.9	3.79	-0.12	18.3	12.4	21.2
137	212.8	0.731	67.5	-2.9	7.03	9.933	28.280	24.696	30.7	6.0	33.6	8.9	3.79	-0.12	18.3	12.3	21.2
138	212.5	0.735	67.5	-2.9	7.04	10.002	28.225	24.627	30.6	6.0	33.5	8.9	3.78	-0.12	18.3	12.3	21.2
139	212.0	0.740	67.5	-2.9	7.04	10.079	28.152	24.540	30.5	6.0	33.4	8.9	3.76	-0.12	18.3	12.3	21.2
140	212.4	0.744	67.5	-2.9	7.05	10.156	28.207	24.567	30.6	6.0	33.5	8.9	3.77	-0.12	18.3	12.3	21.2
141	211.5	0.748	67.5	-2.9	7.06	10.225	28.061	24.417	30.4	6.0	33.3	8.9	3.75	-0.12	18.2	12.2	21.1

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	211.5	0.753	67.5	-2.9	7.06	10.302	28.061	24.395	30.4	6.0	33.3	8.9	3.74	-0.12	18.2	12.2	21.1
143	210.9	0.757	67.5	-2.9	7.07	10.379	27.969	24.292	30.3	6.0	33.2	8.9	3.73	-0.12	18.1	12.1	21.1
144	211.2	0.762	67.5	-2.9	7.07	10.448	28.024	24.321	30.3	6.0	33.3	8.9	3.72	-0.12	18.2	12.2	21.1
145	210.8	0.766	67.5	-2.9	7.08	10.525	27.951	24.234	30.2	6.0	33.2	8.9	3.71	-0.12	18.1	12.1	21.1
146	211.2	0.771	67.5	-2.9	7.09	10.602	28.024	24.278	30.3	6.0	33.2	8.9	3.72	-0.12	18.1	12.1	21.1
147	210.9	0.775	67.4	-3.0	7.09	10.679	27.969	24.208	30.2	6.0	33.2	9.0	3.70	-0.12	18.1	12.1	21.1
148	210.8	0.780	67.4	-3.0	7.10	10.748	27.951	24.172	30.2	6.0	33.1	9.0	3.69	-0.12	18.1	12.1	21.1
149	210.5	0.784	67.4	-3.0	7.10	10.825	27.914	24.118	30.1	6.0	33.1	9.0	3.69	-0.12	18.1	12.1	21.0
150	210.9	0.789	67.4	-3.0	7.11	10.910	27.969	24.143	30.1	6.0	33.1	9.0	3.69	-0.12	18.1	12.1	21.0
151	209.8	0.793	67.4	-3.0	7.12	10.979	27.805	23.977	30.0	6.0	33.0	9.0	3.66	-0.13	18.0	12.0	21.0
152	210.6	0.798	67.4	-3.0	7.12	11.056	27.933	24.070	30.1	6.0	33.1	9.0	3.67	-0.12	18.0	12.0	21.0
153	210.5	0.803	67.4	-3.0	7.13	11.133	27.914	24.032	30.0	6.0	33.0	9.0	3.67	-0.13	18.0	12.0	21.0
154	211.0	0.807	67.4	-3.0	7.13	11.202	27.987	24.078	30.1	6.0	33.1	9.0	3.68	-0.12	18.0	12.0	21.0
155	211.2	0.811	67.4	-3.0	7.14	11.279	28.024	24.089	30.1	6.0	33.1	9.0	3.68	-0.12	18.0	12.0	21.0
156	210.9	0.815	67.4	-3.0	7.15	11.348	27.969	24.021	30.0	6.0	33.0	9.0	3.67	-0.13	18.0	12.0	21.0
157	211.0	0.820	67.4	-3.0	7.15	11.417	27.987	24.017	30.0	6.0	33.0	9.0	3.66	-0.13	18.0	12.0	21.0
158	211.3	0.824	67.3	-3.1	7.16	11.494	28.042	24.045	30.0	6.0	33.1	9.1	3.65	-0.13	18.0	12.0	21.1
159	210.5	0.829	67.4	-3.0	7.16	11.571	27.914	23.910	29.9	6.0	32.9	9.0	3.65	-0.13	17.9	12.0	21.0
160	211.3	0.833	67.4	-3.0	7.17	11.640	28.042	24.004	30.0	6.0	33.0	9.0	3.66	-0.13	18.0	12.0	21.0
161	210.8	0.838	67.3	-3.1	7.18	11.717	27.951	23.901	29.9	6.0	33.0	9.1	3.64	-0.13	17.9	12.0	21.0
162	210.8	0.842	67.3	-3.1	7.18	11.786	27.951	23.882	29.9	6.0	32.9	9.1	3.64	-0.13	17.9	11.9	21.0
163	210.4	0.846	67.3	-3.1	7.19	11.863	27.896	23.812	29.8	6.0	32.9	9.1	3.63	-0.13	17.9	11.9	21.0
164	211.3	0.851	67.3	-3.1	7.19	11.940	28.042	23.919	29.9	6.0	33.0	9.1	3.64	-0.13	18.0	12.0	21.0
165	211.0	0.855	67.3	-3.1	7.20	12.009	27.987	23.852	29.8	6.0	32.9	9.1	3.63	-0.13	17.9	11.9	21.0
166	211.5	0.860	67.3	-3.1	7.21	12.094	28.061	23.892	29.9	6.0	33.0	9.1	3.64	-0.13	17.9	11.9	21.0
167	211.3	0.864	67.3	-3.1	7.21	12.163	28.042	23.857	29.9	6.0	32.9	9.1	3.63	-0.13	17.9	11.9	21.0
168	211.2	0.869	67.3	-3.1	7.22	12.240	28.024	23.819	29.8	6.0	32.9	9.1	3.63	-0.13	17.9	11.9	21.0
169	211.3	0.873	67.3	-3.1	7.22	12.309	28.042	23.816	29.8	6.0	32.9	9.1	3.62	-0.13	17.9	11.9	21.0
170	211.7	0.878	67.3	-3.1	7.23	12.386	28.097	23.842	29.8	6.0	32.9	9.1	3.63	-0.13	17.9	11.9	21.0
171	211.9	0.882	67.3	-3.1	7.24	12.463	28.134	23.853	29.8	6.0	32.9	9.1	3.62	-0.13	17.9	11.9	21.0
172	211.2	0.887	67.3	-3.1	7.24	12.539	28.024	23.735	29.7	6.0	32.8	9.1	3.61	-0.13	17.9	11.9	21.0
173	211.9	0.891	67.3	-3.1	7.25	12.609	28.134	23.812	29.8	6.0	32.9	9.1	3.62	-0.13	17.9	11.9	21.0
174	212.3	0.896	67.3	-3.1	7.26	12.686	28.189	23.838	29.8	6.0	32.9	9.1	3.62	-0.13	17.9	11.9	21.0
175	212.0	0.900	67.3	-3.1	7.26	12.755	28.152	23.787	29.8	6.0	32.9	9.1	3.62	-0.13	17.9	11.9	21.0
176	212.1	0.904	67.3	-3.1	7.27	12.832	28.170	23.781	29.8	6.0	32.9	9.1	3.62	-0.13	17.9	11.9	21.0
177	212.4	0.909	67.3	-3.1	7.27	12.909	28.207	23.791	29.8	6.0	32.9	9.1	3.62	-0.13	17.9	11.9	21.0
178	212.1	0.913	67.3	-3.1	7.28	12.978	28.170	23.740	29.7	6.0	32.8	9.1	3.61	-0.13	17.9	11.9	21.0
179	212.3	0.918	67.3	-3.1	7.29	13.055	28.189	23.734	29.7	6.0	32.8	9.1	3.61	-0.13	17.9	11.9	21.0
180	212.0	0.922	67.3	-3.1	7.29	13.131	28.152	23.681	29.7	6.0	32.8	9.1	3.60	-0.13	17.8	11.8	21.0
181	212.4	0.927	67.3	-3.1	7.30	13.208	28.207	23.707	29.7	6.0	32.8	9.1	3.61	-0.13	17.8	11.9	20.9
182	212.0	0.931	67.3	-3.1	7.30	13.278	28.152	23.639	29.6	6.0	32.7	9.1	3.60	-0.13	17.8	11.8	20.9

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	211.8	0.936	67.3	-3.1	7.31	13.354	28.115	23.586	29.6	6.0	32.7	9.1	3.60	-0.13	17.8	11.8	20.9
184	212.4	0.940	67.3	-3.1	7.32	13.431	28.207	23.644	29.6	6.0	32.7	9.1	3.60	-0.13	17.8	11.8	20.9
185	209.9	0.944	67.3	-3.1	7.32	13.500	27.823	23.292	29.3	6.0	32.4	9.1	3.56	-0.13	17.6	11.6	20.7
186	210.3	0.949	67.3	-3.1	7.33	13.577	27.878	23.318	29.3	6.0	32.4	9.1	3.57	-0.13	17.7	11.7	20.7
187	210.8	0.953	67.3	-3.1	7.34	13.647	27.951	23.362	29.4	6.0	32.5	9.1	3.56	-0.13	17.7	11.7	20.8
188	210.6	0.958	67.3	-3.1	7.34	13.723	27.933	23.325	29.3	6.0	32.4	9.1	3.57	-0.13	17.7	11.7	20.8
189	211.2	0.962	67.3	-3.1	7.35	13.800	28.024	23.382	29.4	6.0	32.5	9.1	3.56	-0.13	17.7	11.7	20.8
190	210.3	0.966	67.3	-3.1	7.35	13.870	27.878	23.237	29.2	6.0	32.4	9.1	3.55	-0.13	17.6	11.6	20.7
191	210.3	0.971	67.3	-3.1	7.36	13.946	27.878	23.215	29.2	6.0	32.3	9.1	3.55	-0.13	17.6	11.6	20.7
192	210.4	0.975	67.3	-3.1	7.37	14.016	27.896	23.212	29.2	6.0	32.3	9.1	3.55	-0.13	17.6	11.6	20.7
193	211.7	0.980	67.3	-3.1	7.37	14.092	28.097	23.363	29.4	6.0	32.5	9.1	3.56	-0.13	17.7	11.7	20.8
194	211.8	0.984	67.3	-3.1	7.38	14.169	28.115	23.357	29.4	6.0	32.5	9.1	3.56	-0.13	17.7	11.7	20.8
195	211.1	0.989	67.3	-3.1	7.39	14.246	28.006	23.241	29.2	6.0	32.3	9.1	3.56	-0.13	17.6	11.6	20.7
196	209.1	0.993	67.3	-3.2	7.39	14.315	27.695	22.956	28.9	6.0	32.1	9.1	3.51	-0.14	17.5	11.5	20.6
197	211.0	0.998	67.3	-3.1	7.40	14.392	27.987	23.185	29.2	6.0	32.3	9.1	3.54	-0.13	17.6	11.6	20.7
198	210.5	1.002	67.3	-3.1	7.41	14.462	27.914	23.103	29.1	6.0	32.2	9.1	3.53	-0.14	17.5	11.6	20.7
199	211.6	1.006	67.3	-3.1	7.41	14.538	28.079	23.222	29.2	6.0	32.3	9.1	3.55	-0.13	17.6	11.6	20.7
200	212.1	1.011	67.3	-3.1	7.42	14.608	28.170	23.281	29.3	6.0	32.4	9.1	3.55	-0.13	17.6	11.6	20.8
201	213.4	1.015	67.3	-3.1	7.42	14.684	28.371	23.431	29.4	6.0	32.5	9.1	3.57	-0.13	17.7	11.7	20.8
202	213.8	1.019	67.3	-3.1	7.43	14.754	28.426	23.458	29.5	6.0	32.6	9.1	3.57	-0.13	17.7	11.7	20.8
203	213.8	1.024	67.3	-3.1	7.44	14.831	28.426	23.436	29.4	6.0	32.6	9.1	3.57	-0.13	17.7	11.7	20.8
204	213.8	1.029	67.3	-3.1	7.44	14.907	28.426	23.414	29.4	6.0	32.5	9.1	3.57	-0.13	17.7	11.7	20.8
205	213.8	1.033	67.3	-3.1	7.45	14.977	28.426	23.394	29.4	6.0	32.5	9.1	3.57	-0.13	17.7	11.7	20.8
206	212.3	1.038	67.3	-3.2	7.46	15.061	28.189	23.168	29.2	6.0	32.3	9.1	3.53	-0.14	17.6	11.6	20.7
207	213.1	1.042	67.3	-3.1	7.46	15.130	28.317	23.257	29.3	6.0	32.4	9.1	3.55	-0.13	17.6	11.6	20.7
208	213.5	1.046	67.3	-3.1	7.47	15.207	28.390	23.298	29.3	6.0	32.4	9.1	3.56	-0.13	17.6	11.6	20.8
209	213.5	1.051	67.3	-3.1	7.48	15.284	28.390	23.276	29.3	6.0	32.4	9.1	3.55	-0.13	17.6	11.6	20.8
210	214.1	1.055	67.3	-3.1	7.48	15.353	28.481	23.334	29.3	6.0	32.5	9.1	3.56	-0.13	17.7	11.7	20.8
211	215.3	1.059	67.3	-3.1	7.49	15.423	28.664	23.469	29.5	6.0	32.6	9.1	3.57	-0.13	17.7	11.7	20.9
212	214.9	1.064	67.3	-3.2	7.50	15.499	28.609	23.400	29.4	6.0	32.5	9.1	3.56	-0.13	17.7	11.7	20.8
213	215.6	1.069	67.3	-3.2	7.50	15.576	28.719	23.471	29.5	6.0	32.6	9.1	3.57	-0.13	17.7	11.7	20.9
214	213.7	1.073	67.3	-3.2	7.51	15.646	28.408	23.189	29.2	6.0	32.3	9.1	3.54	-0.14	17.6	11.6	20.7
215	213.9	1.077	67.3	-3.2	7.52	15.722	28.444	23.198	29.2	6.0	32.3	9.1	3.54	-0.14	17.6	11.6	20.7
216	214.3	1.081	67.2	-3.2	7.52	15.792	28.518	23.240	29.2	6.0	32.4	9.2	3.53	-0.14	17.6	11.6	20.8
217	215.7	1.086	67.3	-3.2	7.53	15.868	28.737	23.402	29.4	6.0	32.5	9.1	3.56	-0.13	17.7	11.7	20.8
218	216.0	1.090	67.3	-3.2	7.54	15.938	28.774	23.413	29.4	6.0	32.6	9.1	3.56	-0.13	17.7	11.7	20.9
219	216.1	1.095	67.3	-3.2	7.54	16.015	28.792	23.406	29.4	6.0	32.6	9.1	3.56	-0.13	17.7	11.7	20.8
220	215.3	1.099	67.2	-3.2	7.55	16.084	28.664	23.279	29.3	6.0	32.5	9.2	3.54	-0.14	17.6	11.6	20.8
221	215.2	1.104	67.2	-3.2	7.56	16.161	28.646	23.242	29.2	6.0	32.4	9.2	3.53	-0.14	17.6	11.6	20.8
222	215.9	1.108	67.2	-3.2	7.56	16.230	28.755	23.314	29.3	6.0	32.5	9.2	3.54	-0.14	17.7	11.7	20.8
223	215.6	1.112	67.2	-3.2	7.57	16.307	28.719	23.261	29.3	6.0	32.4	9.2	3.54	-0.14	17.6	11.6	20.8

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	217.4	1.117	67.2	-3.2	7.58	16.384	28.993	23.468	29.5	6.0	32.6	9.2	3.56	-0.14	17.7	11.7	20.9
225	214.7	1.121	67.2	-3.2	7.58	16.453	28.572	23.097	29.1	6.0	32.3	9.2	3.52	-0.14	17.5	11.5	20.7
226	216.5	1.126	67.2	-3.2	7.59	16.530	28.865	23.319	29.3	6.0	32.5	9.2	3.54	-0.14	17.7	11.7	20.8
227	217.0	1.130	67.2	-3.2	7.60	16.607	28.938	23.358	29.4	6.0	32.5	9.2	3.55	-0.14	17.7	11.7	20.9
228	217.4	1.134	67.2	-3.2	7.60	16.676	28.993	23.383	29.4	6.0	32.6	9.2	3.55	-0.14	17.7	11.7	20.9
229	217.4	1.139	67.2	-3.2	7.61	16.753	28.993	23.361	29.4	6.0	32.5	9.2	3.55	-0.14	17.7	11.7	20.9
230	218.1	1.144	67.2	-3.2	7.62	16.829	29.103	23.430	29.4	6.0	32.6	9.2	3.55	-0.14	17.7	11.7	20.9
231	217.4	1.148	67.2	-3.2	7.62	16.906	28.993	23.317	29.3	6.0	32.5	9.2	3.53	-0.14	17.7	11.7	20.9
232	217.5	1.152	67.2	-3.2	7.63	16.976	29.011	23.312	29.3	6.0	32.5	9.2	3.53	-0.14	17.6	11.7	20.9
233	217.7	1.157	67.2	-3.2	7.64	17.060	29.048	23.318	29.3	6.0	32.5	9.2	3.53	-0.14	17.7	11.7	20.9
234	216.7	1.162	67.2	-3.2	7.64	17.129	28.883	23.161	29.2	6.0	32.4	9.2	3.52	-0.14	17.6	11.6	20.8
235	217.0	1.166	67.2	-3.2	7.65	17.206	28.938	23.184	29.2	6.0	32.4	9.2	3.52	-0.14	17.6	11.6	20.8
236	217.9	1.171	67.2	-3.2	7.66	17.283	29.084	23.283	29.3	6.0	32.5	9.2	3.53	-0.14	17.6	11.6	20.8
237	218.4	1.175	67.2	-3.2	7.67	17.360	29.157	23.321	29.3	6.0	32.6	9.2	3.53	-0.14	17.7	11.7	20.9
238	218.1	1.180	67.2	-3.2	7.67	17.437	29.103	23.253	29.2	6.0	32.5	9.2	3.52	-0.14	17.6	11.6	20.9
239	218.6	1.184	67.2	-3.2	7.68	17.506	29.194	23.309	29.3	6.0	32.5	9.2	3.52	-0.14	17.6	11.7	20.9
240	218.4	1.189	67.2	-3.2	7.69	17.583	29.157	23.256	29.2	6.0	32.5	9.2	3.52	-0.14	17.6	11.6	20.9
241	219.0	1.193	67.2	-3.2	7.69	17.652	29.249	23.311	29.3	6.0	32.5	9.2	3.52	-0.14	17.6	11.7	20.9
242	218.6	1.197	67.2	-3.2	7.70	17.729	29.194	23.244	29.2	6.0	32.5	9.2	3.52	-0.14	17.6	11.6	20.9
243	217.9	1.202	67.2	-3.2	7.71	17.798	29.083	23.132	29.1	6.0	32.4	9.2	3.51	-0.14	17.6	11.6	20.8
244	217.4	1.206	67.1	-3.3	7.71	17.867	28.993	23.038	29.0	6.0	32.3	9.3	3.49	-0.14	17.5	11.5	20.8
245	218.4	1.210	67.1	-3.3	7.72	17.937	29.157	23.153	29.1	6.0	32.4	9.3	3.50	-0.14	17.6	11.6	20.8
246	218.7	1.214	67.2	-3.2	7.73	18.013	29.212	23.175	29.2	6.0	32.4	9.2	3.51	-0.14	17.6	11.6	20.8
247	219.8	1.219	67.2	-3.2	7.73	18.090	29.377	23.288	29.3	6.0	32.5	9.2	3.52	-0.14	17.6	11.6	20.9
248	220.4	1.223	67.2	-3.2	7.74	18.160	29.468	23.342	29.3	6.0	32.6	9.2	3.53	-0.14	17.7	11.7	20.9
249	220.4	1.227	67.1	-3.3	7.75	18.229	29.468	23.322	29.3	6.0	32.6	9.3	3.52	-0.14	17.7	11.7	20.9
250	220.6	1.232	67.1	-3.3	7.75	18.306	29.505	23.329	29.3	6.0	32.6	9.3	3.52	-0.14	17.7	11.7	20.9
251	220.0	1.237	67.1	-3.3	7.76	18.383	29.413	23.232	29.2	6.0	32.5	9.3	3.51	-0.14	17.6	11.6	20.9
252	220.6	1.241	67.1	-3.3	7.77	18.452	29.505	23.286	29.3	6.0	32.5	9.3	3.51	-0.14	17.6	11.6	20.9
253	220.7	1.245	67.1	-3.3	7.78	18.529	29.523	23.278	29.3	6.0	32.5	9.3	3.51	-0.14	17.6	11.6	20.9
254	220.7	1.249	67.1	-3.3	7.78	18.598	29.523	23.258	29.3	6.0	32.5	9.3	3.51	-0.14	17.6	11.6	20.9
255	220.7	1.254	67.1	-3.3	7.79	18.675	29.523	23.235	29.2	6.0	32.5	9.3	3.51	-0.14	17.6	11.6	20.9
256	221.5	1.259	67.1	-3.3	7.80	18.752	29.651	23.316	29.3	6.0	32.6	9.3	3.51	-0.14	17.7	11.7	21.0
257	219.8	1.263	67.1	-3.3	7.80	18.828	29.377	23.071	29.1	6.0	32.4	9.3	3.48	-0.14	17.5	11.5	20.8
258	221.4	1.267	67.1	-3.3	7.81	18.898	29.633	23.258	29.3	6.0	32.6	9.3	3.50	-0.14	17.6	11.6	20.9
259	221.5	1.272	67.1	-3.3	7.82	18.975	29.651	23.250	29.2	6.0	32.5	9.3	3.50	-0.14	17.6	11.6	20.9
260	222.1	1.277	67.1	-3.3	7.83	19.051	29.742	23.301	29.3	6.0	32.6	9.3	3.50	-0.14	17.6	11.7	21.0
261	222.6	1.281	67.1	-3.3	7.83	19.128	29.816	23.338	29.3	6.0	32.6	9.3	3.51	-0.14	17.7	11.7	21.0
262	222.8	1.286	67.1	-3.3	7.84	19.205	29.852	23.344	29.3	6.0	32.6	9.3	3.51	-0.14	17.7	11.7	21.0
263	223.8	1.290	67.1	-3.3	7.85	19.274	30.017	23.456	29.5	6.0	32.8	9.3	3.52	-0.14	17.7	11.7	21.0
264	224.2	1.295	67.1	-3.3	7.85	19.351	30.071	23.478	29.5	6.0	32.8	9.3	3.52	-0.14	17.7	11.7	21.1

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
265	223.8	1.299	67.1	-3.3	7.86	19.420	30.017	23.413	29.4	6.0	32.7	9.3	3.51	-0.14	17.7	11.7	21.0
266	224.7	1.303	67.1	-3.3	7.87	19.497	30.145	23.493	29.5	6.0	32.8	9.3	3.52	-0.14	17.7	11.7	21.1
267	223.1	1.308	67.0	-3.4	7.88	19.574	29.907	23.278	29.3	6.0	32.6	9.4	3.49	-0.14	17.6	11.6	21.0
268	223.7	1.312	67.1	-3.3	7.88	19.643	29.998	23.331	29.3	6.0	32.7	9.3	3.50	-0.14	17.7	11.7	21.0
269	224.4	1.317	67.0	-3.4	7.89	19.720	30.108	23.396	29.4	6.0	32.7	9.4	3.50	-0.14	17.7	11.7	21.0
270	225.0	1.321	67.0	-3.4	7.90	19.789	30.199	23.448	29.4	6.0	32.8	9.4	3.51	-0.14	17.7	11.7	21.1
271	225.0	1.325	67.0	-3.4	7.90	19.859	30.199	23.428	29.4	6.0	32.8	9.4	3.51	-0.14	17.7	11.7	21.1
272	225.0	1.329	67.0	-3.4	7.91	19.936	30.199	23.404	29.4	6.0	32.8	9.4	3.50	-0.14	17.7	11.7	21.1
273	225.7	1.334	67.0	-3.4	7.92	20.012	30.309	23.469	29.5	6.0	32.8	9.4	3.50	-0.14	17.7	11.7	21.1
274	224.8	1.334	67.0	-3.4	7.92	20.012	30.163	23.352	29.3	6.0	32.7	9.4	3.49	-0.15	17.7	11.7	21.1

Specimen B Shear Data

CU Triaxial Test

NCDOT

File Location
T-5791.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5791
Sample Location: Guilford County (Sta. 404+50)
Sample Description:
Remarks: 35° shear plane.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.664
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.839	2.808	
Height (in)	6.032	5.947	
Weight (grams)	1116.00		1211.00
Moisture (%)	19.10		29.24
Dry Density (pcf)	93.52	96.92	
Saturation (%)	65.37	100.00	
Void Ratio	0.774	0.716	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 82.100
Effective Confining Stress (psi): 12.0
Corrected Peak Deviator Stress (psi): 30.286 at reading number: 266

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	39.5	0.130	70.1	0.0	6.19	0.000	0.000	0.000	12.0	12.0	12.0	12.0	1.00	0.00	12.0	0.0	12.0
1	67.7	0.134	71.1	1.0	6.20	0.068	4.554	4.524	16.5	12.0	15.5	11.0	1.41	0.23	14.3	2.3	13.2
2	77.8	0.138	71.6	1.5	6.20	0.135	6.190	6.128	18.1	12.0	16.6	10.5	1.58	0.24	15.1	3.1	13.6
3	86.0	0.142	71.9	1.8	6.21	0.203	7.509	7.415	19.4	12.0	17.6	10.2	1.73	0.24	15.7	3.7	13.9
4	92.8	0.146	72.2	2.1	6.21	0.270	8.606	8.477	20.5	12.0	18.4	9.9	1.85	0.25	16.2	4.2	14.2
5	98.8	0.150	72.3	2.2	6.21	0.338	9.572	9.408	21.4	12.0	19.2	9.8	1.96	0.24	16.7	4.7	14.5
6	103.1	0.153	72.5	2.4	6.22	0.386	10.279	10.088	22.1	12.0	19.7	9.6	2.05	0.24	17.0	5.0	14.6
7	108.5	0.157	72.7	2.6	6.22	0.453	11.152	10.924	22.9	12.0	20.4	9.4	2.16	0.23	17.5	5.5	14.9
8	113.7	0.161	72.8	2.7	6.23	0.530	11.989	11.717	23.7	12.0	21.0	9.3	2.26	0.23	17.9	5.9	15.1
9	118.4	0.165	72.9	2.8	6.23	0.598	12.751	12.440	24.4	12.0	21.6	9.2	2.35	0.23	18.2	6.2	15.4
10	122.8	0.169	73.0	2.9	6.23	0.665	13.457	13.107	25.1	12.0	22.2	9.1	2.44	0.22	18.6	6.6	15.6
11	126.2	0.173	73.1	3.0	6.24	0.733	13.996	13.606	25.6	12.0	22.6	9.0	2.52	0.22	18.8	6.8	15.8
12	129.7	0.177	73.2	3.1	6.24	0.800	14.572	14.142	26.1	12.0	23.1	8.9	2.59	0.22	19.1	7.1	16.0
13	133.1	0.182	73.3	3.2	6.25	0.878	15.111	14.635	26.6	12.0	23.5	8.8	2.66	0.22	19.3	7.3	16.2
14	136.2	0.186	73.3	3.2	6.25	0.945	15.613	15.095	27.1	12.0	23.8	8.8	2.72	0.22	19.5	7.5	16.3
15	138.9	0.190	73.4	3.3	6.26	1.022	16.059	15.495	27.5	12.0	24.2	8.7	2.78	0.21	19.7	7.7	16.5
16	141.6	0.194	73.4	3.3	6.26	1.090	16.487	15.880	27.9	12.0	24.6	8.7	2.83	0.21	19.9	7.9	16.6
17	144.2	0.198	73.4	3.3	6.27	1.157	16.914	16.265	28.3	12.0	24.9	8.7	2.88	0.20	20.1	8.1	16.8
18	146.8	0.203	73.5	3.4	6.27	1.234	17.323	16.626	28.6	12.0	25.2	8.6	2.93	0.20	20.3	8.3	16.9

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	148.5	0.207	73.5	3.4	6.27	1.302	17.602	16.863	28.9	12.0	25.4	8.6	2.97	0.20	20.4	8.4	17.0
20	150.3	0.212	73.5	3.4	6.28	1.379	17.899	17.112	29.1	12.0	25.7	8.6	3.00	0.20	20.6	8.6	17.1
21	152.7	0.216	73.6	3.5	6.28	1.456	18.290	17.453	29.5	12.0	26.0	8.5	3.05	0.20	20.7	8.7	17.2
22	154.1	0.221	73.6	3.5	6.29	1.533	18.513	17.628	29.6	12.0	26.1	8.5	3.08	0.20	20.8	8.8	17.3
23	155.5	0.225	73.6	3.5	6.29	1.611	18.736	17.803	29.8	12.0	26.3	8.5	3.10	0.20	20.9	8.9	17.4
24	157.0	0.231	73.6	3.5	6.30	1.697	18.977	17.990	30.0	12.0	26.5	8.5	3.11	0.19	21.0	9.0	17.5
25	158.5	0.236	73.6	3.5	6.31	1.784	19.219	18.177	30.2	12.0	26.7	8.5	3.15	0.19	21.1	9.1	17.6
26	159.8	0.240	73.6	3.5	6.31	1.861	19.424	18.333	30.3	12.0	26.8	8.5	3.16	0.19	21.2	9.2	17.6
27	161.2	0.245	73.6	3.5	6.32	1.938	19.647	18.506	30.5	12.0	27.0	8.5	3.18	0.19	21.3	9.3	17.7
28	163.1	0.250	73.6	3.5	6.32	2.025	19.963	18.775	30.8	12.0	27.2	8.5	3.22	0.19	21.4	9.4	17.9
29	164.4	0.255	73.6	3.5	6.33	2.102	20.167	18.960	31.0	12.0	27.4	8.5	3.24	0.19	21.5	9.5	18.0
30	166.0	0.259	73.6	3.5	6.33	2.180	20.427	19.199	31.2	12.0	27.7	8.5	3.27	0.18	21.6	9.6	18.1
31	167.3	0.264	73.6	3.5	6.34	2.257	20.632	19.383	31.4	12.0	27.9	8.5	3.28	0.18	21.7	9.7	18.2
32	168.5	0.268	73.5	3.4	6.34	2.334	20.836	19.566	31.6	12.0	28.1	8.6	3.29	0.18	21.8	9.8	18.3
33	169.9	0.273	73.6	3.5	6.35	2.411	21.059	19.768	31.8	12.0	28.2	8.5	3.33	0.18	21.9	9.9	18.4
34	170.9	0.278	73.6	3.5	6.35	2.488	21.227	19.915	31.9	12.0	28.4	8.5	3.34	0.18	22.0	10.0	18.5
35	172.4	0.282	73.5	3.4	6.36	2.565	21.468	20.134	32.1	12.0	28.7	8.6	3.35	0.17	22.1	10.1	18.6
36	174.0	0.286	73.5	3.4	6.36	2.633	21.728	20.373	32.4	12.0	28.9	8.6	3.38	0.17	22.2	10.2	18.7
37	175.7	0.291	73.5	3.4	6.37	2.710	21.989	20.609	32.6	12.0	29.2	8.6	3.41	0.17	22.3	10.3	18.9
38	176.8	0.295	73.5	3.4	6.37	2.787	22.174	20.773	32.8	12.0	29.4	8.6	3.42	0.16	22.4	10.4	19.0
39	178.0	0.300	73.4	3.3	6.38	2.864	22.360	20.936	32.9	12.0	29.6	8.7	3.41	0.16	22.5	10.5	19.1
40	179.3	0.305	73.5	3.4	6.38	2.941	22.583	21.136	33.1	12.0	29.8	8.6	3.45	0.16	22.6	10.6	19.2
41	180.9	0.309	73.4	3.3	6.39	3.019	22.844	21.371	33.4	12.0	30.0	8.7	3.46	0.16	22.7	10.7	19.4
42	182.0	0.314	73.4	3.3	6.39	3.105	23.011	21.513	33.5	12.0	30.2	8.7	3.48	0.15	22.8	10.8	19.4
43	183.3	0.319	73.4	3.3	6.40	3.183	23.215	21.693	33.7	12.0	30.4	8.7	3.49	0.15	22.8	10.8	19.6
44	184.5	0.323	73.4	3.3	6.40	3.260	23.420	21.873	33.9	12.0	30.6	8.7	3.51	0.15	22.9	10.9	19.6
45	185.9	0.328	73.3	3.2	6.41	3.327	23.643	22.073	34.1	12.0	30.8	8.8	3.52	0.15	23.0	11.0	19.8
46	186.9	0.332	73.3	3.2	6.41	3.404	23.810	22.216	34.2	12.0	31.0	8.8	3.51	0.14	23.1	11.1	19.9
47	188.3	0.336	73.3	3.2	6.42	3.472	24.033	22.415	34.4	12.0	31.2	8.8	3.55	0.14	23.2	11.2	20.0
48	190.0	0.341	73.3	3.2	6.42	3.549	24.312	22.666	34.7	12.0	31.5	8.8	3.57	0.14	23.3	11.3	20.2
49	191.2	0.345	73.2	3.1	6.43	3.617	24.498	22.828	34.8	12.0	31.7	8.9	3.57	0.14	23.4	11.4	20.3
50	193.4	0.349	73.2	3.1	6.43	3.694	24.851	23.150	35.1	12.0	32.0	8.9	3.61	0.14	23.6	11.6	20.4
51	194.2	0.353	73.2	3.1	6.43	3.761	24.981	23.258	35.3	12.0	32.2	8.9	3.61	0.13	23.6	11.6	20.5
52	195.6	0.357	73.1	3.0	6.44	3.829	25.204	23.456	35.5	12.0	32.4	9.0	3.62	0.13	23.7	11.7	20.7
53	196.6	0.362	73.1	3.0	6.44	3.906	25.371	23.597	35.6	12.0	32.6	9.0	3.61	0.13	23.8	11.8	20.8
54	197.3	0.366	73.1	3.0	6.45	3.973	25.483	23.687	35.7	12.0	32.7	9.0	3.62	0.13	23.8	11.8	20.9
55	199.1	0.371	73.1	3.0	6.45	4.051	25.780	23.953	36.0	12.0	33.0	9.0	3.65	0.12	24.0	12.0	21.0
56	200.4	0.375	73.0	2.9	6.46	4.118	25.985	24.131	36.1	12.0	33.2	9.1	3.66	0.12	24.1	12.1	21.1
57	201.8	0.379	73.0	2.9	6.46	4.195	26.208	24.325	36.3	12.0	33.4	9.1	3.67	0.12	24.2	12.2	21.3
58	203.4	0.383	72.9	2.8	6.47	4.263	26.468	24.556	36.6	12.0	33.7	9.2	3.68	0.12	24.3	12.3	21.4
59	205.2	0.387	72.9	2.8	6.47	4.330	26.766	24.823	36.8	12.0	34.0	9.2	3.70	0.11	24.4	12.4	21.6

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	206.6	0.392	72.9	2.8	6.48	4.407	26.989	25.016	37.0	12.0	34.2	9.2	3.71	0.11	24.5	12.5	21.7
61	207.5	0.396	72.8	2.7	6.48	4.485	27.137	25.137	37.1	12.0	34.4	9.3	3.71	0.11	24.6	12.6	21.8
62	208.7	0.401	72.8	2.7	6.49	4.562	27.323	25.293	37.3	12.0	34.6	9.3	3.73	0.11	24.6	12.6	21.9
63	210.0	0.406	72.8	2.7	6.49	4.639	27.528	25.467	37.5	12.0	34.8	9.3	3.73	0.11	24.7	12.7	22.0
64	210.9	0.410	72.7	2.6	6.50	4.706	27.676	25.590	37.6	12.0	34.9	9.4	3.74	0.10	24.8	12.8	22.1
65	211.9	0.414	72.7	2.6	6.50	4.784	27.844	25.728	37.7	12.0	35.1	9.4	3.74	0.10	24.9	12.9	22.3
66	213.1	0.419	72.7	2.6	6.51	4.870	28.029	25.881	37.9	12.0	35.3	9.4	3.74	0.10	24.9	12.9	22.4
67	214.3	0.424	72.6	2.5	6.52	4.947	28.234	26.054	38.1	12.0	35.5	9.5	3.75	0.10	25.0	13.0	22.5
68	215.4	0.429	72.5	2.4	6.52	5.034	28.401	26.188	38.2	12.0	35.8	9.6	3.73	0.09	25.1	13.1	22.7
69	216.1	0.434	72.6	2.5	6.53	5.111	28.513	26.272	38.3	12.0	35.8	9.5	3.76	0.09	25.1	13.1	22.7
70	216.9	0.439	72.5	2.4	6.53	5.198	28.643	26.370	38.4	12.0	36.0	9.6	3.75	0.09	25.2	13.2	22.8
71	217.6	0.443	72.5	2.4	6.54	5.275	28.754	26.454	38.5	12.0	36.1	9.6	3.75	0.09	25.2	13.2	22.9
72	218.6	0.448	72.4	2.3	6.54	5.353	28.922	26.590	38.6	12.0	36.3	9.7	3.75	0.09	25.3	13.3	23.0
73	219.3	0.453	72.4	2.3	6.55	5.430	29.033	26.673	38.7	12.0	36.3	9.7	3.76	0.09	25.3	13.3	23.0
74	220.2	0.457	72.3	2.2	6.55	5.507	29.182	26.791	38.8	12.0	36.5	9.8	3.75	0.08	25.4	13.4	23.2
75	221.4	0.462	72.3	2.2	6.56	5.584	29.368	26.944	38.9	12.0	36.8	9.8	3.74	0.08	25.5	13.5	23.3
76	221.9	0.466	72.3	2.2	6.56	5.661	29.461	27.009	39.0	12.0	36.8	9.8	3.76	0.08	25.5	13.5	23.3
77	222.5	0.471	72.3	2.2	6.57	5.738	29.554	27.074	39.1	12.0	36.9	9.8	3.75	0.08	25.5	13.5	23.4
78	223.7	0.475	72.2	2.1	6.57	5.806	29.739	27.229	39.2	12.0	37.1	9.9	3.76	0.08	25.6	13.6	23.5
79	223.8	0.479	72.2	2.1	6.58	5.883	29.758	27.224	39.2	12.0	37.1	9.9	3.75	0.08	25.6	13.6	23.5
80	224.5	0.484	72.1	2.0	6.59	5.960	29.870	27.306	39.3	12.0	37.3	10.0	3.74	0.07	25.7	13.7	23.6
81	224.5	0.489	72.1	2.0	6.59	6.037	29.870	27.283	39.3	12.0	37.3	10.0	3.72	0.07	25.6	13.6	23.7
82	224.9	0.493	72.0	1.9	6.60	6.114	29.944	27.330	39.3	12.0	37.4	10.1	3.71	0.07	25.7	13.7	23.7
83	225.2	0.498	72.0	1.9	6.60	6.192	29.981	27.341	39.3	12.0	37.4	10.1	3.71	0.07	25.7	13.7	23.7
84	225.0	0.502	72.0	1.9	6.61	6.269	29.963	27.301	39.3	12.0	37.4	10.1	3.70	0.07	25.7	13.7	23.8
85	225.4	0.507	71.9	1.8	6.61	6.346	30.018	27.330	39.3	12.0	37.5	10.2	3.68	0.07	25.7	13.7	23.9
86	225.2	0.511	71.9	1.8	6.62	6.413	29.981	27.275	39.3	12.0	37.5	10.2	3.68	0.07	25.6	13.6	23.8
87	224.7	0.516	71.8	1.7	6.62	6.500	29.907	27.179	39.2	12.0	37.5	10.3	3.64	0.06	25.6	13.6	23.9
88	223.9	0.521	71.8	1.7	6.63	6.577	29.777	27.035	39.0	12.0	37.4	10.3	3.62	0.06	25.5	13.5	23.8
89	223.1	0.525	71.7	1.6	6.63	6.645	29.647	26.893	38.9	12.0	37.2	10.4	3.60	0.06	25.4	13.4	23.8
90	222.2	0.529	71.7	1.6	6.64	6.722	29.498	26.732	38.7	12.0	37.1	10.4	3.57	0.06	25.4	13.4	23.8
91	221.6	0.533	71.7	1.6	6.64	6.790	29.405	26.625	38.6	12.0	37.0	10.4	3.56	0.06	25.3	13.3	23.7
92	220.4	0.537	71.7	1.6	6.65	6.857	29.219	26.432	38.4	12.0	36.9	10.4	3.53	0.06	25.2	13.2	23.7
93	219.6	0.543	71.6	1.5	6.65	6.944	29.089	26.286	38.3	12.0	36.8	10.5	3.51	0.06	25.1	13.1	23.6
94	218.7	0.547	71.6	1.5	6.66	7.011	28.940	26.128	38.1	12.0	36.6	10.5	3.49	0.06	25.1	13.1	23.5
95	218.5	0.551	71.6	1.5	6.66	7.079	28.903	26.074	38.1	12.0	36.6	10.5	3.48	0.06	25.0	13.0	23.6
96	217.8	0.555	71.5	1.4	6.67	7.156	28.792	25.948	37.9	12.0	36.5	10.6	3.46	0.06	25.0	13.0	23.5
97	217.4	0.559	71.5	1.4	6.68	7.223	28.736	25.877	37.9	12.0	36.5	10.6	3.44	0.05	24.9	12.9	23.5
98	217.2	0.564	71.5	1.4	6.68	7.301	28.699	25.820	37.8	12.0	36.4	10.6	3.45	0.06	24.9	12.9	23.5
99	216.3	0.568	71.5	1.4	6.69	7.368	28.550	25.663	37.7	12.0	36.3	10.6	3.42	0.05	24.8	12.8	23.4
100	216.4	0.572	71.5	1.4	6.69	7.445	28.568	25.658	37.7	12.0	36.3	10.6	3.42	0.05	24.8	12.8	23.4

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	216.2	0.576	71.5	1.4	6.70	7.513	28.531	25.604	37.6	12.0	36.2	10.6	3.41	0.05	24.8	12.8	23.4
102	216.3	0.581	71.5	1.4	6.70	7.590	28.550	25.599	37.6	12.0	36.2	10.6	3.41	0.05	24.8	12.8	23.4
103	215.5	0.585	71.4	1.3	6.71	7.657	28.420	25.460	37.5	12.0	36.1	10.7	3.38	0.05	24.7	12.7	23.4
104	214.7	0.590	71.3	1.2	6.71	7.735	28.290	25.318	37.3	12.0	36.1	10.8	3.35	0.05	24.7	12.7	23.4
105	215.7	0.594	71.4	1.3	6.72	7.802	28.457	25.453	37.5	12.0	36.1	10.7	3.38	0.05	24.7	12.7	23.4
106	215.8	0.598	71.4	1.3	6.72	7.879	28.476	25.448	37.4	12.0	36.2	10.7	3.37	0.05	24.7	12.7	23.4
107	215.7	0.603	71.3	1.2	6.73	7.956	28.457	25.409	37.4	12.0	36.2	10.8	3.36	0.05	24.7	12.7	23.5
108	215.3	0.607	71.3	1.2	6.73	8.034	28.383	25.319	37.3	12.0	36.1	10.8	3.35	0.05	24.7	12.7	23.4
109	215.0	0.612	71.3	1.2	6.74	8.111	28.345	25.263	37.3	12.0	36.0	10.8	3.35	0.05	24.6	12.6	23.4
110	215.4	0.617	71.3	1.2	6.75	8.198	28.401	25.290	37.3	12.0	36.1	10.8	3.34	0.05	24.6	12.6	23.4
111	214.7	0.622	71.3	1.2	6.75	8.275	28.290	25.165	37.2	12.0	36.0	10.8	3.32	0.05	24.6	12.6	23.4
112	214.7	0.626	71.3	1.2	6.76	8.352	28.290	25.143	37.1	12.0	36.0	10.8	3.32	0.05	24.6	12.6	23.4
113	214.4	0.631	71.3	1.2	6.76	8.439	28.252	25.085	37.1	12.0	35.9	10.8	3.31	0.05	24.5	12.5	23.4
114	214.4	0.636	71.2	1.1	6.77	8.516	28.252	25.063	37.1	12.0	35.9	10.9	3.30	0.04	24.5	12.5	23.4
115	213.9	0.641	71.2	1.1	6.78	8.603	28.160	24.954	37.0	12.0	35.8	10.9	3.29	0.04	24.5	12.5	23.4
116	213.6	0.646	71.2	1.1	6.78	8.680	28.122	24.898	36.9	12.0	35.8	10.9	3.29	0.05	24.4	12.4	23.3
117	213.2	0.650	71.2	1.1	6.79	8.757	28.048	24.808	36.8	12.0	35.7	10.9	3.27	0.04	24.4	12.4	23.3
118	213.2	0.654	71.1	1.0	6.79	8.824	28.048	24.789	36.8	12.0	35.7	11.0	3.26	0.04	24.4	12.4	23.4
119	212.4	0.659	71.1	1.0	6.80	8.902	27.918	24.649	36.6	12.0	35.6	11.0	3.24	0.04	24.3	12.3	23.3
120	212.9	0.664	71.1	1.0	6.80	8.979	28.011	24.712	36.7	12.0	35.7	11.0	3.26	0.04	24.4	12.4	23.3
121	212.8	0.668	71.1	1.0	6.81	9.056	27.992	24.674	36.7	12.0	35.6	11.0	3.25	0.04	24.3	12.3	23.3
122	213.1	0.673	71.1	1.0	6.82	9.143	28.029	24.683	36.7	12.0	35.7	11.0	3.24	0.04	24.3	12.3	23.3
123	212.7	0.677	71.1	1.0	6.82	9.210	27.974	24.614	36.6	12.0	35.6	11.0	3.24	0.04	24.3	12.3	23.3
124	211.8	0.682	71.1	1.0	6.83	9.287	27.825	24.457	36.5	12.0	35.5	11.0	3.22	0.04	24.2	12.2	23.2
125	213.1	0.687	71.1	1.0	6.83	9.365	28.029	24.621	36.6	12.0	35.7	11.0	3.23	0.04	24.3	12.3	23.3
126	213.2	0.691	71.0	0.9	6.84	9.442	28.048	24.616	36.6	12.0	35.7	11.1	3.22	0.04	24.3	12.3	23.4
127	212.9	0.696	71.1	1.0	6.84	9.519	28.011	24.561	36.6	12.0	35.6	11.0	3.23	0.04	24.3	12.3	23.3
128	213.2	0.700	71.1	1.0	6.85	9.596	28.048	24.573	36.6	12.0	35.6	11.0	3.23	0.04	24.3	12.3	23.3
129	213.4	0.705	71.0	0.9	6.86	9.673	28.085	24.585	36.6	12.0	35.7	11.1	3.22	0.04	24.3	12.3	23.4
130	212.9	0.709	71.0	0.9	6.86	9.750	28.011	24.496	36.5	12.0	35.6	11.1	3.21	0.04	24.2	12.2	23.3
131	213.4	0.714	71.0	0.9	6.87	9.827	28.085	24.542	36.5	12.0	35.6	11.1	3.22	0.04	24.3	12.3	23.3
132	213.5	0.719	71.0	0.9	6.87	9.905	28.104	24.537	36.5	12.0	35.7	11.1	3.21	0.04	24.3	12.3	23.4
133	214.2	0.723	70.9	0.8	6.88	9.972	28.215	24.618	36.6	12.0	35.8	11.2	3.21	0.03	24.3	12.3	23.5
134	214.2	0.727	70.9	0.8	6.88	10.049	28.215	24.596	36.6	12.0	35.8	11.2	3.20	0.03	24.3	12.3	23.5
135	214.0	0.731	71.0	0.9	6.89	10.117	28.178	24.544	36.5	12.0	35.7	11.1	3.21	0.04	24.3	12.3	23.4
136	214.6	0.736	70.9	0.8	6.90	10.194	28.271	24.606	36.6	12.0	35.8	11.2	3.21	0.03	24.3	12.3	23.5
137	214.9	0.740	70.9	0.8	6.90	10.261	28.327	24.637	36.6	12.0	35.8	11.2	3.21	0.03	24.3	12.3	23.5
138	215.6	0.744	70.9	0.8	6.91	10.339	28.438	24.715	36.7	12.0	35.9	11.2	3.21	0.03	24.4	12.4	23.5
139	215.8	0.748	70.9	0.8	6.91	10.406	28.476	24.729	36.7	12.0	35.9	11.2	3.22	0.03	24.4	12.4	23.5
140	216.6	0.753	70.9	0.8	6.92	10.483	28.606	24.823	36.8	12.0	36.0	11.2	3.22	0.03	24.4	12.4	23.6
141	216.7	0.757	70.8	0.7	6.92	10.551	28.624	24.821	36.8	12.0	36.1	11.3	3.20	0.03	24.4	12.4	23.7

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	217.6	0.762	70.9	0.8	6.93	10.628	28.754	24.915	36.9	12.0	36.1	11.2	3.22	0.03	24.5	12.5	23.7
143	218.0	0.766	70.9	0.8	6.93	10.695	28.829	24.962	37.0	12.0	36.2	11.2	3.23	0.03	24.5	12.5	23.7
144	218.1	0.770	70.9	0.8	6.94	10.773	28.847	24.956	37.0	12.0	36.2	11.2	3.22	0.03	24.5	12.5	23.7
145	218.2	0.774	70.9	0.8	6.95	10.840	28.866	24.953	37.0	12.0	36.2	11.2	3.22	0.03	24.5	12.5	23.7
146	218.5	0.778	70.9	0.8	6.95	10.908	28.903	24.967	37.0	12.0	36.2	11.2	3.22	0.03	24.5	12.5	23.7
147	219.6	0.783	70.9	0.8	6.96	10.985	29.089	25.110	37.1	12.0	36.3	11.2	3.23	0.03	24.6	12.6	23.8
148	220.4	0.787	70.8	0.7	6.96	11.062	29.219	25.203	37.2	12.0	36.5	11.3	3.23	0.03	24.6	12.6	23.9
149	220.2	0.792	70.8	0.7	6.97	11.139	29.182	25.148	37.1	12.0	36.4	11.3	3.23	0.03	24.6	12.6	23.9
150	220.3	0.796	70.8	0.7	6.97	11.207	29.200	25.145	37.1	12.0	36.4	11.3	3.23	0.03	24.6	12.6	23.9
151	221.0	0.801	70.8	0.7	6.98	11.293	29.312	25.218	37.2	12.0	36.5	11.3	3.23	0.03	24.6	12.6	23.9
152	221.2	0.806	70.8	0.7	6.99	11.370	29.349	25.229	37.2	12.0	36.5	11.3	3.23	0.03	24.6	12.6	23.9
153	221.2	0.810	70.8	0.7	6.99	11.448	29.349	25.206	37.2	12.0	36.5	11.3	3.23	0.03	24.6	12.6	23.9
154	221.6	0.815	70.8	0.7	7.00	11.525	29.405	25.233	37.2	12.0	36.6	11.3	3.23	0.03	24.6	12.6	23.9
155	221.9	0.820	70.7	0.6	7.01	11.612	29.461	25.256	37.3	12.0	36.6	11.4	3.22	0.03	24.6	12.6	24.0
156	222.0	0.825	70.7	0.6	7.01	11.689	29.479	25.250	37.2	12.0	36.6	11.4	3.22	0.02	24.6	12.6	24.0
157	221.8	0.830	70.7	0.6	7.02	11.776	29.442	25.192	37.2	12.0	36.6	11.4	3.22	0.03	24.6	12.6	24.0
158	222.2	0.834	70.7	0.6	7.02	11.843	29.498	25.221	37.2	12.0	36.6	11.4	3.22	0.03	24.6	12.6	24.0
159	222.0	0.839	70.7	0.6	7.03	11.930	29.479	25.179	37.2	12.0	36.6	11.4	3.21	0.02	24.6	12.6	24.0
160	222.5	0.844	70.7	0.6	7.04	12.007	29.554	25.222	37.2	12.0	36.6	11.4	3.21	0.02	24.6	12.6	24.0
161	223.0	0.848	70.7	0.6	7.04	12.084	29.628	25.264	37.3	12.0	36.7	11.4	3.22	0.02	24.6	12.6	24.0
162	223.4	0.853	70.7	0.6	7.05	12.161	29.702	25.307	37.3	12.0	36.7	11.4	3.22	0.02	24.7	12.7	24.1
163	223.9	0.857	70.6	0.5	7.06	12.238	29.777	25.349	37.3	12.0	36.8	11.5	3.21	0.02	24.7	12.7	24.2
164	224.3	0.861	70.7	0.6	7.06	12.306	29.851	25.394	37.4	12.0	36.8	11.4	3.23	0.02	24.7	12.7	24.1
165	224.5	0.866	70.7	0.6	7.07	12.383	29.870	25.387	37.4	12.0	36.8	11.4	3.22	0.02	24.7	12.7	24.1
166	225.0	0.870	70.7	0.6	7.07	12.451	29.963	25.449	37.4	12.0	36.9	11.4	3.22	0.02	24.7	12.7	24.2
167	225.4	0.875	70.7	0.6	7.08	12.537	30.018	25.471	37.5	12.0	36.9	11.4	3.23	0.02	24.7	12.7	24.2
168	225.6	0.880	70.7	0.6	7.09	12.615	30.055	25.481	37.5	12.0	36.9	11.4	3.23	0.02	24.7	12.7	24.2
169	225.5	0.884	70.6	0.5	7.09	12.682	30.037	25.444	37.4	12.0	36.9	11.5	3.22	0.02	24.7	12.7	24.2
170	226.3	0.889	70.6	0.5	7.10	12.769	30.167	25.532	37.5	12.0	37.1	11.5	3.22	0.02	24.8	12.8	24.3
171	226.9	0.893	70.6	0.5	7.10	12.836	30.260	25.592	37.6	12.0	37.1	11.5	3.23	0.02	24.8	12.8	24.3
172	227.1	0.898	70.6	0.5	7.11	12.914	30.297	25.601	37.6	12.0	37.1	11.5	3.23	0.02	24.8	12.8	24.3
173	227.7	0.902	70.6	0.5	7.12	12.991	30.390	25.659	37.7	12.0	37.2	11.5	3.23	0.02	24.8	12.8	24.3
174	227.9	0.907	70.6	0.5	7.12	13.068	30.427	25.668	37.7	12.0	37.2	11.5	3.23	0.02	24.8	12.8	24.4
175	228.3	0.911	70.6	0.5	7.13	13.145	30.483	25.692	37.7	12.0	37.2	11.5	3.23	0.02	24.8	12.8	24.4
176	228.5	0.916	70.6	0.5	7.14	13.222	30.520	25.701	37.7	12.0	37.2	11.5	3.23	0.02	24.9	12.9	24.4
177	228.6	0.920	70.5	0.4	7.14	13.290	30.539	25.697	37.7	12.0	37.3	11.6	3.22	0.02	24.8	12.8	24.4
178	228.6	0.924	70.5	0.4	7.15	13.357	30.539	25.676	37.7	12.0	37.3	11.6	3.21	0.02	24.8	12.8	24.4
179	229.3	0.929	70.5	0.4	7.15	13.434	30.650	25.749	37.7	12.0	37.3	11.6	3.23	0.02	24.9	12.9	24.4
180	229.1	0.933	70.5	0.4	7.16	13.502	30.613	25.696	37.7	12.0	37.3	11.6	3.22	0.02	24.8	12.8	24.4
181	229.8	0.937	70.5	0.4	7.17	13.579	30.725	25.769	37.8	12.0	37.3	11.6	3.23	0.02	24.9	12.9	24.4
182	230.3	0.942	70.5	0.4	7.17	13.656	30.818	25.826	37.8	12.0	37.4	11.6	3.23	0.02	24.9	12.9	24.5

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	230.7	0.946	70.5	0.4	7.18	13.733	30.873	25.850	37.8	12.0	37.4	11.6	3.24	0.02	24.9	12.9	24.5
184	231.0	0.950	70.5	0.4	7.18	13.801	30.929	25.877	37.9	12.0	37.5	11.6	3.23	0.02	24.9	12.9	24.5
185	230.9	0.955	70.5	0.4	7.19	13.878	30.910	25.837	37.8	12.0	37.5	11.6	3.22	0.01	24.9	12.9	24.6
186	232.2	0.959	70.5	0.4	7.20	13.945	31.115	25.992	38.0	12.0	37.6	11.6	3.24	0.02	25.0	13.0	24.6
187	232.4	0.964	70.5	0.4	7.20	14.023	31.152	26.000	38.0	12.0	37.6	11.6	3.24	0.02	25.0	13.0	24.6
188	233.0	0.968	70.5	0.4	7.21	14.100	31.245	26.056	38.1	12.0	37.7	11.6	3.24	0.01	25.0	13.0	24.7
189	233.3	0.972	70.5	0.4	7.22	14.167	31.301	26.083	38.1	12.0	37.7	11.6	3.24	0.01	25.0	13.0	24.7
190	234.1	0.977	70.5	0.4	7.22	14.244	31.431	26.170	38.2	12.0	37.8	11.6	3.25	0.01	25.1	13.1	24.7
191	234.5	0.981	70.4	0.3	7.23	14.322	31.487	26.194	38.2	12.0	37.9	11.7	3.24	0.01	25.1	13.1	24.8
192	235.4	0.985	70.4	0.3	7.23	14.389	31.635	26.300	38.3	12.0	38.0	11.7	3.24	0.01	25.1	13.1	24.9
193	236.0	0.990	70.4	0.3	7.24	14.466	31.728	26.355	38.4	12.0	38.0	11.7	3.26	0.01	25.2	13.2	24.9
194	236.3	0.995	70.4	0.3	7.25	14.543	31.784	26.378	38.4	12.0	38.1	11.7	3.25	0.01	25.2	13.2	24.9
195	236.5	0.999	70.4	0.3	7.25	14.621	31.821	26.385	38.4	12.0	38.1	11.7	3.25	0.01	25.2	13.2	24.9
196	237.0	1.004	70.4	0.3	7.26	14.698	31.896	26.424	38.4	12.0	38.1	11.7	3.25	0.01	25.2	13.2	24.9
197	238.3	1.008	70.4	0.3	7.27	14.775	32.100	26.574	38.6	12.0	38.3	11.7	3.27	0.01	25.3	13.3	25.0
198	238.5	1.013	70.4	0.3	7.27	14.852	32.137	26.581	38.6	12.0	38.3	11.7	3.27	0.01	25.3	13.3	25.0
199	239.0	1.017	70.3	0.2	7.28	14.929	32.212	26.619	38.6	12.0	38.4	11.8	3.26	0.01	25.3	13.3	25.1
200	239.9	1.023	70.3	0.2	7.29	15.016	32.360	26.718	38.7	12.0	38.5	11.8	3.27	0.01	25.4	13.4	25.1
201	240.7	1.027	70.3	0.2	7.29	15.093	32.490	26.803	38.8	12.0	38.6	11.8	3.28	0.01	25.4	13.4	25.2
202	241.4	1.032	70.3	0.2	7.30	15.170	32.602	26.873	38.9	12.0	38.6	11.8	3.29	0.01	25.4	13.4	25.2
203	241.8	1.036	70.3	0.2	7.31	15.238	32.676	26.914	38.9	12.0	38.7	11.8	3.28	0.01	25.5	13.5	25.3
204	241.5	1.040	70.3	0.2	7.31	15.315	32.620	26.841	38.8	12.0	38.6	11.8	3.27	0.01	25.4	13.4	25.2
205	241.6	1.045	70.3	0.2	7.32	15.392	32.639	26.832	38.8	12.0	38.7	11.8	3.27	0.01	25.4	13.4	25.3
206	242.8	1.049	70.2	0.1	7.33	15.460	32.825	26.967	39.0	12.0	38.8	11.9	3.27	0.00	25.5	13.5	25.4
207	243.5	1.054	70.2	0.1	7.33	15.537	32.936	27.036	39.0	12.0	38.9	11.9	3.28	0.00	25.5	13.5	25.4
208	243.7	1.058	70.3	0.2	7.34	15.614	32.974	27.042	39.0	12.0	38.9	11.8	3.28	0.01	25.5	13.5	25.4
209	244.7	1.063	70.2	0.1	7.35	15.691	33.141	27.157	39.2	12.0	39.0	11.9	3.29	0.00	25.6	13.6	25.5
210	245.8	1.067	70.2	0.1	7.35	15.759	33.308	27.276	39.3	12.0	39.2	11.9	3.30	0.00	25.6	13.6	25.5
211	245.6	1.071	70.2	0.1	7.36	15.836	33.290	27.234	39.2	12.0	39.1	11.9	3.29	0.00	25.6	13.6	25.5
212	246.6	1.076	70.2	0.1	7.36	15.913	33.438	27.334	39.3	12.0	39.3	11.9	3.29	0.00	25.7	13.7	25.6
213	246.7	1.081	70.2	0.1	7.37	15.990	33.457	27.324	39.3	12.0	39.2	11.9	3.29	0.00	25.7	13.7	25.6
214	246.9	1.085	70.1	0.0	7.38	16.067	33.494	27.329	39.3	12.0	39.3	12.0	3.28	0.00	25.7	13.7	25.7
215	247.6	1.090	70.2	0.1	7.39	16.154	33.606	27.393	39.4	12.0	39.3	11.9	3.30	0.00	25.7	13.7	25.6
216	248.4	1.095	70.1	0.0	7.39	16.231	33.736	27.477	39.5	12.0	39.4	12.0	3.30	0.00	25.7	13.7	25.7
217	249.7	1.100	70.1	0.0	7.40	16.308	33.940	27.622	39.6	12.0	39.6	12.0	3.31	0.00	25.8	13.8	25.8
218	250.6	1.104	70.1	0.0	7.41	16.385	34.089	27.720	39.7	12.0	39.7	12.0	3.31	0.00	25.9	13.9	25.9
219	251.2	1.109	70.1	0.0	7.41	16.463	34.182	27.771	39.8	12.0	39.8	12.0	3.31	0.00	25.9	13.9	25.9
220	252.3	1.113	70.1	0.0	7.42	16.540	34.368	27.900	39.9	12.0	39.9	12.0	3.33	0.00	25.9	13.9	25.9
221	252.4	1.118	70.0	-0.1	7.43	16.627	34.386	27.886	39.9	12.0	40.0	12.1	3.31	0.00	25.9	13.9	26.0
222	252.4	1.122	70.1	0.0	7.43	16.684	34.386	27.866	39.9	12.0	39.9	12.0	3.31	0.00	25.9	13.9	26.0
223	252.4	1.126	70.1	0.0	7.44	16.762	34.386	27.839	39.8	12.0	39.9	12.0	3.31	0.00	25.9	13.9	26.0

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	252.4	1.130	70.0	-0.1	7.45	16.829	34.386	27.816	39.8	12.0	39.9	12.1	3.30	0.00	25.9	13.9	26.0
225	253.2	1.134	70.0	-0.1	7.45	16.897	34.516	27.901	39.9	12.0	40.0	12.1	3.31	0.00	26.0	14.0	26.0
226	252.2	1.139	70.0	-0.1	7.46	16.964	34.349	27.739	39.7	12.0	39.8	12.1	3.30	0.00	25.9	13.9	25.9
227	254.3	1.143	70.0	-0.1	7.47	17.041	34.684	27.990	40.0	12.0	40.1	12.1	3.31	0.00	26.0	14.0	26.1
228	255.1	1.148	69.9	-0.2	7.47	17.118	34.814	28.071	40.1	12.0	40.2	12.2	3.31	-0.01	26.0	14.0	26.2
229	255.8	1.152	69.9	-0.2	7.48	17.186	34.925	28.140	40.1	12.0	40.3	12.2	3.31	-0.01	26.1	14.1	26.2
230	255.8	1.156	70.0	-0.1	7.48	17.253	34.925	28.116	40.1	12.0	40.2	12.1	3.32	0.00	26.1	14.1	26.2
231	256.5	1.160	69.9	-0.2	7.49	17.321	35.037	28.185	40.2	12.0	40.3	12.2	3.32	-0.01	26.1	14.1	26.3
232	256.9	1.164	69.9	-0.2	7.50	17.398	35.111	28.219	40.2	12.0	40.4	12.2	3.31	-0.01	26.1	14.1	26.3
233	257.7	1.168	69.9	-0.2	7.50	17.466	35.241	28.303	40.3	12.0	40.5	12.2	3.32	-0.01	26.2	14.2	26.4
234	258.4	1.173	69.9	-0.2	7.51	17.543	35.353	28.367	40.4	12.0	40.6	12.2	3.33	-0.01	26.2	14.2	26.4
235	259.1	1.177	69.9	-0.2	7.52	17.610	35.464	28.435	40.4	12.0	40.7	12.2	3.32	-0.01	26.2	14.2	26.5
236	260.3	1.181	69.8	-0.3	7.52	17.678	35.650	28.565	40.6	12.0	40.8	12.3	3.33	-0.01	26.3	14.3	26.6
237	260.7	1.186	69.9	-0.2	7.53	17.755	35.725	28.598	40.6	12.0	40.8	12.2	3.34	-0.01	26.3	14.3	26.5
238	260.8	1.190	69.8	-0.3	7.54	17.832	35.743	28.586	40.6	12.0	40.9	12.3	3.33	-0.01	26.3	14.3	26.6
239	262.0	1.195	69.8	-0.3	7.54	17.909	35.929	28.711	40.7	12.0	41.0	12.3	3.34	-0.01	26.4	14.4	26.6
240	262.7	1.199	69.8	-0.3	7.55	17.986	36.041	28.775	40.8	12.0	41.1	12.3	3.34	-0.01	26.4	14.4	26.7
241	263.5	1.204	69.8	-0.3	7.56	18.064	36.171	28.853	40.9	12.0	41.2	12.3	3.34	-0.01	26.4	14.4	26.7
242	264.2	1.208	69.7	-0.4	7.57	18.141	36.282	28.917	40.9	12.0	41.3	12.4	3.34	-0.01	26.5	14.5	26.8
243	264.9	1.213	69.7	-0.4	7.57	18.218	36.394	28.980	41.0	12.0	41.4	12.4	3.33	-0.02	26.5	14.5	26.9
244	266.1	1.218	69.7	-0.4	7.58	18.295	36.598	29.119	41.1	12.0	41.5	12.4	3.35	-0.01	26.6	14.6	27.0
245	266.5	1.222	69.7	-0.4	7.59	18.372	36.654	29.136	41.1	12.0	41.5	12.4	3.35	-0.01	26.6	14.6	27.0
246	267.2	1.227	69.7	-0.4	7.59	18.449	36.765	29.199	41.2	12.0	41.6	12.4	3.35	-0.02	26.6	14.6	27.0
247	268.2	1.231	69.7	-0.4	7.60	18.526	36.933	29.307	41.3	12.0	41.7	12.4	3.36	-0.02	26.7	14.7	27.1
248	268.2	1.236	69.6	-0.5	7.61	18.604	36.933	29.278	41.3	12.0	41.8	12.5	3.35	-0.02	26.6	14.6	27.1
249	269.1	1.240	69.6	-0.5	7.61	18.671	37.081	29.374	41.4	12.0	41.9	12.5	3.35	-0.02	26.7	14.7	27.2
250	270.0	1.245	69.5	-0.6	7.62	18.748	37.230	29.467	41.5	12.0	42.0	12.6	3.35	-0.02	26.7	14.7	27.3
251	270.5	1.249	69.6	-0.5	7.63	18.825	37.304	29.498	41.5	12.0	42.0	12.5	3.36	-0.02	26.7	14.7	27.3
252	271.1	1.254	69.6	-0.5	7.64	18.903	37.397	29.545	41.5	12.0	42.1	12.5	3.36	-0.02	26.8	14.8	27.3
253	271.2	1.258	69.5	-0.6	7.64	18.980	37.416	29.531	41.5	12.0	42.1	12.6	3.35	-0.02	26.8	14.8	27.3
254	271.8	1.263	69.5	-0.6	7.65	19.057	37.509	29.577	41.6	12.0	42.2	12.6	3.35	-0.02	26.8	14.8	27.4
255	272.8	1.268	69.5	-0.6	7.66	19.134	37.676	29.684	41.7	12.0	42.3	12.6	3.36	-0.02	26.8	14.8	27.4
256	274.0	1.272	69.5	-0.6	7.67	19.211	37.862	29.805	41.8	12.0	42.4	12.6	3.36	-0.02	26.9	14.9	27.5
257	275.0	1.277	69.5	-0.6	7.67	19.288	38.029	29.911	41.9	12.0	42.6	12.6	3.37	-0.02	27.0	15.0	27.6
258	275.9	1.281	69.4	-0.7	7.68	19.366	38.178	30.001	42.0	12.0	42.7	12.7	3.36	-0.02	27.0	15.0	27.7
259	276.5	1.286	69.4	-0.7	7.69	19.443	38.271	30.047	42.0	12.0	42.7	12.7	3.37	-0.02	27.0	15.0	27.7
260	276.8	1.291	69.4	-0.7	7.70	19.529	38.327	30.058	42.1	12.0	42.7	12.7	3.37	-0.02	27.0	15.0	27.7
261	276.9	1.296	69.4	-0.7	7.70	19.607	38.345	30.044	42.0	12.0	42.8	12.7	3.36	-0.02	27.0	15.0	27.7
262	277.6	1.300	69.4	-0.7	7.71	19.684	38.457	30.104	42.1	12.0	42.8	12.7	3.37	-0.02	27.1	15.1	27.8
263	278.3	1.305	69.3	-0.8	7.72	19.761	38.568	30.163	42.2	12.0	42.9	12.8	3.36	-0.03	27.1	15.1	27.8
264	279.3	1.309	69.3	-0.8	7.73	19.838	38.717	30.253	42.3	12.0	43.0	12.8	3.37	-0.03	27.1	15.1	27.9

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
265	278.8	1.314	69.3	-0.8	7.73	19.915	38.643	30.163	42.2	12.0	43.0	12.8	3.35	-0.03	27.1	15.1	27.9
266	279.9	1.318	69.3	-0.8	7.74	19.983	38.829	30.286	42.3	12.0	43.1	12.8	3.37	-0.03	27.1	15.1	27.9
267	279.8	1.320	69.3	-0.8	7.74	20.012	38.810	30.260	42.3	12.0	43.1	12.8	3.36	-0.03	27.1	15.1	27.9

Sample Failure Photographs

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. U-2412B

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project 39406.1.1 **County** GUILFORD **Owner**

Date: Sampled 3/22/13 **Received** 4/8/13 **Reported** 4/10/13

Sampled from **By** NEIL ROBERSON

Submitted by TED HOWARD 1995 **Standard Specifications**

784560 TO 784562
4/11/13

TEST RESULTS

Proj. Sample No.		ST-29#1	ST-29#2	ST-29#3			
Lab. Sample No.		784560	784561	784562			
Retained #4 Sieve	%	-	-	-			
Passing #10 Sieve	%	97	97	97			
Passing #40 Sieve	%	84	82	85			
Passing #200 Sieve	%	61	58	63			

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	20.0	22.8	19.0			
Fine Sand Ret - #270	%	24.4	25.9	25.5			
Silt 0.05 - 0.005 mm	%	45.5	41.2	45.5			
Clay < 0.005 mm	%	10.1	10.1	10.1			
T-#		T-5663	T-5663	T-5663			
Specific Gravity		2.701	2.699	2.711			

L. L.		42	43	42			
P. I.		5	3	3			
AASHTO Classification		A-5(3)	A-5(2)	A-5(3)			
Station		404+50	404+50	404+50			
Offset		94' RT	94' RT	94' RT			
Alignment		L	L	L			
Location							
Depth (Ft)		19.60	19.60	19.60			
	to	21.60	21.60	21.60			
Final Moisture (%)		30.33	29.79	30.72			

cc: NEIL ROBERSON
GREG BODENHEIMER

Soils Engineer

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. U-2412B

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project 39406.1.1 **County** GUILFORD **Owner**

Date: Sampled 3/22/13 **Received** 3/25/13 **Reported** 3/27/13

Sampled from **By** NEIL ROBERSON

Submitted by TED HOWARD 1995 **Standard Specifications**

784279 TO 784280
4/3/13

TEST RESULTS

Proj. Sample No.		ST-31#1	ST-31#3				
Lab. Sample No.		784279	784280				
Retained #4 Sieve	%	-	-				
Passing #10 Sieve	%	100	100				
Passing #40 Sieve	%	99	96				
Passing #200 Sieve	%	62	66				

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	4.5	10.0				
Fine Sand Ret - #270	%	43.1	33.2				
Silt 0.05 - 0.005 mm	%	42.2	44.7				
Clay < 0.005 mm	%	10.2	12.2				
T-#		T-5664	T-5664				
Specific Gravity		2.945	2.945				

L. L.		58	57				
P. I.		16	21				
AASHTO Classification		A-7-5(11)	A-7-5(14)				
Station		404+50	404+50				
Offset		94' RT	94' RT				
Alignment		L	L				
Location							
Depth (Ft)		29.20	29.20				
	to	31.20	31.20				
Moisture (%)		42.02	43.14				

cc: NEIL ROBERSON
GREGG BODENHEIMER

Soils Engineer

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. U-2412B

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project 39406.1.1 **County** GUILFORD **Owner**

Date: Sampled 3/22/13 **Received** 4/1/13 **Reported** 4/4/13

Sampled from **By** NEIL ROBERSON

Submitted by GREG BODENHEIMER 1995 **Standard Specifications**

784499 TO 784499
4/8/13

TEST RESULTS

Proj. Sample No.		ST-31#2					
Lab. Sample No.		784499					
Retained #4 Sieve	%	-					
Passing #10 Sieve	%	100					
Passing #40 Sieve	%	100					
Passing #200 Sieve	%	70					

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	2.2					
Fine Sand Ret - #270	%	39.4					
Silt 0.05 - 0.005 mm	%	46.3					
Clay < 0.005 mm	%	12.1					
T-#		T-5664					
Specific Gravity		2.945					

L. L.		54					
P. I.		15					
AASHTO Classification		A-7-5(12)					
Station		404+50					
Offset		94' RT					
Alignment		L					
Location							
Depth (Ft)		29.20					
	to	31.20					
Final Moisture (%)		42.24					

cc: NEIL ROBERSON
TED HOWARD

Soils Engineer

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. U-2412B

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project 39406.1.1 **County** GUILFORD **Owner**

Date: Sampled 3/22/13 **Received** 4/15/13 **Reported** 4/17/13

Sampled from **By** NEIL ROBERSON

Submitted by TED HOWARD 1995 **Standard Specifications**

784714 TO 784716
4/23/13

TEST RESULTS

Proj. Sample No.		ST-33#1	ST-33#2	ST-33#3			
Lab. Sample No.		784714	784715	784716			
Retained #4 Sieve	%	-	-	-			
Passing #10 Sieve	%	96	97	95			
Passing #40 Sieve	%	80	79	76			
Passing #200 Sieve	%	54	55	54			

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	26.3	26.7	28.6			
Fine Sand Ret - #270	%	23.1	21.9	21.1			
Silt 0.05 - 0.005 mm	%	44.5	45.3	44.3			
Clay < 0.005 mm	%	6.1	6.1	6.1			
T-#		T-5665	T-5665	T-5665			
Specific Gravity		2.73	2.704	2.71			

L. L.		42	40	41			
P. I.		8	4	5			
AASHTO Classification		A-5(3)	A-4(2)	A-5(2)			
Station		404+50	404+50	404+50			
Offset		94' RT	94' RT	94' RT			
Alignment		L	L	L			
Location							
Depth (Ft)		39.20	39.20	39.20			
	to	41.20	41.20	41.20			
Final Moisture		27.24	28.33	23.22			

cc: NEIL ROBERSON
GREG BODENHEIMER

Soils Engineer

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	24.44	25.98	**Plastic Limits:**	0	
Dry Density (pcf):	94.37	102.95	**Plasticity Index (%):**	0	
Saturation (%):	83.35	109.13			
Void Ratio:	0.7952	0.6455	**Specific Gravity:**	2.715	Measured

Soil Description: Yellowish white colored clayey silt. Sample was dry and brittle.

Project Number: 39406.1.1 **Depth:** 39.2 - 41.2 ft **Remarks:**

Sample Number: ST-33 **Boring Number:** Solid Height = 0.56111 inches ; Est. blows/feet = NA

Project: U-2412B

Client: T-5665

Location: Guilford County (Sta. 404 + 50)

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	24.44	25.98	**Plastic Limits:**	0	
Dry Density (pcf):	94.37	102.95	**Plasticity Index (%):**	0	
Saturation (%):	83.35	109.13			
Void Ratio:	0.7952	0.6455	**Specific Gravity:**	2.715	Measured

Soil Description: Yellowish white colored clayey silt. Sample was dry and brittle.

Project Number: 39406.1.1 **Depth:** 39.2 - 41.2 ft

Sample Number: ST-33 **Boring Number:**

Project: U-2412B

Client: T-5665

Location: Guilford County (Sta. 404 + 50)

Remarks: Solid Height = 0.56111 inches ; Est. blows/feet = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	24.44	25.98	**Plastic Limits:**	0	
Dry Density (pcf):	94.37	102.95	**Plasticity Index (%):**	0	
Saturation (%):	83.35	109.13			
Void Ratio:	0.7952	0.6455	**Specific Gravity:**	2.715	Measured

Soil Description: Yellowish white colored clayey silt. Sample was dry and brittle.

Project Number: 39406.1.1 **Depth:** 39.2 - 41.2 ft

Sample Number: ST-33 **Boring Number:**

Project: U-2412B

Client: T-5665

Location: Guilford County (Sta. 404 + 50)

Remarks: Solid Height = 0.56111 inches ; Est. blows/feet = NA

Consolidation Test Results
Summary

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County (Sta. 404 + 50)
Job Number: T-5665

Sample Number: ST-33 **Soil Description:**
Boring Number: Yellowish white colored clayey silt. Sample was dry and brittle.
Depth: 39.2 - 41.2 ft **Remarks:** **Test Number:**
Sample Type: Undisturbed Solid Height = 0.56111 inches ; Est. blows/feet = NA **Test Date:**

Index	Load Sequence (tsf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	1.0051	0.4452	0.00	0.7952	0.000		0.000	
1	0.031	0.0013	1.0038	0.4439	0.13	0.7929	0.174		4491.314	
2	0.063	0.0043	1.0008	0.4409	0.43	0.7875	0.336		2303.920	
3	0.125	0.0088	0.9963	0.4364	0.88	0.7795	0.490		1567.519	
4	0.250	0.0163	0.9888	0.4289	1.62	0.7661	0.490		1544.008	
5	0.500	0.0251	0.9800	0.4201	2.50	0.7504	0.490		1516.648	
6	1.000	0.0358	0.9693	0.4094	3.56	0.7313	0.303		2403.365	
7	2.000	0.0500	0.9551	0.3952	4.97	0.7059	0.207		3416.616	
8	4.000	0.0687	0.9364	0.3765	6.84	0.6725	0.391		1737.078	
9	2.000	0.0646	0.9405	0.3806	6.43	0.6798	0.000		0.000	
10	1.000	0.0616	0.9435	0.3836	6.13	0.6852	0.000		0.000	
11	0.500	0.0572	0.9479	0.3880	5.69	0.6930	0.000		0.000	
12	1.000	0.0608	0.9443	0.3844	6.05	0.6866	0.000		0.000	
13	2.000	0.0648	0.9403	0.3804	6.45	0.6795	0.000		0.000	
14	4.000	0.0711	0.9340	0.3741	7.07	0.6682	0.000		0.000	
15	8.000	0.0965	0.9086	0.3487	9.60	0.6229	0.360		1774.483	
16	16.000	0.1276	0.8775	0.3176	12.70	0.5673	0.810		735.594	
17	4.000	0.1228	0.8823	0.3224	12.22	0.5759	0.000		0.000	
18	0.016	0.0838	0.9213	0.3614	8.34	0.6455	0.000		0.000	

Tested By: **Checked By:**

Consolidation Test
Consolidation Specimen Information

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County (Sta. 404 + 50)
Job Number: T-5665 **Test Date:**

Sample Number: ST-33 **Soil Description:**
Boring Number: Yellowish white colored clayey silt. Sample was dry and brittle.
Depth: 39.2 - 41.2 ft **Remarks:**
Sample Type: Undisturbed Solid Height = 0.56111 inches ; Est. blows/feet = NA

Test Number:
Liquid Limit: 0.0000 **Initial Void Ratio:** 0.7952 **Initial Height (in):** 1.0051
Plastic Limit: 0.0000 **Plasticity Index (%):** 0.0000 **Initial Diameter (in):** 2.4989
Specific Gravity: 2.7150 Measured **Weight of Ring (g):** 111.0900

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	151.95	153.83
Dry Soil + Container (g)	122.11	122.11
Weight of Container (g)	0.00	0.00
Moisture Content (%)	24.44	25.98
Void Ratio	0.7952	0.6455
Saturation (%)	83.35	109.13
Dry Density (pcf)	94.37	102.95

Tested By: **Checked By:**

ncdot

Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date

Tested By:

Effective Stress at Maximum Deviator Stress Criterion

Deviator Stress Vs. Axial Strain

Initial	Specimen A	B	C	D
Water Content (%)	24.7	25.1	21.4	
Dry Density (pcf)	97.1	93.1	100.9	
Saturation (%)	89.28	83.38	85.76	
Void Ratio	0.750	0.809	0.672	
Diameter (in)	2.869	2.876	2.871	
Height (in)	5.904	6.052	6.075	
Specific Gravity	2.73	2.70	2.71	
Liquid Limit	0	0	0	
Plastic Limit	0	0	0	
After Consolidation	**A**	**B**	**C**	**D**
B-Value	0.00	0.00	0.00	
Water Content (%)	25.8	27.4	24.3	
Dry Density (pcf)	99.57	98.74	106.83	
Saturation (%)	100.00	100.00	100.00	
Void Ratio	0.712	0.709	0.584	
Effective Stress (psi)	9.0	18.0	36.0	
Back Press. (psi)	60.0	60.4	60.8	
Rate of Strain	0.009	0.009	0.009	

Maximium Deviator Stress Criterion	
C (psi)	0.0
C' (psi)	0.0
Ø (deg)	0.0
Ø' (deg)	0.0

After Shear	A	B	C	D
σ'1 at Failure (psi)	40.15	39.75	77.58	
σ'3 at Failure (psi)	11.25	13.70	30.46	

Project:	U-2412B
Location:	Guilford County (Sta. 404 + 50)
Project Number:	39406.1.1
Boring Number:	
Sample Number:	ST-33
Depth:	39.2 - 41.2 ft
Sample Type:	Undisturbed
Description:	
Test Type	Consolidated Undrained
Remarks	

Failure Photographs

ncdot

Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date:

Tested By:

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)

Change in Pore Pressure vs. Axial Strain

Deviator Stress vs. Axial Strain

Principal Stress Ratio vs. Axial Strain

Change in Pore Pressure vs. Axial Strain
21.0
16.0
11.0
6.0
1.0
-4.0
Change in Pore Pressure (psi)
0.000
5.000
10.000
15.000
20.000
25.000
Axial Strain (%)
Specimen A
Specimen B
Specimen C
Specimen D

Mohr Stress Circles at Maximum Deviator Stress Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at Maximum Principal Stress Ratio Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at 15% Axial Strain Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)
Q (psi)
60.0
45.0
30.0
15.0
0.0
0.0
15.0
30.0
45.0
60.0
P' (psi)
Specimen A
Specimen B
Specimen C
Specimen D
Tangent Line

Stress Paths (Total)
(C' = 0.0 Ø' = 0.0)
Q (psi)
80.0
60.0
40.0
20.0
0.0
0.0
20.0
40.0
60.0
80.0
P (psi)

Specimen A Shear Data

CU Triaxial Test

ncdot

File Location
T-5665.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5665
Sample Location: Guilford County (Sta. 404 + 50)
Sample Description: Yellowish white colored clayey silt
Remarks: 40° shear plane. Sample was coarse and brittle.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.73
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.868	2.839	
Height (in)	5.904	5.881	
Weight (grams)	1213.00		1238.00
Moisture (%)	24.67		27.24
Dry Density (pcf)	97.14	99.57	
Saturation (%)	89.28	100.00	
Void Ratio	0.750	0.712	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 69.000
Effective Confining Stress (psi): 9.0
Corrected Peak Deviator Stress (psi): 28.895 at reading number: 190

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	18.6	0.063	60.0	0.0	6.33	0.000	0.000	0.000	9.0	9.0	9.0	9.0	1.00	0.00	9.0	0.0	9.0
1	35.5	0.067	60.9	0.9	6.33	0.078	2.667	2.634	11.6	9.0	10.7	8.1	1.33	0.33	10.3	1.3	9.4
2	40.6	0.070	61.3	1.3	6.34	0.125	3.476	3.423	12.4	9.0	11.1	7.7	1.45	0.38	10.7	1.7	9.4
3	46.3	0.074	61.8	1.8	6.34	0.203	4.377	4.290	13.3	9.0	11.4	7.2	1.60	0.42	11.1	2.1	9.3
4	50.8	0.080	62.3	2.2	6.35	0.289	5.076	4.949	13.9	9.0	11.7	6.7	1.73	0.45	11.4	2.5	9.2
5	53.9	0.084	62.5	2.5	6.35	0.367	5.573	5.410	14.4	9.0	11.9	6.5	1.83	0.46	11.7	2.7	9.2
6	56.6	0.088	62.7	2.7	6.36	0.430	5.996	5.803	14.8	9.0	12.1	6.3	1.92	0.46	11.9	2.9	9.2
7	58.0	0.091	62.9	2.9	6.36	0.493	6.216	5.995	15.0	9.0	12.1	6.1	1.98	0.48	12.0	3.0	9.1
8	61.5	0.096	63.1	3.0	6.37	0.563	6.768	6.512	15.5	9.0	12.4	5.9	2.10	0.47	12.2	3.3	9.2
9	63.9	0.100	63.2	3.2	6.37	0.641	7.154	6.860	15.8	9.0	12.6	5.8	2.19	0.47	12.4	3.4	9.2
10	38.8	0.109	62.6	2.6	6.38	0.790	3.182	2.851	11.8	9.0	9.2	6.4	1.45	0.91	10.4	1.4	7.8
11	50.8	0.113	63.1	3.0	6.38	0.860	5.076	4.699	13.7	9.0	10.6	5.9	1.79	0.65	11.3	2.3	8.3
12	34.9	0.119	62.5	2.5	6.39	0.962	2.575	2.177	11.1	9.0	8.7	6.5	1.33	1.13	10.1	1.1	7.6
13	46.1	0.122	62.9	2.9	6.39	1.008	4.340	3.906	12.9	9.0	10.0	6.1	1.64	0.74	10.9	2.0	8.0
14	54.4	0.125	63.2	3.1	6.40	1.055	5.646	5.178	14.1	9.0	11.0	5.8	1.89	0.60	11.6	2.6	8.4
15	58.3	0.127	63.3	3.2	6.40	1.094	6.272	5.779	14.7	9.0	11.5	5.7	2.01	0.56	11.9	2.9	8.6
16	61.1	0.131	63.4	3.4	6.40	1.165	6.713	6.183	15.2	9.0	11.8	5.6	2.10	0.54	12.1	3.1	8.7
17	65.7	0.135	63.5	3.5	6.41	1.227	7.430	6.863	15.8	9.0	12.4	5.5	2.25	0.51	12.4	3.4	8.9
18	68.9	0.139	63.6	3.6	6.41	1.298	7.945	7.339	16.3	9.0	12.7	5.4	2.36	0.49	12.6	3.7	9.1

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	72.3	0.143	63.7	3.7	6.42	1.368	8.479	7.832	16.8	9.0	13.1	5.3	2.47	0.47	12.9	3.9	9.2
20	74.0	0.147	63.7	3.7	6.42	1.438	8.754	8.071	17.0	9.0	13.3	5.3	2.54	0.46	13.0	4.0	9.3
21	76.7	0.151	63.8	3.8	6.43	1.509	9.177	8.454	17.4	9.0	13.6	5.2	2.64	0.45	13.2	4.2	9.4
22	79.0	0.155	63.9	3.9	6.43	1.579	9.545	8.783	17.8	9.0	13.9	5.1	2.72	0.44	13.4	4.4	9.5
23	81.6	0.160	64.0	3.9	6.44	1.650	9.950	9.147	18.1	9.0	14.2	5.0	2.81	0.43	13.5	4.6	9.6
24	83.6	0.164	64.0	4.0	6.44	1.720	10.263	9.420	18.4	9.0	14.4	5.0	2.89	0.42	13.7	4.7	9.7
25	85.8	0.168	64.0	4.0	6.45	1.790	10.612	9.728	18.7	9.0	14.7	5.0	2.95	0.41	13.8	4.9	9.9
26	87.8	0.172	64.0	4.0	6.45	1.868	10.925	9.997	19.0	9.0	15.0	5.0	3.02	0.40	14.0	5.0	10.0
27	90.5	0.177	64.0	4.0	6.45	1.939	11.348	10.376	19.3	9.0	15.3	5.0	3.09	0.39	14.2	5.2	10.1
28	92.2	0.181	64.1	4.0	6.46	2.009	11.623	10.615	19.6	9.0	15.5	4.9	3.15	0.38	14.3	5.3	10.2
29	94.6	0.185	64.1	4.0	6.46	2.079	12.010	10.985	20.0	9.0	15.9	4.9	3.23	0.37	14.5	5.5	10.4
30	96.5	0.189	64.1	4.1	6.47	2.158	12.304	11.264	20.2	9.0	16.2	4.9	3.30	0.36	14.6	5.6	10.5
31	98.1	0.194	64.1	4.0	6.47	2.236	12.561	11.506	20.5	9.0	16.4	4.9	3.33	0.35	14.7	5.8	10.7
32	100.0	0.199	64.1	4.0	6.48	2.314	12.856	11.783	20.8	9.0	16.7	4.9	3.39	0.34	14.9	5.9	10.8
33	102.7	0.203	64.1	4.0	6.48	2.392	13.279	12.186	21.2	9.0	17.1	4.9	3.47	0.33	15.1	6.1	11.0
34	104.1	0.208	64.0	4.0	6.49	2.470	13.499	12.391	21.4	9.0	17.4	5.0	3.50	0.32	15.2	6.2	11.2
35	106.1	0.212	64.0	4.0	6.50	2.549	13.812	12.685	21.7	9.0	17.7	5.0	3.54	0.31	15.3	6.3	11.3
36	108.4	0.217	64.0	4.0	6.50	2.627	14.180	13.032	22.0	9.0	18.0	5.0	3.61	0.31	15.5	6.5	11.5
37	109.8	0.222	64.0	4.0	6.51	2.705	14.401	13.236	22.2	9.0	18.3	5.0	3.64	0.30	15.6	6.6	11.6
38	112.5	0.226	64.0	3.9	6.51	2.783	14.824	13.636	22.6	9.0	18.7	5.0	3.70	0.29	15.8	6.8	11.9
39	114.1	0.230	63.9	3.9	6.52	2.853	15.081	13.876	22.8	9.0	19.0	5.1	3.73	0.28	15.9	6.9	12.0
40	115.4	0.235	63.9	3.8	6.52	2.932	15.283	14.060	23.0	9.0	19.2	5.1	3.74	0.27	16.0	7.0	12.2
41	117.1	0.239	63.8	3.8	6.53	3.002	15.559	14.317	23.3	9.0	19.5	5.2	3.77	0.27	16.1	7.2	12.3
42	119.4	0.244	63.8	3.8	6.53	3.080	15.927	14.662	23.6	9.0	19.9	5.2	3.82	0.26	16.3	7.3	12.5
43	121.3	0.248	63.8	3.7	6.54	3.151	16.221	14.935	23.9	9.0	20.2	5.2	3.86	0.25	16.4	7.5	12.7
44	122.6	0.252	63.7	3.7	6.54	3.229	16.424	15.118	24.1	9.0	20.4	5.3	3.88	0.25	16.5	7.6	12.8
45	124.9	0.257	63.7	3.7	6.55	3.299	16.792	15.463	24.4	9.0	20.8	5.3	3.91	0.24	16.7	7.7	13.0
46	126.4	0.261	63.6	3.6	6.55	3.377	17.031	15.680	24.7	9.0	21.1	5.4	3.92	0.23	16.8	7.8	13.2
47	127.8	0.265	63.6	3.6	6.56	3.448	17.251	15.882	24.9	9.0	21.3	5.4	3.94	0.22	16.9	7.9	13.3
48	129.8	0.270	63.5	3.5	6.56	3.526	17.564	16.170	25.1	9.0	21.6	5.5	3.96	0.22	17.1	8.1	13.5
49	131.4	0.274	63.5	3.5	6.57	3.596	17.821	16.406	25.4	9.0	21.9	5.5	3.99	0.21	17.2	8.2	13.7
50	133.8	0.279	63.5	3.4	6.57	3.674	18.189	16.746	25.7	9.0	22.3	5.5	4.02	0.20	17.3	8.4	13.9
51	135.0	0.283	63.4	3.4	6.58	3.745	18.392	16.928	25.9	9.0	22.5	5.6	4.04	0.20	17.4	8.5	14.0
52	136.8	0.287	63.4	3.3	6.58	3.823	18.667	17.179	26.1	9.0	22.8	5.6	4.05	0.19	17.6	8.6	14.2
53	137.3	0.291	63.3	3.3	6.59	3.893	18.741	17.236	26.2	9.0	22.9	5.7	4.03	0.19	17.6	8.6	14.3
54	139.0	0.296	63.2	3.2	6.59	3.971	19.017	17.487	26.5	9.0	23.2	5.8	4.04	0.18	17.7	8.7	14.5
55	140.2	0.301	63.2	3.2	6.60	4.050	19.201	17.648	26.6	9.0	23.5	5.8	4.04	0.18	17.8	8.8	14.6
56	142.1	0.305	63.2	3.1	6.60	4.128	19.513	17.933	26.9	9.0	23.8	5.8	4.07	0.17	17.9	9.0	14.8
57	144.8	0.309	63.1	3.1	6.61	4.198	19.936	18.325	27.3	9.0	24.2	5.9	4.11	0.17	18.1	9.2	15.1
58	145.6	0.314	63.0	3.0	6.61	4.276	20.065	18.432	27.4	9.0	24.4	6.0	4.09	0.16	18.2	9.2	15.2
59	147.4	0.318	63.0	3.0	6.62	4.347	20.341	18.682	27.7	9.0	24.7	6.0	4.12	0.16	18.3	9.3	15.3

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	148.7	0.323	62.9	2.9	6.62	4.425	20.543	18.859	27.8	9.0	24.9	6.1	4.11	0.15	18.4	9.4	15.5
61	149.9	0.327	62.9	2.8	6.63	4.503	20.746	19.037	28.0	9.0	25.2	6.1	4.10	0.15	18.5	9.5	15.6
62	151.6	0.332	62.8	2.8	6.63	4.581	21.003	19.266	28.2	9.0	25.5	6.2	4.11	0.14	18.6	9.6	15.8
63	152.7	0.336	62.8	2.8	6.64	4.651	21.187	19.427	28.4	9.0	25.6	6.2	4.12	0.14	18.7	9.7	15.9
64	153.9	0.341	62.7	2.7	6.64	4.730	21.371	19.585	28.6	9.0	25.9	6.3	4.12	0.14	18.8	9.8	16.1
65	155.1	0.345	62.7	2.7	6.65	4.800	21.555	19.745	28.7	9.0	26.1	6.3	4.13	0.13	18.8	9.9	16.2
66	156.1	0.349	62.6	2.6	6.65	4.870	21.720	19.888	28.9	9.0	26.3	6.4	4.12	0.13	18.9	9.9	16.3
67	157.2	0.354	62.6	2.5	6.66	4.949	21.886	20.028	29.0	9.0	26.5	6.4	4.12	0.13	19.0	10.0	16.4
68	158.7	0.358	62.5	2.5	6.66	5.019	22.125	20.240	29.2	9.0	26.8	6.5	4.11	0.12	19.1	10.1	16.6
69	160.3	0.362	62.5	2.4	6.67	5.097	22.383	20.467	29.4	9.0	27.0	6.5	4.13	0.12	19.2	10.2	16.8
70	161.5	0.366	62.4	2.4	6.67	5.167	22.566	20.625	29.6	9.0	27.2	6.6	4.13	0.11	19.3	10.3	16.9
71	162.3	0.371	62.3	2.3	6.68	5.246	22.695	20.730	29.7	9.0	27.4	6.7	4.11	0.11	19.3	10.4	17.0
72	164.1	0.375	62.3	2.3	6.69	5.316	22.989	20.992	30.0	9.0	27.7	6.7	4.14	0.11	19.5	10.5	17.2
73	165.2	0.379	62.3	2.2	6.69	5.386	23.155	21.133	30.1	9.0	27.9	6.7	4.13	0.11	19.5	10.6	17.3
74	166.5	0.384	62.2	2.1	6.70	5.465	23.357	21.306	30.3	9.0	28.1	6.8	4.12	0.10	19.6	10.7	17.5
75	167.6	0.389	62.1	2.1	6.70	5.543	23.541	21.461	30.4	9.0	28.4	6.9	4.11	0.10	19.7	10.7	17.6
76	168.1	0.393	62.1	2.0	6.71	5.613	23.615	21.514	30.5	9.0	28.4	6.9	4.11	0.10	19.7	10.8	17.7
77	170.0	0.397	62.0	2.0	6.71	5.691	23.909	21.773	30.7	9.0	28.8	7.0	4.12	0.09	19.9	10.9	17.9
78	170.9	0.402	62.0	1.9	6.72	5.769	24.056	21.893	30.9	9.0	28.9	7.0	4.11	0.09	19.9	10.9	18.0
79	171.8	0.406	61.9	1.9	6.72	5.848	24.203	22.013	31.0	9.0	29.1	7.1	4.11	0.09	20.0	11.0	18.1
80	173.1	0.411	61.9	1.8	6.73	5.918	24.406	22.186	31.2	9.0	29.3	7.1	4.11	0.08	20.1	11.1	18.2
81	175.3	0.415	61.8	1.8	6.73	5.996	24.755	22.496	31.5	9.0	29.7	7.2	4.13	0.08	20.2	11.2	18.4
82	175.6	0.420	61.7	1.7	6.74	6.074	24.792	22.511	31.5	9.0	29.8	7.3	4.10	0.08	20.2	11.3	18.5
83	176.6	0.424	61.7	1.6	6.74	6.152	24.957	22.647	31.6	9.0	30.0	7.3	4.09	0.07	20.3	11.3	18.7
84	177.9	0.429	61.6	1.6	6.75	6.231	25.160	22.817	31.8	9.0	30.2	7.4	4.10	0.07	20.4	11.4	18.8
85	178.8	0.433	61.6	1.6	6.76	6.301	25.307	22.937	31.9	9.0	30.4	7.4	4.09	0.07	20.4	11.5	18.9
86	180.0	0.438	61.5	1.5	6.76	6.379	25.491	23.090	32.1	9.0	30.6	7.5	4.09	0.06	20.5	11.5	19.0
87	181.1	0.442	61.5	1.5	6.77	6.457	25.675	23.242	32.2	9.0	30.7	7.5	4.10	0.06	20.6	11.6	19.1
88	182.0	0.447	61.4	1.4	6.77	6.536	25.803	23.342	32.3	9.0	30.9	7.6	4.09	0.06	20.6	11.7	19.2
89	182.7	0.451	61.4	1.3	6.78	6.614	25.914	23.425	32.4	9.0	31.0	7.6	4.07	0.06	20.7	11.7	19.3
90	184.2	0.456	61.3	1.3	6.78	6.692	26.153	23.628	32.6	9.0	31.3	7.7	4.08	0.05	20.8	11.8	19.5
91	185.7	0.460	61.3	1.2	6.79	6.762	26.392	23.832	32.8	9.0	31.6	7.7	4.08	0.05	20.9	11.9	19.7
92	186.1	0.465	61.2	1.2	6.79	6.840	26.465	23.880	32.9	9.0	31.7	7.8	4.07	0.05	20.9	11.9	19.7
93	187.7	0.469	61.2	1.1	6.80	6.919	26.705	24.082	33.1	9.0	31.9	7.8	4.08	0.05	21.0	12.0	19.9
95	189.3	0.478	61.1	1.0	6.81	7.067	26.962	24.282	33.3	9.0	32.2	7.9	4.06	0.04	21.1	12.1	20.1
96	189.9	0.483	61.0	1.0	6.82	7.145	27.054	24.346	33.3	9.0	32.4	8.0	4.04	0.04	21.1	12.2	20.2
97	190.8	0.487	61.0	0.9	6.82	7.223	27.201	24.461	33.4	9.0	32.5	8.0	4.04	0.04	21.2	12.2	20.3
98	192.4	0.491	60.9	0.9	6.83	7.294	27.459	24.681	33.7	9.0	32.8	8.1	4.05	0.04	21.3	12.3	20.4
99	192.8	0.496	60.9	0.8	6.83	7.372	27.514	24.711	33.7	9.0	32.8	8.1	4.04	0.03	21.3	12.4	20.5
100	193.8	0.501	60.8	0.8	6.84	7.450	27.679	24.842	33.8	9.0	33.0	8.2	4.04	0.03	21.4	12.4	20.6
101	194.8	0.505	60.8	0.7	6.84	7.521	27.826	24.959	33.9	9.0	33.2	8.2	4.03	0.03	21.5	12.5	20.7

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
102	195.8	0.509	60.7	0.7	6.85	7.599	27.992	25.090	34.1	9.0	33.4	8.3	4.02	0.03	21.5	12.5	20.8
103	196.7	0.514	60.6	0.6	6.86	7.669	28.139	25.206	34.2	9.0	33.6	8.4	4.02	0.02	21.6	12.6	21.0
104	198.0	0.518	60.6	0.6	6.86	7.747	28.341	25.371	34.3	9.0	33.8	8.4	4.03	0.02	21.7	12.7	21.1
105	198.1	0.522	60.6	0.5	6.87	7.818	28.360	25.368	34.3	9.0	33.8	8.4	4.00	0.02	21.7	12.7	21.1
106	198.5	0.527	60.5	0.5	6.87	7.896	28.415	25.396	34.4	9.0	33.9	8.5	4.00	0.02	21.7	12.7	21.2
107	200.1	0.531	60.5	0.4	6.88	7.966	28.672	25.613	34.6	9.0	34.1	8.5	4.00	0.02	21.8	12.8	21.3
108	200.0	0.536	60.4	0.4	6.88	8.044	28.654	25.574	34.5	9.0	34.2	8.6	3.98	0.01	21.8	12.8	21.4
109	200.9	0.540	60.4	0.3	6.89	8.123	28.801	25.687	34.7	9.0	34.3	8.6	3.97	0.01	21.8	12.8	21.5
110	201.6	0.544	60.3	0.3	6.89	8.193	28.912	25.768	34.7	9.0	34.4	8.7	3.97	0.01	21.9	12.9	21.6
111	202.2	0.549	60.3	0.2	6.90	8.271	29.004	25.830	34.8	9.0	34.6	8.7	3.96	0.01	21.9	12.9	21.7
112	203.5	0.554	60.2	0.2	6.91	8.349	29.206	25.992	35.0	9.0	34.8	8.8	3.97	0.01	22.0	13.0	21.8
113	204.1	0.558	60.2	0.1	6.91	8.420	29.298	26.056	35.0	9.0	34.9	8.8	3.95	0.01	22.0	13.0	21.9
114	204.5	0.562	60.1	0.1	6.92	8.498	29.371	26.100	35.1	9.0	35.0	8.9	3.94	0.00	22.0	13.1	21.9
115	205.1	0.567	60.1	0.0	6.92	8.576	29.463	26.162	35.1	9.0	35.1	8.9	3.93	0.00	22.1	13.1	22.0
116	205.4	0.571	60.0	0.0	6.93	8.646	29.500	26.174	35.1	9.0	35.2	9.0	3.91	0.00	22.1	13.1	22.1
117	206.2	0.576	60.0	-0.1	6.93	8.724	29.629	26.269	35.2	9.0	35.3	9.0	3.91	0.00	22.1	13.1	22.2
118	206.6	0.580	59.9	-0.1	6.94	8.803	29.702	26.313	35.3	9.0	35.4	9.1	3.90	0.00	22.1	13.2	22.2
119	207.2	0.585	59.9	-0.1	6.95	8.881	29.794	26.373	35.3	9.0	35.5	9.1	3.90	0.00	22.2	13.2	22.3
120	207.6	0.589	59.9	-0.1	6.95	8.959	29.850	26.400	35.4	9.0	35.5	9.1	3.90	-0.01	22.2	13.2	22.3
121	207.8	0.594	59.8	-0.2	6.96	9.037	29.886	26.410	35.4	9.0	35.6	9.2	3.87	-0.01	22.2	13.2	22.4
122	208.6	0.599	59.7	-0.3	6.96	9.115	30.015	26.504	35.5	9.0	35.8	9.3	3.86	-0.01	22.2	13.3	22.5
123	208.7	0.603	59.7	-0.3	6.97	9.194	30.033	26.497	35.5	9.0	35.8	9.3	3.85	-0.01	22.2	13.2	22.5
124	209.7	0.608	59.7	-0.4	6.98	9.272	30.181	26.607	35.6	9.0	35.9	9.3	3.85	-0.01	22.3	13.3	22.6
125	210.1	0.612	59.6	-0.4	6.98	9.342	30.254	26.653	35.6	9.0	36.0	9.4	3.85	-0.01	22.3	13.3	22.7
126	211.3	0.617	59.6	-0.4	6.99	9.420	30.438	26.796	35.8	9.0	36.2	9.4	3.86	-0.02	22.4	13.4	22.8
127	212.0	0.621	59.6	-0.5	6.99	9.491	30.548	26.874	35.8	9.0	36.3	9.4	3.85	-0.02	22.4	13.4	22.9
128	212.1	0.625	59.5	-0.5	7.00	9.561	30.567	26.869	35.8	9.0	36.4	9.5	3.83	-0.02	22.4	13.4	22.9
129	212.9	0.629	59.5	-0.6	7.00	9.639	30.696	26.962	35.9	9.0	36.5	9.5	3.83	-0.02	22.5	13.5	23.0
130	213.2	0.634	59.4	-0.6	7.01	9.709	30.732	26.973	35.9	9.0	36.5	9.6	3.82	-0.02	22.5	13.5	23.0
131	214.1	0.638	59.4	-0.6	7.02	9.788	30.879	27.082	36.1	9.0	36.7	9.6	3.83	-0.02	22.5	13.5	23.1
132	214.9	0.642	59.4	-0.6	7.02	9.858	31.008	27.176	36.1	9.0	36.8	9.6	3.83	-0.02	22.6	13.6	23.2
133	215.4	0.647	59.4	-0.7	7.03	9.936	31.082	27.218	36.2	9.0	36.9	9.6	3.82	-0.02	22.6	13.6	23.3
134	216.9	0.651	59.3	-0.7	7.03	10.007	31.321	27.412	36.4	9.0	37.1	9.7	3.83	-0.03	22.7	13.7	23.4
135	217.0	0.656	59.3	-0.8	7.04	10.085	31.339	27.404	36.4	9.0	37.1	9.7	3.82	-0.03	22.7	13.7	23.4
136	217.9	0.660	59.2	-0.8	7.05	10.163	31.486	27.512	36.5	9.0	37.3	9.8	3.81	-0.03	22.7	13.8	23.5
137	217.5	0.665	59.2	-0.8	7.05	10.241	31.413	27.421	36.4	9.0	37.2	9.8	3.79	-0.03	22.7	13.7	23.5
138	219.1	0.669	59.2	-0.8	7.06	10.311	31.670	27.630	36.6	9.0	37.4	9.8	3.81	-0.03	22.8	13.8	23.6
139	219.4	0.674	59.2	-0.9	7.06	10.390	31.725	27.654	36.6	9.0	37.5	9.8	3.81	-0.03	22.8	13.8	23.7
140	219.9	0.678	59.1	-0.9	7.07	10.468	31.799	27.695	36.7	9.0	37.6	9.9	3.80	-0.03	22.8	13.8	23.7
141	220.6	0.683	59.1	-1.0	7.08	10.546	31.909	27.769	36.7	9.0	37.7	9.9	3.79	-0.03	22.9	13.9	23.8
142	221.0	0.687	59.0	-1.0	7.08	10.616	31.965	27.796	36.8	9.0	37.8	10.0	3.79	-0.04	22.9	13.9	23.9

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
143	221.0	0.691	59.0	-1.1	7.09	10.695	31.965	27.771	36.7	9.0	37.8	10.0	3.77	-0.04	22.9	13.9	23.9
144	220.8	0.696	59.0	-1.1	7.09	10.773	31.946	27.730	36.7	9.0	37.8	10.0	3.77	-0.04	22.8	13.9	23.9
145	221.9	0.700	58.9	-1.1	7.10	10.843	32.112	27.855	36.8	9.0	37.9	10.1	3.77	-0.04	22.9	13.9	24.0
146	221.8	0.705	58.9	-1.1	7.11	10.921	32.093	27.813	36.8	9.0	37.9	10.1	3.76	-0.04	22.9	13.9	24.0
147	221.9	0.709	58.9	-1.1	7.11	10.999	32.112	27.805	36.8	9.0	37.9	10.1	3.75	-0.04	22.9	13.9	24.0
148	222.8	0.714	58.8	-1.2	7.12	11.070	32.259	27.913	36.9	9.0	38.1	10.2	3.74	-0.04	22.9	14.0	24.1
149	223.3	0.718	58.8	-1.2	7.12	11.140	32.332	27.956	36.9	9.0	38.2	10.2	3.74	-0.04	22.9	14.0	24.2
150	223.1	0.723	58.8	-1.3	7.13	11.226	32.296	27.895	36.9	9.0	38.1	10.2	3.73	-0.05	22.9	13.9	24.2
151	223.2	0.727	58.7	-1.3	7.14	11.296	32.314	27.889	36.9	9.0	38.1	10.3	3.72	-0.05	22.9	13.9	24.2
152	224.0	0.731	58.7	-1.3	7.14	11.375	32.443	27.978	36.9	9.0	38.2	10.3	3.73	-0.05	23.0	14.0	24.2
153	224.0	0.736	58.7	-1.3	7.15	11.445	32.443	27.955	36.9	9.0	38.2	10.3	3.72	-0.05	22.9	14.0	24.3
154	224.9	0.740	58.7	-1.3	7.15	11.523	32.590	28.060	37.0	9.0	38.4	10.3	3.72	-0.05	23.0	14.0	24.3
155	224.4	0.744	58.6	-1.4	7.16	11.594	32.516	27.972	36.9	9.0	38.3	10.4	3.70	-0.05	23.0	14.0	24.4
156	226.3	0.749	58.6	-1.4	7.17	11.664	32.811	28.209	37.2	9.0	38.6	10.4	3.71	-0.05	23.1	14.1	24.5
157	226.4	0.753	58.6	-1.5	7.17	11.742	32.829	28.199	37.2	9.0	38.6	10.4	3.70	-0.05	23.1	14.1	24.5
158	226.3	0.758	58.6	-1.5	7.18	11.820	32.811	28.157	37.1	9.0	38.6	10.4	3.70	-0.05	23.0	14.1	24.5
159	226.2	0.762	58.5	-1.5	7.18	11.891	32.792	28.118	37.1	9.0	38.6	10.5	3.69	-0.05	23.0	14.1	24.5
160	227.1	0.766	58.5	-1.5	7.19	11.969	32.939	28.222	37.2	9.0	38.7	10.5	3.69	-0.05	23.1	14.1	24.6
161	227.4	0.771	58.5	-1.6	7.20	12.039	32.976	28.231	37.2	9.0	38.8	10.5	3.68	-0.05	23.1	14.1	24.6
162	227.2	0.775	58.4	-1.6	7.20	12.117	32.958	28.189	37.2	9.0	38.7	10.6	3.67	-0.06	23.1	14.1	24.6
163	228.3	0.780	58.4	-1.6	7.21	12.195	33.123	28.309	37.3	9.0	38.9	10.6	3.68	-0.06	23.1	14.2	24.7
164	227.8	0.784	58.4	-1.6	7.22	12.274	33.050	28.218	37.2	9.0	38.8	10.6	3.66	-0.06	23.1	14.1	24.7
165	228.3	0.789	58.4	-1.6	7.22	12.344	33.123	28.260	37.2	9.0	38.9	10.6	3.66	-0.06	23.1	14.1	24.7
166	229.1	0.794	58.4	-1.7	7.23	12.430	33.252	28.344	37.3	9.0	39.0	10.6	3.66	-0.06	23.1	14.2	24.8
167	229.6	0.798	58.3	-1.7	7.23	12.508	33.326	28.382	37.4	9.0	39.1	10.7	3.66	-0.06	23.2	14.2	24.9
168	229.6	0.802	58.3	-1.7	7.24	12.579	33.326	28.359	37.3	9.0	39.1	10.7	3.65	-0.06	23.2	14.2	24.9
169	229.6	0.807	58.3	-1.8	7.25	12.665	33.326	28.330	37.3	9.0	39.1	10.7	3.64	-0.06	23.1	14.2	24.9
170	230.6	0.811	58.2	-1.8	7.25	12.735	33.491	28.451	37.4	9.0	39.2	10.8	3.65	-0.06	23.2	14.2	25.0
171	231.1	0.816	58.2	-1.8	7.26	12.813	33.565	28.489	37.5	9.0	39.3	10.8	3.64	-0.06	23.2	14.2	25.0
172	231.0	0.821	58.2	-1.8	7.27	12.891	33.546	28.447	37.4	9.0	39.2	10.8	3.64	-0.06	23.2	14.2	25.0
173	230.4	0.825	58.2	-1.8	7.27	12.969	33.454	28.340	37.3	9.0	39.2	10.8	3.62	-0.07	23.1	14.2	25.0
174	232.7	0.829	58.2	-1.9	7.28	13.040	33.822	28.637	37.6	9.0	39.5	10.8	3.64	-0.07	23.3	14.3	25.2
175	232.9	0.834	58.1	-1.9	7.29	13.118	33.859	28.642	37.6	9.0	39.5	10.9	3.63	-0.07	23.3	14.3	25.2
176	232.9	0.839	58.1	-1.9	7.29	13.196	33.859	28.616	37.6	9.0	39.5	10.9	3.62	-0.07	23.3	14.3	25.2
177	233.9	0.843	58.1	-2.0	7.30	13.274	34.006	28.717	37.7	9.0	39.6	10.9	3.63	-0.07	23.3	14.4	25.3
178	233.1	0.847	58.1	-2.0	7.30	13.345	33.877	28.582	37.6	9.0	39.5	10.9	3.61	-0.07	23.3	14.3	25.2
179	233.5	0.852	58.0	-2.0	7.31	13.423	33.951	28.619	37.6	9.0	39.6	11.0	3.61	-0.07	23.3	14.3	25.3
180	233.1	0.856	58.0	-2.0	7.32	13.493	33.877	28.531	37.5	9.0	39.5	11.0	3.60	-0.07	23.2	14.3	25.3
181	234.3	0.861	58.0	-2.0	7.32	13.571	34.080	28.680	37.7	9.0	39.7	11.0	3.60	-0.07	23.3	14.3	25.4
182	233.9	0.865	58.0	-2.1	7.33	13.650	34.006	28.589	37.6	9.0	39.6	11.0	3.59	-0.07	23.3	14.3	25.3
183	234.2	0.869	57.9	-2.1	7.34	13.720	34.061	28.613	37.6	9.0	39.7	11.1	3.58	-0.07	23.3	14.3	25.4

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
184	234.7	0.874	57.9	-2.1	7.34	13.790	34.135	28.653	37.6	9.0	39.7	11.1	3.59	-0.07	23.3	14.3	25.4
185	235.5	0.878	57.9	-2.1	7.35	13.868	34.264	28.737	37.7	9.0	39.8	11.1	3.59	-0.07	23.3	14.4	25.5
186	235.5	0.882	57.9	-2.2	7.35	13.939	34.264	28.713	37.7	9.0	39.8	11.1	3.58	-0.08	23.3	14.4	25.5
187	236.0	0.887	57.8	-2.2	7.36	14.017	34.337	28.749	37.7	9.0	39.9	11.2	3.57	-0.08	23.3	14.4	25.5
188	235.2	0.891	57.8	-2.2	7.37	14.087	34.208	28.614	37.6	9.0	39.8	11.2	3.56	-0.08	23.3	14.3	25.5
189	236.9	0.895	57.8	-2.3	7.37	14.158	34.484	28.827	37.8	9.0	40.1	11.2	3.57	-0.08	23.4	14.4	25.6
190	237.6	0.900	57.7	-2.3	7.38	14.236	34.595	28.895	37.9	9.0	40.1	11.3	3.57	-0.08	23.4	14.4	25.7
191	236.3	0.904	57.7	-2.3	7.39	14.306	34.392	28.697	37.7	9.0	40.0	11.3	3.55	-0.08	23.3	14.3	25.6
192	236.8	0.909	57.7	-2.3	7.39	14.384	34.466	28.733	37.7	9.0	40.0	11.3	3.55	-0.08	23.3	14.4	25.6
193	237.5	0.913	57.7	-2.3	7.40	14.463	34.576	28.801	37.8	9.0	40.1	11.3	3.55	-0.08	23.4	14.4	25.7
194	237.0	0.917	57.7	-2.4	7.41	14.533	34.503	28.713	37.7	9.0	40.1	11.3	3.53	-0.08	23.3	14.4	25.7
195	236.0	0.922	57.6	-2.4	7.41	14.611	34.337	28.545	37.5	9.0	39.9	11.4	3.51	-0.08	23.2	14.3	25.6
196	237.7	0.926	57.6	-2.4	7.42	14.689	34.613	28.754	37.7	9.0	40.2	11.4	3.52	-0.08	23.3	14.4	25.8
197	237.1	0.931	57.6	-2.4	7.43	14.767	34.521	28.648	37.6	9.0	40.0	11.4	3.51	-0.08	23.3	14.3	25.7
198	237.8	0.935	57.6	-2.4	7.43	14.838	34.631	28.718	37.7	9.0	40.1	11.4	3.52	-0.08	23.3	14.4	25.8
199	237.4	0.939	57.6	-2.5	7.44	14.908	34.558	28.631	37.6	9.0	40.1	11.4	3.51	-0.09	23.3	14.3	25.7
200	237.5	0.944	57.6	-2.5	7.45	14.986	34.576	28.620	37.6	9.0	40.0	11.4	3.50	-0.09	23.3	14.3	25.7
201	237.7	0.949	57.5	-2.5	7.45	15.065	34.613	28.624	37.6	9.0	40.1	11.5	3.50	-0.09	23.3	14.3	25.8
202	237.5	0.953	57.5	-2.5	7.46	15.135	34.576	28.568	37.5	9.0	40.1	11.5	3.48	-0.09	23.3	14.3	25.8
203	237.7	0.957	57.5	-2.5	7.47	15.213	34.613	28.572	37.5	9.0	40.1	11.5	3.48	-0.09	23.3	14.3	25.8
204	238.3	0.961	57.5	-2.6	7.47	15.283	34.705	28.626	37.6	9.0	40.2	11.5	3.48	-0.09	23.3	14.3	25.9
205	238.0	0.966	57.5	-2.6	7.48	15.362	34.650	28.552	37.5	9.0	40.1	11.5	3.47	-0.09	23.2	14.3	25.8
206	238.0	0.971	57.5	-2.6	7.49	15.440	34.650	28.525	37.5	9.0	40.1	11.5	3.47	-0.09	23.2	14.3	25.8
207	237.7	0.975	57.4	-2.6	7.49	15.510	34.613	28.469	37.4	9.0	40.0	11.6	3.46	-0.09	23.2	14.2	25.8
208	238.5	0.979	57.4	-2.6	7.50	15.588	34.742	28.551	37.5	9.0	40.2	11.6	3.46	-0.09	23.2	14.3	25.9
209	238.8	0.984	57.4	-2.7	7.51	15.667	34.778	28.555	37.5	9.0	40.2	11.6	3.45	-0.09	23.2	14.3	25.9
210	238.8	0.988	57.4	-2.7	7.51	15.737	34.778	28.530	37.5	9.0	40.2	11.6	3.45	-0.09	23.2	14.3	25.9
211	239.0	0.993	57.3	-2.7	7.52	15.815	34.815	28.534	37.5	9.0	40.2	11.7	3.45	-0.09	23.2	14.3	25.9
212	239.0	0.997	57.3	-2.7	7.53	15.893	34.815	28.507	37.5	9.0	40.2	11.7	3.44	-0.09	23.2	14.3	25.9
213	240.3	1.002	57.3	-2.7	7.53	15.971	35.018	28.650	37.6	9.0	40.3	11.7	3.46	-0.09	23.3	14.3	26.0
214	239.5	1.006	57.3	-2.7	7.54	16.042	34.889	28.517	37.5	9.0	40.2	11.7	3.44	-0.10	23.2	14.3	26.0
215	239.7	1.011	57.3	-2.8	7.55	16.120	34.926	28.521	37.5	9.0	40.2	11.7	3.43	-0.10	23.2	14.3	26.0
216	239.5	1.015	57.2	-2.8	7.55	16.190	34.889	28.465	37.4	9.0	40.2	11.8	3.42	-0.10	23.2	14.2	26.0
217	239.7	1.019	57.2	-2.8	7.56	16.268	34.926	28.469	37.4	9.0	40.2	11.8	3.42	-0.10	23.2	14.2	26.0
218	239.3	1.023	57.2	-2.8	7.57	16.339	34.870	28.398	37.4	9.0	40.2	11.8	3.41	-0.10	23.2	14.2	26.0
219	240.0	1.028	57.2	-2.8	7.57	16.417	34.981	28.463	37.4	9.0	40.2	11.8	3.42	-0.10	23.2	14.2	26.0
220	240.2	1.033	57.2	-2.8	7.58	16.495	34.999	28.451	37.4	9.0	40.3	11.8	3.41	-0.10	23.2	14.2	26.0
221	240.2	1.037	57.2	-2.8	7.59	16.566	34.999	28.426	37.4	9.0	40.2	11.8	3.41	-0.10	23.2	14.2	26.0
222	241.0	1.041	57.2	-2.9	7.59	16.644	35.128	28.506	37.5	9.0	40.3	11.8	3.41	-0.10	23.2	14.3	26.1
223	241.0	1.046	57.1	-2.9	7.60	16.722	35.128	28.479	37.4	9.0	40.3	11.9	3.40	-0.10	23.2	14.2	26.1
224	240.2	1.051	57.1	-2.9	7.61	16.800	34.999	28.344	37.3	9.0	40.2	11.9	3.38	-0.10	23.1	14.2	26.1

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
225	240.3	1.055	57.1	-2.9	7.62	16.878	35.018	28.332	37.3	9.0	40.2	11.9	3.38	-0.10	23.1	14.2	26.1
226	241.3	1.059	57.1	-2.9	7.62	16.949	35.183	28.445	37.4	9.0	40.3	11.9	3.39	-0.10	23.2	14.2	26.1
227	241.2	1.064	57.1	-2.9	7.63	17.027	35.165	28.402	37.4	9.0	40.3	11.9	3.39	-0.10	23.2	14.2	26.1
228	240.6	1.069	57.1	-3.0	7.64	17.105	35.073	28.299	37.3	9.0	40.2	11.9	3.37	-0.10	23.1	14.1	26.1
229	240.4	1.073	57.0	-3.0	7.64	17.183	35.036	28.241	37.2	9.0	40.2	12.0	3.36	-0.11	23.1	14.1	26.1
230	240.5	1.077	57.0	-3.0	7.65	17.253	35.054	28.231	37.2	9.0	40.2	12.0	3.36	-0.11	23.1	14.1	26.1
231	240.7	1.082	57.0	-3.0	7.66	17.332	35.091	28.234	37.2	9.0	40.2	12.0	3.36	-0.11	23.1	14.1	26.1
232	241.2	1.086	57.0	-3.0	7.66	17.410	35.165	28.268	37.2	9.0	40.3	12.0	3.36	-0.11	23.1	14.1	26.1
233	241.4	1.091	57.0	-3.0	7.67	17.488	35.201	28.270	37.2	9.0	40.3	12.0	3.36	-0.11	23.1	14.1	26.1
234	240.9	1.095	57.0	-3.0	7.68	17.558	35.110	28.170	37.1	9.0	40.2	12.0	3.34	-0.11	23.1	14.1	26.1
235	240.9	1.100	57.0	-3.0	7.69	17.637	35.110	28.142	37.1	9.0	40.2	12.0	3.34	-0.11	23.0	14.1	26.1
236	241.2	1.104	57.0	-3.1	7.69	17.707	35.165	28.163	37.1	9.0	40.2	12.0	3.34	-0.11	23.1	14.1	26.1
237	240.6	1.109	56.9	-3.1	7.70	17.785	35.073	28.060	37.0	9.0	40.1	12.1	3.32	-0.11	23.0	14.0	26.1
238	240.4	1.113	56.9	-3.1	7.71	17.855	35.036	28.005	37.0	9.0	40.1	12.1	3.32	-0.11	23.0	14.0	26.1
239	241.1	1.117	56.9	-3.1	7.71	17.934	35.146	28.068	37.0	9.0	40.1	12.1	3.32	-0.11	23.0	14.0	26.1
240	240.5	1.121	56.9	-3.1	7.72	18.004	35.054	27.968	36.9	9.0	40.0	12.1	3.32	-0.11	23.0	14.0	26.1
241	241.0	1.126	56.9	-3.1	7.73	18.074	35.128	28.004	37.0	9.0	40.1	12.1	3.32	-0.11	23.0	14.0	26.1
242	240.4	1.130	56.9	-3.1	7.73	18.153	35.036	27.901	36.9	9.0	40.0	12.1	3.31	-0.11	22.9	14.0	26.1
243	241.0	1.134	56.9	-3.2	7.74	18.223	35.128	27.952	36.9	9.0	40.1	12.1	3.30	-0.11	22.9	14.0	26.1
244	240.7	1.139	56.9	-3.2	7.75	18.301	35.091	27.894	36.9	9.0	40.0	12.1	3.30	-0.11	22.9	13.9	26.1
245	240.4	1.143	56.9	-3.2	7.75	18.371	35.036	27.824	36.8	9.0	40.0	12.1	3.29	-0.11	22.9	13.9	26.0
246	240.4	1.148	56.9	-3.2	7.76	18.450	35.036	27.797	36.8	9.0	39.9	12.1	3.29	-0.11	22.9	13.9	26.0
247	240.2	1.152	56.8	-3.2	7.77	18.520	34.999	27.742	36.7	9.0	39.9	12.2	3.28	-0.11	22.8	13.9	26.0
248	241.0	1.156	56.8	-3.2	7.78	18.598	35.128	27.820	36.8	9.0	40.0	12.2	3.29	-0.11	22.9	13.9	26.1
249	240.6	1.160	56.8	-3.2	7.78	18.668	35.073	27.750	36.7	9.0	39.9	12.2	3.28	-0.12	22.8	13.9	26.1
250	240.5	1.165	56.8	-3.2	7.79	18.747	35.054	27.708	36.7	9.0	39.9	12.2	3.27	-0.12	22.8	13.9	26.0
251	241.1	1.170	56.8	-3.2	7.80	18.825	35.146	27.755	36.7	9.0	39.9	12.2	3.28	-0.12	22.8	13.9	26.1
252	241.0	1.174	56.8	-3.2	7.80	18.895	35.128	27.715	36.7	9.0	39.9	12.2	3.27	-0.12	22.8	13.9	26.0
253	241.3	1.178	56.8	-3.2	7.81	18.973	35.183	27.733	36.7	9.0	39.9	12.2	3.27	-0.12	22.8	13.9	26.1
254	241.7	1.183	56.8	-3.2	7.82	19.052	35.238	27.750	36.7	9.0	39.9	12.2	3.28	-0.12	22.8	13.9	26.1
255	242.3	1.188	56.8	-3.2	7.83	19.130	35.330	27.797	36.8	9.0	40.0	12.2	3.27	-0.12	22.9	13.9	26.1
256	242.3	1.192	56.8	-3.3	7.83	19.208	35.330	27.769	36.7	9.0	40.0	12.2	3.27	-0.12	22.9	13.9	26.1
257	242.5	1.197	56.7	-3.3	7.84	19.286	35.367	27.771	36.7	9.0	40.0	12.3	3.26	-0.12	22.9	13.9	26.2
258	242.6	1.201	56.8	-3.3	7.85	19.364	35.385	27.758	36.7	9.0	40.0	12.2	3.27	-0.12	22.8	13.9	26.1
259	242.5	1.206	56.7	-3.3	7.86	19.442	35.367	27.716	36.7	9.0	40.0	12.3	3.26	-0.12	22.8	13.9	26.1
260	242.4	1.211	56.7	-3.3	7.87	19.521	35.349	27.673	36.6	9.0	40.0	12.3	3.25	-0.12	22.8	13.8	26.1
261	242.1	1.215	56.7	-3.3	7.87	19.591	35.312	27.619	36.6	9.0	39.9	12.3	3.25	-0.12	22.8	13.8	26.1
262	243.2	1.219	56.7	-3.3	7.88	19.669	35.477	27.724	36.7	9.0	40.0	12.3	3.25	-0.12	22.8	13.9	26.2
263	241.9	1.223	56.7	-3.4	7.89	19.740	35.275	27.537	36.5	9.0	39.9	12.3	3.23	-0.12	22.7	13.8	26.1
264	242.4	1.228	56.7	-3.4	7.89	19.818	35.349	27.568	36.5	9.0	39.9	12.3	3.23	-0.12	22.8	13.8	26.1
265	241.9	1.233	56.7	-3.4	7.90	19.896	35.275	27.482	36.5	9.0	39.8	12.3	3.23	-0.12	22.7	13.7	26.1

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
266	242.8	1.237	56.7	-3.4	7.91	19.966	35.422	27.575	36.5	9.0	39.9	12.3	3.24	-0.12	22.8	13.8	26.1
267	242.8	1.239	56.7	-3.4	7.91	19.997	35.422	27.564	36.5	9.0	39.9	12.3	3.23	-0.12	22.8	13.8	26.1

Specimen B Shear Data

CU Triaxial Test

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File Location
T-5665.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5665
Sample Location: Guilford County (Sta. 404 + 50)
Sample Description: Yellowish white colored silt
Remarks: 30° shear plane with slicken side. Sample was coarse.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.704
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.875	2.822	
Height (in)	6.052	5.923	
Weight (grams)	1201.00		1232.00
Moisture (%)	25.10		28.33
Dry Density (pcf)	93.06	98.74	
Saturation (%)	83.38	100.00	
Void Ratio	0.809	0.709	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 78.400
Effective Confining Stress (psi): 18.0
Corrected Peak Deviator Stress (psi): 26.047 at reading number: 271

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	22.8	0.165	60.4	0.0	6.25	0.000	0.000	0.000	18.0	18.0	18.0	18.0	1.00	0.00	18.0	0.0	18.0
1	53.4	0.169	61.9	1.5	6.26	0.058	4.893	4.867	22.9	18.0	21.3	16.5	1.30	0.31	20.4	2.4	18.9
2	64.2	0.173	63.0	2.6	6.26	0.126	6.622	6.564	24.6	18.0	22.0	15.4	1.43	0.39	21.3	3.3	18.7
3	46.8	0.177	62.7	2.3	6.27	0.203	3.844	3.757	21.8	18.0	19.4	15.7	1.24	0.62	19.9	1.9	17.6
4	69.4	0.181	63.8	3.4	6.27	0.271	7.450	7.324	25.3	18.0	21.9	14.6	1.50	0.47	21.7	3.7	18.2
5	76.7	0.185	64.4	4.0	6.27	0.339	8.627	8.465	26.5	18.0	22.5	14.0	1.60	0.47	22.2	4.2	18.2
6	82.4	0.190	65.0	4.6	6.28	0.417	9.528	9.326	27.3	18.0	22.8	13.4	1.69	0.49	22.7	4.7	18.1
7	87.9	0.195	65.5	5.1	6.28	0.494	10.411	10.167	28.2	18.0	23.1	12.9	1.79	0.50	23.1	5.1	18.0
8	91.9	0.199	65.8	5.4	6.29	0.572	11.055	10.769	28.8	18.0	23.3	12.6	1.86	0.51	23.4	5.4	17.9
9	95.6	0.203	66.2	5.8	6.29	0.630	11.643	11.325	29.3	18.0	23.5	12.2	1.93	0.51	23.7	5.7	17.9
10	99.4	0.207	66.5	6.1	6.30	0.698	12.250	11.893	29.9	18.0	23.8	11.9	2.00	0.51	23.9	5.9	17.9
11	102.7	0.211	66.8	6.4	6.30	0.765	12.784	12.388	30.4	18.0	24.0	11.6	2.06	0.51	24.2	6.2	17.8
12	105.9	0.215	67.0	6.6	6.31	0.833	13.299	12.863	30.9	18.0	24.3	11.4	2.12	0.51	24.4	6.4	17.9
13	109.0	0.219	67.2	6.8	6.31	0.911	13.796	13.315	31.3	18.0	24.5	11.2	2.19	0.51	24.7	6.7	17.9
14	112.4	0.224	67.4	7.0	6.32	0.998	14.329	13.797	31.8	18.0	24.8	11.0	2.25	0.51	24.9	6.9	17.9
15	115.4	0.229	67.6	7.2	6.32	1.075	14.807	14.229	32.2	18.0	25.1	10.8	2.31	0.50	25.1	7.1	18.0
16	117.9	0.234	67.7	7.3	6.33	1.163	15.212	14.582	32.6	18.0	25.3	10.7	2.37	0.50	25.3	7.3	18.0
17	120.7	0.239	67.9	7.5	6.33	1.240	15.653	14.976	33.0	18.0	25.5	10.5	2.42	0.50	25.5	7.5	18.0
18	123.6	0.243	68.0	7.6	6.34	1.318	16.132	15.405	33.4	18.0	25.8	10.4	2.48	0.49	25.7	7.7	18.1

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	126.1	0.247	68.1	7.7	6.34	1.386	16.518	15.749	33.8	18.0	26.0	10.3	2.53	0.49	25.9	7.9	18.2
20	128.4	0.251	68.2	7.8	6.35	1.453	16.886	16.074	34.1	18.0	26.3	10.2	2.58	0.49	26.0	8.0	18.2
21	130.1	0.256	68.3	7.9	6.35	1.531	17.162	16.302	34.3	18.0	26.4	10.1	2.61	0.48	26.2	8.2	18.3
22	132.5	0.260	68.3	7.9	6.35	1.599	17.548	16.644	34.6	18.0	26.7	10.1	2.65	0.48	26.3	8.3	18.4
23	134.7	0.264	68.4	8.0	6.36	1.667	17.897	16.949	35.0	18.0	26.9	10.0	2.70	0.47	26.5	8.5	18.5
24	137.2	0.269	68.4	8.0	6.36	1.744	18.302	17.303	35.3	18.0	27.3	10.0	2.74	0.46	26.7	8.7	18.6
25	140.1	0.273	68.5	8.1	6.37	1.812	18.762	17.716	35.7	18.0	27.6	9.9	2.79	0.46	26.9	8.9	18.8
26	142.5	0.277	68.5	8.1	6.37	1.889	19.148	18.050	36.1	18.0	27.9	9.9	2.83	0.45	27.0	9.0	18.9
27	144.6	0.281	68.6	8.2	6.38	1.957	19.479	18.335	36.3	18.0	28.2	9.8	2.86	0.44	27.2	9.2	19.0
28	146.8	0.286	68.6	8.2	6.38	2.035	19.829	18.646	36.6	18.0	28.5	9.8	2.89	0.44	27.3	9.3	19.2
29	148.6	0.290	68.6	8.2	6.39	2.112	20.123	18.918	36.9	18.0	28.8	9.8	2.92	0.43	27.5	9.5	19.3
30	150.4	0.295	68.6	8.2	6.39	2.190	20.417	19.191	37.2	18.0	29.0	9.8	2.95	0.43	27.6	9.6	19.4
31	151.3	0.300	68.6	8.2	6.40	2.277	20.546	19.299	37.3	18.0	29.1	9.8	2.96	0.42	27.7	9.6	19.5
32	151.5	0.305	68.5	8.1	6.40	2.364	20.583	19.317	37.3	18.0	29.2	9.9	2.95	0.42	27.7	9.7	19.6
33	152.5	0.310	68.5	8.1	6.41	2.451	20.749	19.460	37.5	18.0	29.4	9.9	2.96	0.41	27.7	9.7	19.7
34	152.9	0.315	68.4	8.0	6.42	2.529	20.804	19.498	37.5	18.0	29.5	10.0	2.96	0.41	27.8	9.7	19.7
35	152.9	0.320	68.4	8.0	6.42	2.606	20.804	19.482	37.5	18.0	29.5	10.0	2.94	0.41	27.7	9.7	19.8
36	153.2	0.324	68.3	7.9	6.43	2.674	20.859	19.521	37.5	18.0	29.6	10.1	2.94	0.41	27.8	9.8	19.8
37	153.7	0.328	68.3	7.9	6.43	2.742	20.932	19.579	37.6	18.0	29.7	10.1	2.93	0.40	27.8	9.8	19.9
38	154.2	0.332	68.2	7.8	6.43	2.820	21.024	19.652	37.7	18.0	29.8	10.2	2.93	0.40	27.8	9.8	20.0
39	154.2	0.336	68.2	7.8	6.44	2.878	21.024	19.640	37.6	18.0	29.9	10.2	2.92	0.40	27.8	9.8	20.0
40	154.8	0.340	68.1	7.7	6.44	2.946	21.116	19.715	37.7	18.0	30.0	10.3	2.92	0.39	27.9	9.9	20.1
41	155.4	0.344	68.1	7.7	6.45	3.023	21.208	19.788	37.8	18.0	30.1	10.3	2.92	0.39	27.9	9.9	20.2
42	155.7	0.348	68.1	7.7	6.45	3.091	21.264	19.827	37.8	18.0	30.2	10.3	2.92	0.39	27.9	9.9	20.3
43	152.9	0.352	68.2	7.8	6.46	3.159	20.804	19.367	37.4	18.0	29.6	10.2	2.89	0.40	27.7	9.7	19.9
44	154.7	0.356	68.1	7.7	6.46	3.226	21.098	19.638	37.6	18.0	30.0	10.3	2.90	0.39	27.8	9.8	20.1
45	154.9	0.360	68.0	7.6	6.47	3.294	21.135	19.659	37.7	18.0	30.0	10.4	2.89	0.39	27.8	9.8	20.2
46	155.2	0.365	68.0	7.6	6.47	3.372	21.172	19.678	37.7	18.0	30.1	10.4	2.89	0.38	27.8	9.8	20.3
47	155.5	0.369	67.9	7.5	6.48	3.440	21.227	19.717	37.7	18.0	30.2	10.5	2.88	0.38	27.9	9.9	20.3
48	156.0	0.374	67.9	7.5	6.48	3.517	21.300	19.771	37.8	18.0	30.3	10.5	2.88	0.38	27.9	9.9	20.4
49	156.9	0.378	67.9	7.5	6.49	3.585	21.447	19.899	37.9	18.0	30.4	10.5	2.89	0.38	28.0	9.9	20.5
50	156.9	0.382	67.8	7.5	6.49	3.662	21.447	19.882	37.9	18.0	30.4	10.6	2.88	0.37	27.9	9.9	20.5
51	157.7	0.387	67.8	7.4	6.50	3.740	21.576	19.990	38.0	18.0	30.6	10.6	2.89	0.37	28.0	10.0	20.6
52	158.2	0.391	67.8	7.4	6.50	3.808	21.650	20.046	38.0	18.0	30.6	10.6	2.89	0.37	28.0	10.0	20.6
53	158.8	0.395	67.8	7.4	6.51	3.885	21.760	20.135	38.1	18.0	30.7	10.6	2.90	0.37	28.1	10.1	20.7
54	159.5	0.400	67.8	7.4	6.51	3.963	21.871	20.224	38.2	18.0	30.8	10.6	2.91	0.37	28.1	10.1	20.7
55	158.6	0.405	67.8	7.4	6.52	4.040	21.723	20.066	38.1	18.0	30.7	10.6	2.89	0.37	28.0	10.0	20.7
56	158.5	0.410	67.7	7.3	6.52	4.128	21.705	20.029	38.0	18.0	30.7	10.7	2.88	0.37	28.0	10.0	20.7
57	158.7	0.415	67.7	7.3	6.53	4.215	21.742	20.046	38.0	18.0	30.7	10.7	2.88	0.37	28.0	10.0	20.7
58	159.5	0.420	67.7	7.3	6.53	4.292	21.871	20.152	38.2	18.0	30.8	10.7	2.89	0.36	28.1	10.1	20.7
59	160.0	0.424	67.7	7.3	6.54	4.370	21.944	20.206	38.2	18.0	30.9	10.7	2.89	0.36	28.1	10.1	20.8

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	161.1	0.429	67.7	7.3	6.54	4.457	22.128	20.362	38.4	18.0	31.0	10.7	2.91	0.36	28.2	10.2	20.9
61	160.7	0.434	67.7	7.3	6.55	4.535	22.054	20.275	38.3	18.0	31.0	10.7	2.89	0.36	28.1	10.1	20.8
62	161.8	0.438	67.7	7.3	6.56	4.612	22.238	20.433	38.4	18.0	31.2	10.7	2.90	0.36	28.2	10.2	20.9
63	162.2	0.443	67.7	7.3	6.56	4.690	22.294	20.468	38.5	18.0	31.2	10.7	2.91	0.36	28.2	10.2	21.0
64	162.4	0.448	67.6	7.2	6.57	4.767	22.330	20.486	38.5	18.0	31.2	10.8	2.90	0.35	28.2	10.2	21.0
65	162.4	0.452	67.6	7.2	6.57	4.835	22.330	20.471	38.5	18.0	31.2	10.8	2.90	0.35	28.2	10.2	21.0
66	162.6	0.457	67.6	7.2	6.58	4.922	22.367	20.487	38.5	18.0	31.3	10.8	2.90	0.35	28.2	10.2	21.0
67	162.6	0.461	67.6	7.2	6.58	5.000	22.367	20.469	38.5	18.0	31.3	10.8	2.90	0.35	28.2	10.2	21.0
68	163.3	0.465	67.6	7.2	6.59	5.067	22.478	20.559	38.6	18.0	31.4	10.8	2.90	0.35	28.3	10.3	21.1
69	163.2	0.470	67.6	7.2	6.59	5.145	22.459	20.524	38.5	18.0	31.4	10.8	2.89	0.35	28.3	10.3	21.1
70	163.2	0.475	67.6	7.2	6.60	5.222	22.459	20.507	38.5	18.0	31.4	10.8	2.89	0.35	28.3	10.3	21.1
71	162.9	0.479	67.5	7.1	6.60	5.290	22.404	20.439	38.4	18.0	31.3	10.9	2.88	0.35	28.2	10.2	21.1
72	163.3	0.483	67.5	7.1	6.61	5.368	22.478	20.491	38.5	18.0	31.4	10.9	2.88	0.35	28.2	10.2	21.1
73	163.3	0.488	67.5	7.1	6.61	5.445	22.478	20.474	38.5	18.0	31.4	10.9	2.88	0.35	28.2	10.2	21.1
74	163.8	0.492	67.5	7.1	6.62	5.523	22.551	20.526	38.5	18.0	31.4	10.9	2.88	0.35	28.3	10.3	21.2
75	165.1	0.498	67.5	7.1	6.62	5.610	22.753	20.697	38.7	18.0	31.6	10.9	2.90	0.34	28.4	10.3	21.3
76	165.3	0.503	67.5	7.1	6.63	5.697	22.790	20.712	38.7	18.0	31.6	10.9	2.90	0.34	28.4	10.4	21.3
77	166.4	0.508	67.5	7.1	6.64	5.794	22.974	20.863	38.9	18.0	31.8	10.9	2.91	0.34	28.4	10.4	21.3
78	166.6	0.513	67.5	7.1	6.64	5.872	22.993	20.863	38.9	18.0	31.8	10.9	2.91	0.34	28.4	10.4	21.4
79	167.4	0.518	67.5	7.1	6.65	5.949	23.121	20.966	39.0	18.0	31.9	10.9	2.92	0.34	28.5	10.5	21.4
80	167.9	0.522	67.5	7.1	6.65	6.017	23.213	21.037	39.0	18.0	32.0	10.9	2.92	0.34	28.5	10.5	21.5
81	168.7	0.526	67.4	7.0	6.66	6.085	23.342	21.142	39.1	18.0	32.1	11.0	2.93	0.33	28.6	10.6	21.5
82	169.1	0.530	67.4	7.0	6.66	6.162	23.397	21.176	39.2	18.0	32.1	11.0	2.93	0.33	28.6	10.6	21.6
83	170.0	0.534	67.4	7.0	6.67	6.230	23.544	21.298	39.3	18.0	32.3	11.0	2.94	0.33	28.7	10.6	21.6
84	169.5	0.538	67.4	7.0	6.67	6.298	23.471	21.213	39.2	18.0	32.2	11.0	2.92	0.33	28.6	10.6	21.6
85	170.0	0.542	67.4	7.0	6.68	6.366	23.544	21.266	39.3	18.0	32.3	11.0	2.93	0.33	28.6	10.6	21.7
86	171.0	0.546	67.3	6.9	6.68	6.434	23.710	21.405	39.4	18.0	32.5	11.1	2.94	0.32	28.7	10.7	21.8
87	172.3	0.551	67.3	6.9	6.69	6.511	23.912	21.576	39.6	18.0	32.6	11.1	2.95	0.32	28.8	10.8	21.8
88	173.8	0.555	67.3	6.9	6.69	6.579	24.151	21.783	39.8	18.0	32.8	11.1	2.97	0.32	28.9	10.9	21.9
89	173.6	0.559	67.3	6.9	6.70	6.647	24.115	21.732	39.7	18.0	32.8	11.1	2.96	0.32	28.9	10.9	21.9
90	174.4	0.564	67.3	6.9	6.70	6.724	24.243	21.834	39.8	18.0	32.9	11.1	2.96	0.32	28.9	10.9	22.0
91	174.1	0.568	67.3	6.9	6.71	6.792	24.207	21.783	39.8	18.0	32.9	11.1	2.96	0.32	28.9	10.9	22.0
92	148.8	0.572	67.3	6.9	6.71	6.860	20.160	17.997	36.0	18.0	29.1	11.1	2.62	0.38	27.0	9.0	20.1
93	171.0	0.576	67.5	7.1	6.72	6.928	23.710	21.288	39.3	18.0	32.2	10.9	2.95	0.33	28.6	10.6	21.6
94	172.5	0.580	67.4	7.0	6.72	7.005	23.949	21.492	39.5	18.0	32.5	11.0	2.95	0.33	28.7	10.7	21.7
95	173.2	0.585	67.4	7.0	6.73	7.083	24.059	21.576	39.6	18.0	32.6	11.0	2.96	0.32	28.8	10.8	21.8
96	173.8	0.589	67.3	6.9	6.74	7.160	24.151	21.642	39.6	18.0	32.7	11.1	2.95	0.32	28.8	10.8	21.9
97	174.7	0.594	67.3	6.9	6.74	7.238	24.299	21.760	39.8	18.0	32.9	11.1	2.96	0.32	28.9	10.9	22.0
98	175.8	0.599	67.3	6.9	6.75	7.315	24.464	21.895	39.9	18.0	33.0	11.1	2.97	0.31	28.9	10.9	22.1
99	175.1	0.603	67.3	6.9	6.75	7.393	24.354	21.774	39.8	18.0	32.9	11.1	2.95	0.32	28.9	10.9	22.0
100	175.5	0.608	67.2	6.8	6.76	7.470	24.427	21.823	39.8	18.0	33.0	11.2	2.95	0.31	28.9	10.9	22.1

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	175.5	0.613	67.2	6.8	6.76	7.558	24.427	21.802	39.8	18.0	33.0	11.2	2.95	0.31	28.9	10.9	22.1
102	176.1	0.618	67.2	6.8	6.77	7.635	24.519	21.868	39.9	18.0	33.1	11.2	2.95	0.31	28.9	10.9	22.1
103	176.8	0.623	67.2	6.8	6.78	7.722	24.630	21.948	40.0	18.0	33.2	11.2	2.95	0.31	29.0	11.0	22.2
104	177.9	0.627	67.2	6.8	6.78	7.800	24.814	22.099	40.1	18.0	33.3	11.2	2.97	0.31	29.1	11.0	22.3
105	179.4	0.632	67.1	6.7	6.79	7.877	25.053	22.300	40.3	18.0	33.6	11.3	2.98	0.30	29.2	11.1	22.4
106	179.9	0.636	67.1	6.7	6.79	7.955	25.126	22.348	40.4	18.0	33.6	11.3	2.98	0.30	29.2	11.2	22.4
107	179.7	0.641	67.1	6.7	6.80	8.032	25.090	22.295	40.3	18.0	33.6	11.3	2.98	0.30	29.1	11.1	22.4
108	179.9	0.645	67.1	6.7	6.80	8.100	25.126	22.311	40.3	18.0	33.6	11.3	2.97	0.30	29.2	11.2	22.5
109	180.8	0.650	67.1	6.7	6.81	8.178	25.273	22.427	40.4	18.0	33.7	11.3	2.98	0.30	29.2	11.2	22.5
110	181.0	0.654	67.1	6.7	6.82	8.255	25.310	22.441	40.4	18.0	33.8	11.3	2.98	0.30	29.2	11.2	22.6
111	181.5	0.659	67.1	6.7	6.82	8.333	25.384	22.489	40.5	18.0	33.8	11.3	2.98	0.30	29.2	11.2	22.6
112	181.0	0.663	67.0	6.6	6.83	8.410	25.310	22.402	40.4	18.0	33.8	11.4	2.97	0.30	29.2	11.2	22.6
113	181.7	0.669	67.0	6.6	6.83	8.497	25.421	22.481	40.5	18.0	33.9	11.4	2.98	0.29	29.2	11.2	22.6
114	181.8	0.672	67.0	6.6	6.84	8.556	25.439	22.483	40.5	18.0	33.9	11.4	2.97	0.29	29.2	11.2	22.6
115	181.2	0.677	67.0	6.6	6.84	8.633	25.329	22.362	40.4	18.0	33.8	11.4	2.96	0.29	29.2	11.2	22.6
116	181.8	0.681	67.0	6.6	6.85	8.711	25.439	22.443	40.4	18.0	33.9	11.4	2.96	0.29	29.2	11.2	22.7
117	182.3	0.686	67.0	6.6	6.86	8.788	25.513	22.491	40.5	18.0	33.9	11.4	2.97	0.29	29.2	11.2	22.7
118	183.5	0.690	66.9	6.5	6.86	8.866	25.697	22.639	40.6	18.0	34.1	11.5	2.97	0.29	29.3	11.3	22.8
119	183.7	0.696	66.9	6.5	6.87	8.953	25.733	22.650	40.7	18.0	34.1	11.5	2.98	0.29	29.3	11.3	22.8
120	182.8	0.701	66.9	6.5	6.87	9.040	25.586	22.493	40.5	18.0	34.0	11.5	2.96	0.29	29.2	11.2	22.7
121	182.5	0.706	66.9	6.5	6.88	9.127	25.549	22.438	40.4	18.0	33.9	11.5	2.95	0.29	29.2	11.2	22.7
122	183.6	0.711	66.9	6.5	6.89	9.214	25.715	22.566	40.6	18.0	34.1	11.5	2.96	0.29	29.3	11.3	22.8
123	183.5	0.716	66.8	6.4	6.89	9.292	25.697	22.529	40.5	18.0	34.1	11.6	2.95	0.29	29.3	11.3	22.8
124	183.2	0.720	66.8	6.4	6.90	9.369	25.660	22.476	40.5	18.0	34.1	11.6	2.94	0.29	29.2	11.2	22.8
125	183.2	0.725	66.8	6.4	6.91	9.447	25.660	22.456	40.5	18.0	34.0	11.6	2.94	0.29	29.2	11.2	22.8
126	183.8	0.729	66.8	6.4	6.91	9.515	25.752	22.522	40.5	18.0	34.1	11.6	2.94	0.29	29.3	11.3	22.8
127	185.8	0.733	66.8	6.4	6.92	9.583	26.064	22.787	40.8	18.0	34.3	11.6	2.97	0.28	29.4	11.4	22.9
128	187.3	0.737	66.8	6.4	6.92	9.650	26.304	22.985	41.0	18.0	34.6	11.6	2.98	0.28	29.5	11.5	23.1
129	187.3	0.741	66.8	6.4	6.93	9.718	26.304	22.968	41.0	18.0	34.6	11.6	2.98	0.28	29.5	11.5	23.1
130	187.1	0.745	66.8	6.4	6.93	9.796	26.285	22.931	40.9	18.0	34.5	11.6	2.97	0.28	29.5	11.5	23.1
131	187.8	0.749	66.8	6.4	6.94	9.864	26.395	23.012	41.0	18.0	34.7	11.6	2.98	0.28	29.5	11.5	23.1
132	188.5	0.754	66.8	6.4	6.94	9.931	26.506	23.094	41.1	18.0	34.7	11.6	2.98	0.28	29.5	11.5	23.2
133	189.0	0.758	66.8	6.4	6.95	9.999	26.579	23.142	41.1	18.0	34.8	11.6	2.99	0.27	29.6	11.6	23.2
134	190.4	0.762	66.8	6.4	6.95	10.067	26.800	23.323	41.3	18.0	35.0	11.6	3.00	0.27	29.7	11.7	23.3
135	190.4	0.766	66.7	6.3	6.96	10.135	26.800	23.304	41.3	18.0	35.0	11.7	3.00	0.27	29.7	11.7	23.3
136	191.1	0.770	66.7	6.3	6.96	10.212	26.911	23.383	41.4	18.0	35.1	11.7	3.00	0.27	29.7	11.7	23.4
137	191.6	0.774	66.7	6.3	6.97	10.280	27.002	23.447	41.4	18.0	35.1	11.7	3.00	0.27	29.7	11.7	23.4
138	192.3	0.779	66.7	6.3	6.98	10.358	27.113	23.525	41.5	18.0	35.3	11.7	3.01	0.27	29.8	11.8	23.5
139	192.2	0.783	66.6	6.2	6.98	10.426	27.094	23.490	41.5	18.0	35.2	11.8	3.00	0.27	29.7	11.7	23.5
140	192.4	0.787	66.6	6.2	6.99	10.503	27.131	23.502	41.5	18.0	35.3	11.8	3.00	0.27	29.8	11.8	23.5
141	193.1	0.792	66.6	6.2	6.99	10.581	27.242	23.580	41.6	18.0	35.4	11.8	3.00	0.26	29.8	11.8	23.6

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	193.1	0.797	66.6	6.2	7.00	10.658	27.242	23.559	41.6	18.0	35.4	11.8	2.99	0.26	29.8	11.8	23.6
143	193.5	0.801	66.6	6.2	7.01	10.736	27.297	23.587	41.6	18.0	35.4	11.8	2.99	0.26	29.8	11.8	23.6
144	193.9	0.806	66.6	6.2	7.01	10.813	27.370	23.631	41.6	18.0	35.5	11.8	2.99	0.26	29.8	11.8	23.7
145	194.0	0.810	66.5	6.1	7.02	10.891	27.389	23.626	41.6	18.0	35.5	11.9	2.99	0.26	29.8	11.8	23.7
146	195.0	0.815	66.5	6.1	7.02	10.978	27.536	23.733	41.7	18.0	35.6	11.9	3.00	0.26	29.9	11.9	23.7
147	195.0	0.820	66.5	6.1	7.03	11.055	27.536	23.712	41.7	18.0	35.6	11.9	3.00	0.26	29.9	11.9	23.7
148	195.9	0.825	66.5	6.1	7.04	11.133	27.683	23.821	41.8	18.0	35.7	11.9	3.00	0.26	29.9	11.9	23.8
149	196.5	0.829	66.5	6.1	7.04	11.210	27.775	23.882	41.9	18.0	35.8	11.9	3.01	0.26	29.9	11.9	23.8
150	197.1	0.834	66.5	6.1	7.05	11.288	27.885	23.958	42.0	18.0	35.9	11.9	3.01	0.25	30.0	12.0	23.9
151	197.3	0.838	66.5	6.1	7.05	11.356	27.904	23.955	42.0	18.0	35.9	11.9	3.01	0.25	30.0	12.0	23.9
152	197.1	0.842	66.4	6.0	7.06	11.433	27.885	23.918	41.9	18.0	35.9	12.0	3.00	0.25	30.0	12.0	23.9
153	197.3	0.847	66.4	6.0	7.07	11.511	27.904	23.912	41.9	18.0	35.9	12.0	3.00	0.25	30.0	12.0	23.9
154	197.8	0.852	66.4	6.0	7.07	11.588	27.996	23.972	42.0	18.0	35.9	12.0	3.00	0.25	30.0	12.0	24.0
155	197.1	0.856	66.4	6.0	7.08	11.656	27.885	23.855	41.9	18.0	35.9	12.0	2.98	0.25	29.9	11.9	24.0
156	197.0	0.860	66.3	5.9	7.08	11.734	27.867	23.818	41.8	18.0	35.9	12.1	2.98	0.25	29.9	11.9	24.0
157	197.3	0.865	66.3	5.9	7.09	11.811	27.904	23.828	41.8	18.0	35.9	12.1	2.98	0.25	29.9	11.9	24.0
158	197.1	0.869	66.3	5.9	7.10	11.889	27.885	23.791	41.8	18.0	35.8	12.1	2.97	0.25	29.9	11.9	23.9
159	197.6	0.874	66.3	5.9	7.10	11.966	27.959	23.834	41.8	18.0	35.9	12.1	2.97	0.25	29.9	11.9	24.0
160	198.8	0.879	66.3	5.9	7.11	12.044	28.143	23.974	42.0	18.0	36.0	12.1	2.99	0.25	30.0	12.0	24.0
161	198.8	0.883	66.3	5.9	7.11	12.111	28.143	23.955	42.0	18.0	36.0	12.1	2.98	0.25	30.0	12.0	24.1
162	199.2	0.887	66.3	5.9	7.12	12.189	28.216	23.998	42.0	18.0	36.1	12.1	2.99	0.25	30.0	12.0	24.1
163	198.2	0.892	66.3	5.9	7.13	12.276	28.051	23.828	41.8	18.0	36.0	12.1	2.96	0.25	29.9	11.9	24.1
164	198.5	0.897	66.3	5.9	7.13	12.354	28.106	23.854	41.9	18.0	36.0	12.1	2.96	0.25	29.9	11.9	24.1
165	199.2	0.902	66.3	5.9	7.14	12.441	28.216	23.926	41.9	18.0	36.1	12.1	2.97	0.24	30.0	12.0	24.1
166	199.6	0.907	66.3	5.9	7.15	12.528	28.272	23.950	42.0	18.0	36.1	12.1	2.97	0.24	30.0	12.0	24.1
167	200.3	0.912	66.2	5.8	7.16	12.615	28.382	24.022	42.0	18.0	36.2	12.2	2.97	0.24	30.0	12.0	24.2
168	200.6	0.916	66.2	5.8	7.16	12.683	28.437	24.051	42.1	18.0	36.2	12.2	2.98	0.24	30.0	12.0	24.2
169	201.7	0.921	66.2	5.8	7.17	12.761	28.621	24.189	42.2	18.0	36.4	12.2	2.99	0.24	30.1	12.1	24.3
170	202.0	0.925	66.2	5.8	7.17	12.828	28.658	24.202	42.2	18.0	36.4	12.2	2.98	0.24	30.1	12.1	24.3
171	201.9	0.929	66.2	5.8	7.18	12.887	28.640	24.169	42.2	18.0	36.4	12.2	2.98	0.24	30.1	12.1	24.3
172	201.7	0.933	66.2	5.8	7.18	12.954	28.621	24.134	42.1	18.0	36.4	12.2	2.97	0.24	30.1	12.1	24.3
173	201.6	0.935	66.2	5.8	7.19	13.003	28.603	24.104	42.1	18.0	36.3	12.2	2.97	0.24	30.1	12.1	24.3
174	202.1	0.938	66.2	5.8	7.19	13.051	28.676	24.154	42.2	18.0	36.4	12.2	2.97	0.24	30.1	12.1	24.3
175	202.3	0.941	66.1	5.7	7.20	13.100	28.713	24.172	42.2	18.0	36.4	12.3	2.97	0.24	30.1	12.1	24.3
176	202.0	0.944	66.1	5.7	7.20	13.148	28.658	24.110	42.1	18.0	36.4	12.3	2.97	0.24	30.1	12.1	24.3
177	202.1	0.947	66.1	5.7	7.20	13.197	28.676	24.112	42.1	18.0	36.4	12.3	2.96	0.24	30.1	12.1	24.3
178	202.7	0.949	66.1	5.7	7.21	13.235	28.768	24.181	42.2	18.0	36.4	12.3	2.97	0.24	30.1	12.1	24.4
179	203.8	0.951	66.1	5.7	7.21	13.264	28.952	24.332	42.3	18.0	36.6	12.3	2.98	0.24	30.2	12.2	24.4
180	204.9	0.954	66.1	5.7	7.21	13.323	29.118	24.459	42.5	18.0	36.7	12.3	2.99	0.23	30.2	12.2	24.5
181	205.1	0.959	66.1	5.7	7.22	13.400	29.155	24.468	42.5	18.0	36.8	12.3	2.99	0.23	30.2	12.2	24.5
182	205.8	0.963	66.1	5.7	7.23	13.468	29.265	24.544	42.5	18.0	36.9	12.3	2.99	0.23	30.3	12.3	24.6

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	206.3	0.967	66.1	5.7	7.23	13.536	29.357	24.604	42.6	18.0	37.0	12.3	2.99	0.23	30.3	12.3	24.7
184	207.6	0.971	66.1	5.7	7.24	13.604	29.559	24.758	42.8	18.0	37.1	12.3	3.00	0.23	30.4	12.4	24.7
185	209.2	0.975	66.1	5.7	7.24	13.671	29.817	24.961	43.0	18.0	37.3	12.3	3.03	0.23	30.5	12.5	24.8
186	210.0	0.979	66.1	5.7	7.25	13.739	29.946	25.052	43.1	18.0	37.4	12.3	3.03	0.23	30.5	12.5	24.9
187	209.7	0.984	66.0	5.6	7.26	13.817	29.890	24.981	43.0	18.0	37.4	12.4	3.02	0.23	30.5	12.5	24.9
188	209.3	0.988	66.0	5.6	7.26	13.894	29.835	24.910	42.9	18.0	37.3	12.4	3.01	0.23	30.5	12.5	24.8
189	208.9	0.993	66.0	5.6	7.27	13.972	29.762	24.824	42.8	18.0	37.2	12.4	3.00	0.23	30.4	12.4	24.8
190	208.4	0.998	66.0	5.6	7.28	14.059	29.688	24.735	42.7	18.0	37.2	12.4	2.99	0.23	30.4	12.4	24.8
191	208.5	1.003	66.0	5.6	7.28	14.136	29.706	24.727	42.7	18.0	37.2	12.4	2.99	0.23	30.4	12.4	24.8
192	208.5	1.007	66.0	5.6	7.29	14.214	29.706	24.704	42.7	18.0	37.1	12.4	2.99	0.23	30.4	12.4	24.8
193	209.7	1.012	65.9	5.5	7.30	14.301	29.890	24.836	42.8	18.0	37.3	12.5	2.99	0.22	30.4	12.4	24.9
194	209.6	1.017	65.9	5.5	7.30	14.379	29.872	24.797	42.8	18.0	37.3	12.5	2.99	0.22	30.4	12.4	24.9
195	209.5	1.022	65.9	5.5	7.31	14.456	29.854	24.758	42.8	18.0	37.3	12.5	2.98	0.22	30.4	12.4	24.9
196	209.5	1.026	65.9	5.5	7.32	14.524	29.854	24.738	42.7	18.0	37.3	12.5	2.98	0.22	30.4	12.4	24.9
197	209.9	1.030	65.9	5.5	7.32	14.602	29.927	24.778	42.8	18.0	37.3	12.5	2.98	0.22	30.4	12.4	24.9
198	210.3	1.034	65.8	5.4	7.33	14.669	29.982	24.804	42.8	18.0	37.4	12.6	2.98	0.22	30.4	12.4	25.0
199	211.0	1.038	65.8	5.4	7.33	14.737	30.093	24.878	42.9	18.0	37.4	12.6	2.98	0.22	30.4	12.4	25.0
200	212.0	1.042	65.8	5.4	7.34	14.805	30.258	24.999	43.0	18.0	37.6	12.6	2.99	0.22	30.5	12.5	25.1
201	212.4	1.046	65.8	5.4	7.35	14.873	30.332	25.041	43.0	18.0	37.6	12.6	2.99	0.22	30.5	12.5	25.1
202	212.8	1.051	65.8	5.4	7.35	14.950	30.387	25.064	43.1	18.0	37.7	12.6	2.99	0.22	30.5	12.5	25.1
203	212.6	1.055	65.8	5.4	7.36	15.018	30.350	25.012	43.0	18.0	37.7	12.6	2.98	0.21	30.5	12.5	25.1
204	212.6	1.059	65.7	5.3	7.37	15.096	30.350	24.989	43.0	18.0	37.7	12.7	2.97	0.21	30.5	12.5	25.2
205	213.0	1.064	65.7	5.3	7.37	15.173	30.424	25.028	43.0	18.0	37.7	12.7	2.97	0.21	30.5	12.5	25.2
206	213.9	1.068	65.7	5.3	7.38	15.241	30.571	25.132	43.1	18.0	37.8	12.7	2.98	0.21	30.6	12.6	25.2
207	214.2	1.073	65.7	5.3	7.38	15.319	30.608	25.139	43.1	18.0	37.8	12.7	2.98	0.21	30.6	12.6	25.3
208	214.9	1.077	65.7	5.3	7.39	15.396	30.718	25.209	43.2	18.0	37.9	12.7	2.99	0.21	30.6	12.6	25.3
209	213.8	1.081	65.7	5.3	7.40	15.464	30.553	25.048	43.1	18.0	37.8	12.7	2.97	0.21	30.5	12.5	25.3
210	213.4	1.086	65.6	5.2	7.40	15.551	30.479	24.959	43.0	18.0	37.7	12.8	2.96	0.21	30.5	12.5	25.2
211	214.1	1.091	65.6	5.2	7.41	15.629	30.589	25.029	43.0	18.0	37.8	12.8	2.96	0.21	30.5	12.5	25.3
212	214.4	1.096	65.6	5.2	7.42	15.706	30.645	25.052	43.1	18.0	37.8	12.8	2.96	0.21	30.5	12.5	25.3
213	213.8	1.100	65.6	5.2	7.43	15.784	30.553	24.951	43.0	18.0	37.8	12.8	2.95	0.21	30.5	12.5	25.3
214	213.8	1.104	65.6	5.2	7.43	15.851	30.553	24.930	42.9	18.0	37.7	12.8	2.94	0.21	30.5	12.5	25.3
215	213.9	1.109	65.6	5.2	7.44	15.929	30.571	24.922	42.9	18.0	37.8	12.8	2.94	0.21	30.5	12.5	25.3
216	214.7	1.113	65.6	5.2	7.44	15.997	30.700	25.009	43.0	18.0	37.9	12.8	2.95	0.21	30.5	12.5	25.4
217	215.8	1.116	65.6	5.2	7.45	16.055	30.865	25.130	43.1	18.0	38.0	12.8	2.96	0.21	30.6	12.6	25.4
218	215.6	1.120	65.5	5.1	7.46	16.123	30.828	25.078	43.1	18.0	38.0	12.9	2.95	0.20	30.5	12.5	25.4
219	216.0	1.124	65.5	5.1	7.46	16.181	30.902	25.122	43.1	18.0	38.0	12.9	2.95	0.20	30.6	12.6	25.5
220	216.4	1.128	65.5	5.1	7.47	16.249	30.957	25.147	43.1	18.0	38.1	12.9	2.95	0.20	30.6	12.6	25.5
221	216.7	1.132	65.5	5.1	7.47	16.317	31.012	25.173	43.2	18.0	38.1	12.9	2.95	0.20	30.6	12.6	25.5
222	217.4	1.136	65.5	5.1	7.48	16.384	31.123	25.244	43.2	18.0	38.2	12.9	2.95	0.20	30.6	12.6	25.6
223	216.7	1.140	65.4	5.0	7.48	16.452	31.012	25.131	43.1	18.0	38.1	13.0	2.94	0.20	30.6	12.6	25.5

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	215.6	1.144	65.4	5.0	7.49	16.530	30.828	24.953	43.0	18.0	38.0	13.0	2.92	0.20	30.5	12.5	25.5
225	215.7	1.149	65.4	5.0	7.50	16.607	30.847	24.944	42.9	18.0	38.0	13.0	2.92	0.20	30.5	12.5	25.5
226	215.6	1.154	65.3	4.9	7.51	16.685	30.828	24.905	42.9	18.0	38.0	13.1	2.91	0.20	30.5	12.5	25.5
227	215.9	1.158	65.3	4.9	7.51	16.753	30.884	24.930	42.9	18.0	38.0	13.1	2.91	0.20	30.5	12.5	25.5
228	216.4	1.162	65.3	4.9	7.52	16.830	30.957	24.967	43.0	18.0	38.0	13.1	2.91	0.20	30.5	12.5	25.5
229	216.8	1.167	65.3	4.9	7.53	16.908	31.031	25.005	43.0	18.0	38.1	13.1	2.92	0.20	30.5	12.5	25.6
230	216.9	1.172	65.3	4.9	7.53	16.995	31.049	24.993	43.0	18.0	38.1	13.1	2.91	0.20	30.5	12.5	25.6
231	217.2	1.176	65.3	4.9	7.54	17.072	31.086	24.999	43.0	18.0	38.1	13.1	2.91	0.20	30.5	12.5	25.6
232	217.5	1.181	65.3	4.9	7.55	17.150	31.141	25.021	43.0	18.0	38.1	13.1	2.91	0.20	30.5	12.5	25.6
233	218.3	1.186	65.3	4.9	7.55	17.227	31.270	25.103	43.1	18.0	38.2	13.1	2.91	0.19	30.6	12.6	25.7
234	218.5	1.190	65.3	4.9	7.56	17.305	31.307	25.109	43.1	18.0	38.2	13.1	2.91	0.19	30.6	12.6	25.7
235	218.2	1.195	65.3	4.9	7.57	17.382	31.252	25.040	43.0	18.0	38.2	13.1	2.91	0.19	30.5	12.5	25.7
236	218.2	1.199	65.3	4.9	7.58	17.460	31.252	25.015	43.0	18.0	38.2	13.1	2.90	0.19	30.5	12.5	25.7
237	219.1	1.204	65.2	4.8	7.58	17.537	31.399	25.112	43.1	18.0	38.3	13.2	2.91	0.19	30.6	12.6	25.7
238	219.0	1.209	65.2	4.8	7.59	17.615	31.380	25.073	43.1	18.0	38.2	13.2	2.90	0.19	30.5	12.5	25.7
239	218.2	1.213	65.2	4.8	7.60	17.692	31.252	24.943	42.9	18.0	38.1	13.2	2.89	0.19	30.5	12.5	25.7
240	219.8	1.218	65.2	4.8	7.60	17.770	31.509	25.130	43.1	18.0	38.3	13.2	2.90	0.19	30.6	12.6	25.8
241	220.5	1.222	65.2	4.8	7.61	17.838	31.619	25.200	43.2	18.0	38.4	13.2	2.91	0.19	30.6	12.6	25.8
242	221.0	1.226	65.2	4.8	7.62	17.906	31.693	25.238	43.2	18.0	38.5	13.2	2.91	0.19	30.6	12.6	25.9
243	220.5	1.230	65.1	4.7	7.62	17.983	31.619	25.154	43.2	18.0	38.4	13.3	2.90	0.19	30.6	12.6	25.8
244	221.4	1.234	65.1	4.7	7.63	18.051	31.767	25.253	43.3	18.0	38.5	13.3	2.90	0.19	30.6	12.6	25.9
245	222.0	1.239	65.1	4.7	7.64	18.128	31.859	25.303	43.3	18.0	38.6	13.3	2.90	0.19	30.7	12.7	25.9
246	222.3	1.244	65.1	4.7	7.65	18.206	31.914	25.324	43.3	18.0	38.6	13.3	2.90	0.18	30.7	12.7	26.0
247	221.4	1.248	65.1	4.7	7.65	18.274	31.767	25.182	43.2	18.0	38.5	13.3	2.89	0.19	30.6	12.6	25.9
248	222.7	1.252	65.1	4.7	7.66	18.351	31.969	25.323	43.3	18.0	38.7	13.3	2.90	0.18	30.7	12.7	26.0
249	222.7	1.257	65.1	4.7	7.67	18.429	31.969	25.298	43.3	18.0	38.6	13.3	2.90	0.18	30.7	12.6	26.0
250	223.1	1.261	65.0	4.6	7.67	18.506	32.042	25.333	43.3	18.0	38.7	13.4	2.89	0.18	30.7	12.7	26.0
251	222.7	1.266	65.0	4.6	7.68	18.584	31.969	25.248	43.3	18.0	38.7	13.4	2.88	0.18	30.6	12.6	26.0
252	223.9	1.271	65.0	4.6	7.69	18.661	32.171	25.388	43.4	18.0	38.8	13.4	2.89	0.18	30.7	12.7	26.1
253	224.3	1.275	65.0	4.6	7.70	18.739	32.226	25.408	43.4	18.0	38.8	13.4	2.89	0.18	30.7	12.7	26.1
254	224.9	1.280	65.0	4.6	7.70	18.826	32.318	25.454	43.5	18.0	38.9	13.4	2.89	0.18	30.7	12.7	26.2
255	225.2	1.285	65.0	4.6	7.71	18.904	32.374	25.474	43.5	18.0	38.9	13.4	2.90	0.18	30.7	12.7	26.2
256	226.2	1.290	65.0	4.6	7.72	18.981	32.539	25.583	43.6	18.0	39.0	13.4	2.91	0.18	30.8	12.8	26.2
257	226.5	1.294	64.9	4.5	7.73	19.059	32.576	25.588	43.6	18.0	39.1	13.5	2.90	0.18	30.8	12.8	26.3
258	226.7	1.298	64.9	4.5	7.73	19.126	32.613	25.595	43.6	18.0	39.1	13.5	2.90	0.18	30.8	12.8	26.3
259	227.2	1.303	64.9	4.5	7.74	19.204	32.686	25.630	43.6	18.0	39.1	13.5	2.90	0.18	30.8	12.8	26.3
260	227.5	1.307	64.9	4.5	7.75	19.281	32.741	25.649	43.7	18.0	39.2	13.5	2.90	0.17	30.8	12.8	26.4
261	228.2	1.312	64.9	4.5	7.75	19.359	32.852	25.712	43.7	18.0	39.2	13.5	2.90	0.17	30.9	12.9	26.4
262	228.7	1.316	64.8	4.4	7.76	19.427	32.925	25.749	43.8	18.0	39.3	13.6	2.90	0.17	30.9	12.9	26.4
263	229.8	1.320	64.8	4.4	7.77	19.495	33.109	25.875	43.9	18.0	39.4	13.6	2.91	0.17	30.9	12.9	26.5
264	229.9	1.325	64.8	4.4	7.77	19.572	33.128	25.864	43.9	18.0	39.4	13.6	2.90	0.17	30.9	12.9	26.5

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
265	230.4	1.329	64.8	4.4	7.78	19.640	33.201	25.901	43.9	18.0	39.5	13.6	2.90	0.17	31.0	13.0	26.6
266	230.3	1.333	64.8	4.4	7.79	19.708	33.183	25.864	43.9	18.0	39.5	13.6	2.90	0.17	30.9	12.9	26.5
267	230.8	1.337	64.8	4.4	7.80	19.785	33.275	25.912	43.9	18.0	39.6	13.6	2.90	0.17	31.0	13.0	26.6
268	230.8	1.341	64.8	4.4	7.80	19.853	33.275	25.889	43.9	18.0	39.5	13.6	2.90	0.17	30.9	12.9	26.6
269	231.3	1.345	64.7	4.3	7.81	19.921	33.348	25.925	43.9	18.0	39.6	13.7	2.90	0.17	31.0	13.0	26.6
270	232.0	1.349	64.7	4.3	7.82	19.989	33.459	25.991	44.0	18.0	39.7	13.7	2.90	0.17	31.0	13.0	26.7
271	232.5	1.350	64.7	4.3	7.82	19.998	33.532	26.047	44.0	18.0	39.7	13.7	2.90	0.17	31.0	13.0	26.7

Specimen C Shear Data

CU Triaxial Test

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File Location
T-5665.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client: T-5665
Sample Location: Guilford County (Sta. 404 + 50)
Sample Description: Yellowish white colored clayey silt
Remarks: 30° shear plane with slicken side. Sample was coarse and brittle.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.71
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.871	2.815	
Height (in)	6.075	5.969	
Weight (grams)	1265.00		1284.00
Moisture (%)	21.40		23.22
Dry Density (pcf)	100.93	106.83	
Saturation (%)	85.76	100.00	
Void Ratio	0.672	0.584	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 96.800
Effective Confining Stress (psi): 36.0
Corrected Peak Deviator Stress (psi): 47.121 at reading number: 251

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	30.8	0.154	60.8	0.0	6.23	0.000	0.000	0.000	36.0	36.0	36.0	36.0	1.00	0.00	36.0	0.0	36.0
1	66.4	0.160	62.4	1.6	6.23	0.105	5.722	5.675	41.7	36.0	40.1	34.4	1.17	0.28	38.8	2.8	37.2
2	92.9	0.165	64.7	3.9	6.24	0.191	9.982	9.888	45.9	36.0	41.9	32.1	1.31	0.40	40.9	4.9	37.0
3	111.4	0.170	66.6	5.8	6.24	0.277	12.945	12.800	48.8	36.0	43.0	30.2	1.42	0.45	42.4	6.4	36.6
4	126.5	0.175	68.2	7.4	6.25	0.354	15.370	15.178	51.2	36.0	43.8	28.6	1.53	0.49	43.6	7.6	36.2
5	139.4	0.180	69.5	8.7	6.25	0.440	17.445	17.196	53.2	36.0	44.5	27.3	1.63	0.51	44.6	8.6	35.9
6	150.7	0.184	70.7	9.9	6.26	0.517	19.259	18.958	54.9	36.0	45.0	26.1	1.73	0.52	45.5	9.5	35.5
7	161.3	0.190	71.7	10.9	6.26	0.603	20.963	20.601	56.6	36.0	45.7	25.1	1.82	0.53	46.3	10.3	35.4
8	170.5	0.195	72.6	11.8	6.27	0.689	22.445	22.021	58.0	36.0	46.2	24.2	1.91	0.53	47.0	11.0	35.2
9	179.1	0.199	73.3	12.5	6.27	0.765	23.815	23.334	59.3	36.0	46.8	23.5	1.99	0.54	47.6	11.7	35.2
10	187.6	0.204	73.9	13.0	6.28	0.842	25.185	24.644	60.6	36.0	47.6	22.9	2.07	0.53	48.3	12.3	35.3
11	195.8	0.209	74.4	13.6	6.28	0.928	26.500	25.892	61.9	36.0	48.3	22.4	2.16	0.52	48.9	12.9	35.4
12	203.4	0.214	74.9	14.0	6.29	1.004	27.722	27.052	63.0	36.0	49.0	21.9	2.23	0.52	49.5	13.5	35.5
13	211.2	0.218	75.3	14.5	6.29	1.081	28.982	28.246	64.2	36.0	49.7	21.5	2.32	0.51	50.1	14.1	35.6
14	218.3	0.223	75.7	14.9	6.30	1.167	30.111	29.304	65.3	36.0	50.4	21.1	2.39	0.51	50.6	14.7	35.7
15	225.9	0.228	76.1	15.3	6.30	1.244	31.334	30.458	66.4	36.0	51.1	20.7	2.47	0.50	51.2	15.2	35.9
16	233.6	0.232	76.4	15.6	6.31	1.320	32.574	31.629	67.6	36.0	52.0	20.4	2.55	0.49	51.8	15.8	36.2
17	241.0	0.237	76.6	15.8	6.31	1.397	33.759	32.742	68.7	36.0	52.9	20.2	2.62	0.48	52.4	16.4	36.5
18	248.0	0.242	76.8	16.0	6.32	1.473	34.889	33.800	69.8	36.0	53.8	20.0	2.69	0.47	52.9	16.9	36.9

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	255.3	0.246	77.0	16.2	6.32	1.550	36.056	34.892	70.9	36.0	54.7	19.8	2.76	0.46	53.4	17.4	37.3
20	261.9	0.251	77.2	16.4	6.33	1.626	37.130	35.891	71.9	36.0	55.5	19.6	2.83	0.46	53.9	17.9	37.6
21	269.0	0.255	77.3	16.5	6.33	1.703	38.259	36.943	72.9	36.0	56.4	19.5	2.90	0.45	54.5	18.5	37.9
22	275.6	0.260	77.5	16.7	6.34	1.779	39.315	37.920	73.9	36.0	57.2	19.3	2.97	0.44	54.9	19.0	38.3
23	282.5	0.265	77.6	16.8	6.34	1.865	40.426	38.943	74.9	36.0	58.2	19.2	3.03	0.43	55.5	19.5	38.7
24	288.7	0.269	77.6	16.8	6.35	1.942	41.426	39.863	75.8	36.0	59.0	19.2	3.08	0.42	55.9	19.9	39.1
25	294.7	0.274	77.6	16.8	6.35	2.018	42.389	40.752	76.7	36.0	59.9	19.2	3.13	0.41	56.4	20.4	39.6
26	298.4	0.279	78.0	17.2	6.36	2.095	42.982	41.300	77.3	36.0	60.1	18.8	3.20	0.42	56.6	20.6	39.4
27	304.8	0.283	77.9	17.0	6.36	2.171	44.019	42.282	78.3	36.0	61.2	18.9	3.23	0.40	57.1	21.1	40.1
28	310.1	0.288	77.9	17.0	6.37	2.248	44.871	43.081	79.1	36.0	62.0	18.9	3.28	0.40	57.5	21.5	40.5
29	315.0	0.292	77.8	17.0	6.37	2.324	45.648	43.806	79.8	36.0	62.8	19.0	3.31	0.39	57.9	21.9	40.9
30	319.6	0.297	77.8	17.0	6.38	2.401	46.389	44.494	80.5	36.0	63.5	19.0	3.34	0.38	58.2	22.2	41.3
31	323.6	0.302	77.7	16.8	6.38	2.487	47.037	45.086	81.1	36.0	64.2	19.1	3.36	0.37	58.5	22.5	41.7
32	327.0	0.307	77.5	16.7	6.39	2.564	47.574	45.573	81.6	36.0	64.8	19.3	3.37	0.37	58.8	22.8	42.0
33	330.3	0.311	77.4	16.6	6.39	2.640	48.111	46.060	82.0	36.0	65.4	19.4	3.38	0.36	59.0	23.0	42.4
34	332.3	0.316	77.3	16.5	6.40	2.717	48.426	46.329	82.3	36.0	65.8	19.5	3.38	0.36	59.1	23.2	42.6
35	333.8	0.321	77.3	16.4	6.41	2.803	48.667	46.522	82.5	36.0	66.1	19.5	3.38	0.35	59.2	23.3	42.8
36	335.3	0.325	77.1	16.3	6.41	2.879	48.908	46.718	82.7	36.0	66.4	19.7	3.38	0.35	59.3	23.4	43.0
37	335.6	0.330	77.0	16.2	6.42	2.956	48.963	46.735	82.7	36.0	66.5	19.8	3.36	0.35	59.3	23.4	43.2
38	336.2	0.335	76.7	15.9	6.42	3.032	49.056	46.787	82.8	36.0	66.8	20.1	3.33	0.34	59.4	23.4	43.4
39	337.0	0.340	76.5	15.7	6.43	3.118	49.185	46.870	82.9	36.0	67.1	20.3	3.31	0.34	59.4	23.4	43.7
40	337.7	0.344	76.4	15.6	6.43	3.195	49.297	46.940	82.9	36.0	67.4	20.4	3.30	0.33	59.4	23.5	43.9
41	337.7	0.349	76.3	15.4	6.44	3.271	49.297	46.902	82.9	36.0	67.4	20.5	3.28	0.33	59.4	23.5	44.0
42	337.6	0.353	76.1	15.3	6.44	3.348	49.278	46.847	82.8	36.0	67.5	20.7	3.26	0.33	59.4	23.4	44.1
43	337.3	0.358	76.0	15.2	6.45	3.425	49.241	46.773	82.8	36.0	67.5	20.8	3.25	0.33	59.4	23.4	44.2
44	336.8	0.363	75.8	15.0	6.45	3.501	49.148	46.646	82.6	36.0	67.7	21.0	3.22	0.32	59.3	23.3	44.3
45	336.5	0.367	75.6	14.8	6.46	3.578	49.111	46.573	82.6	36.0	67.8	21.2	3.20	0.32	59.3	23.3	44.5
46	336.3	0.372	75.4	14.6	6.46	3.654	49.074	46.500	82.5	36.0	67.9	21.4	3.17	0.31	59.2	23.2	44.7
47	335.7	0.377	75.3	14.4	6.47	3.740	48.982	46.368	82.3	36.0	67.9	21.5	3.15	0.31	59.2	23.2	44.7
48	335.6	0.381	75.2	14.4	6.47	3.817	48.963	46.313	82.3	36.0	67.9	21.6	3.14	0.31	59.1	23.2	44.8
49	335.0	0.386	75.0	14.2	6.48	3.893	48.871	46.187	82.2	36.0	68.0	21.8	3.12	0.31	59.1	23.1	44.9
50	334.4	0.391	74.9	14.1	6.48	3.970	48.760	46.043	82.0	36.0	67.9	21.9	3.11	0.31	59.0	23.0	44.9
51	333.4	0.395	74.7	13.9	6.49	4.046	48.611	45.863	81.8	36.0	67.9	22.1	3.08	0.30	58.9	22.9	45.0
52	333.4	0.400	74.5	13.7	6.49	4.123	48.611	45.826	81.8	36.0	68.1	22.3	3.06	0.30	58.9	22.9	45.2
53	333.5	0.404	74.4	13.6	6.50	4.199	48.630	45.806	81.8	36.0	68.2	22.4	3.05	0.30	58.9	22.9	45.3
54	333.4	0.409	74.4	13.6	6.50	4.276	48.611	45.751	81.7	36.0	68.2	22.4	3.04	0.30	58.9	22.9	45.3
55	333.2	0.413	74.3	13.4	6.51	4.352	48.574	45.679	81.7	36.0	68.2	22.5	3.03	0.29	58.8	22.8	45.4
56	308.6	0.418	74.8	14.0	6.51	4.429	44.630	41.872	77.9	36.0	63.9	22.0	2.90	0.33	56.9	20.9	43.0
57	325.1	0.422	74.6	13.8	6.52	4.505	47.278	44.367	80.3	36.0	66.5	22.2	3.00	0.31	58.2	22.2	44.4
58	327.5	0.427	74.3	13.5	6.52	4.582	47.667	44.701	80.7	36.0	67.2	22.5	2.99	0.30	58.3	22.4	44.8
59	328.9	0.432	74.1	13.3	6.53	4.659	47.889	44.877	80.9	36.0	67.6	22.7	2.98	0.30	58.4	22.4	45.1

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	330.8	0.436	74.0	13.2	6.54	4.735	48.185	45.122	81.1	36.0	67.9	22.8	2.98	0.29	58.5	22.6	45.4
61	332.4	0.441	73.9	13.1	6.54	4.821	48.445	45.328	81.3	36.0	68.2	22.9	2.98	0.29	58.6	22.7	45.6
62	333.4	0.446	73.8	13.0	6.55	4.898	48.611	45.449	81.4	36.0	68.4	23.0	2.98	0.29	58.7	22.7	45.7
63	334.1	0.450	73.8	13.0	6.55	4.974	48.723	45.518	81.5	36.0	68.5	23.0	2.98	0.28	58.7	22.8	45.8
64	334.8	0.455	73.7	12.9	6.56	5.051	48.834	45.586	81.6	36.0	68.7	23.1	2.97	0.28	58.8	22.8	45.9
65	335.2	0.460	73.6	12.8	6.56	5.137	48.889	45.596	81.6	36.0	68.8	23.2	2.96	0.28	58.8	22.8	46.0
66	336.3	0.465	73.5	12.6	6.57	5.213	49.074	45.735	81.7	36.0	69.1	23.3	2.96	0.28	58.8	22.9	46.2
67	336.4	0.469	73.3	12.5	6.57	5.290	49.093	45.715	81.7	36.0	69.2	23.5	2.95	0.27	58.8	22.9	46.4
68	338.0	0.474	73.3	12.4	6.58	5.366	49.352	45.922	81.9	36.0	69.5	23.5	2.95	0.27	58.9	23.0	46.5
69	337.9	0.478	73.2	12.4	6.58	5.443	49.334	45.867	81.8	36.0	69.5	23.6	2.94	0.27	58.9	22.9	46.5
70	338.5	0.483	73.1	12.3	6.59	5.519	49.426	45.917	81.9	36.0	69.6	23.7	2.94	0.27	58.9	23.0	46.6
71	339.1	0.488	73.1	12.3	6.60	5.606	49.519	45.962	81.9	36.0	69.7	23.7	2.94	0.27	59.0	23.0	46.7
72	339.4	0.493	73.0	12.2	6.60	5.682	49.574	45.976	82.0	36.0	69.8	23.8	2.93	0.27	59.0	23.0	46.8
73	339.3	0.497	72.9	12.0	6.61	5.759	49.556	45.921	81.9	36.0	69.9	23.9	2.92	0.26	58.9	23.0	46.9
74	339.2	0.502	72.8	12.0	6.61	5.835	49.537	45.865	81.8	36.0	69.9	24.0	2.91	0.26	58.9	22.9	46.9
75	339.8	0.506	72.7	11.9	6.62	5.912	49.630	45.915	81.9	36.0	70.0	24.1	2.91	0.26	58.9	23.0	47.1
76	340.9	0.511	72.7	11.8	6.62	5.988	49.815	46.051	82.0	36.0	70.2	24.1	2.91	0.26	59.0	23.0	47.2
77	341.6	0.516	72.6	11.8	6.63	6.074	49.926	46.112	82.1	36.0	70.3	24.2	2.91	0.26	59.0	23.1	47.2
78	342.0	0.521	72.5	11.7	6.63	6.151	49.982	46.126	82.1	36.0	70.4	24.3	2.90	0.25	59.0	23.1	47.3
79	342.3	0.525	72.4	11.6	6.64	6.227	50.037	46.140	82.1	36.0	70.5	24.4	2.89	0.25	59.0	23.1	47.4
80	342.0	0.530	72.3	11.5	6.64	6.304	49.982	46.050	82.0	36.0	70.5	24.5	2.88	0.25	59.0	23.0	47.5
81	342.4	0.534	72.3	11.4	6.65	6.380	50.056	46.081	82.1	36.0	70.6	24.5	2.88	0.25	59.0	23.0	47.6
82	342.7	0.539	72.2	11.4	6.66	6.457	50.093	46.077	82.1	36.0	70.7	24.6	2.87	0.25	59.0	23.0	47.6
83	342.9	0.544	72.2	11.4	6.66	6.533	50.130	46.073	82.1	36.0	70.7	24.6	2.87	0.25	59.0	23.0	47.7
84	343.1	0.548	72.1	11.3	6.67	6.610	50.167	46.070	82.0	36.0	70.7	24.7	2.87	0.25	59.0	23.0	47.7
85	343.1	0.553	72.1	11.2	6.67	6.696	50.167	46.026	82.0	36.0	70.8	24.7	2.86	0.24	59.0	23.0	47.7
86	342.9	0.558	71.9	11.1	6.68	6.773	50.130	45.953	81.9	36.0	70.8	24.9	2.85	0.24	59.0	23.0	47.8
87	343.2	0.562	71.8	11.0	6.68	6.849	50.185	45.967	81.9	36.0	71.0	25.0	2.84	0.24	59.0	23.0	48.0
88	343.6	0.567	71.8	11.0	6.69	6.926	50.241	45.980	82.0	36.0	71.0	25.0	2.84	0.24	59.0	23.0	48.0
89	343.8	0.572	71.8	11.0	6.69	7.002	50.278	45.976	82.0	36.0	71.0	25.0	2.84	0.24	59.0	23.0	48.0
90	343.6	0.576	71.7	10.9	6.70	7.079	50.241	45.903	81.9	36.0	71.0	25.1	2.83	0.24	58.9	23.0	48.0
91	343.5	0.581	71.7	10.9	6.71	7.155	50.223	45.848	81.8	36.0	70.9	25.1	2.83	0.24	58.9	22.9	48.0
92	343.8	0.585	71.6	10.8	6.71	7.232	50.278	45.861	81.8	36.0	71.1	25.2	2.82	0.23	58.9	22.9	48.1
93	344.5	0.590	71.5	10.6	6.72	7.308	50.389	45.925	81.9	36.0	71.3	25.3	2.81	0.23	58.9	23.0	48.3
94	345.1	0.594	71.4	10.6	6.72	7.385	50.482	45.972	82.0	36.0	71.4	25.4	2.81	0.23	59.0	23.0	48.4
95	345.4	0.599	71.3	10.5	6.73	7.471	50.537	45.980	82.0	36.0	71.4	25.5	2.81	0.23	59.0	23.0	48.4
96	346.0	0.604	71.3	10.5	6.73	7.547	50.630	46.027	82.0	36.0	71.5	25.5	2.81	0.23	59.0	23.0	48.5
97	346.7	0.609	71.3	10.5	6.74	7.624	50.741	46.091	82.1	36.0	71.6	25.5	2.81	0.23	59.0	23.0	48.5
98	346.9	0.613	71.3	10.4	6.75	7.700	50.778	46.087	82.1	36.0	71.6	25.5	2.80	0.23	59.0	23.0	48.6
99	347.5	0.618	71.1	10.3	6.75	7.777	50.871	46.133	82.1	36.0	71.8	25.7	2.80	0.22	59.0	23.1	48.7
100	347.5	0.622	71.1	10.2	6.76	7.853	50.871	46.094	82.1	36.0	71.8	25.7	2.79	0.22	59.0	23.0	48.8

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	347.6	0.627	71.0	10.2	6.76	7.930	50.889	46.072	82.1	36.0	71.9	25.8	2.78	0.22	59.0	23.0	48.9
102	347.6	0.632	71.0	10.2	6.77	8.016	50.889	46.028	82.0	36.0	71.8	25.8	2.78	0.22	59.0	23.0	48.8
103	348.0	0.637	70.9	10.1	6.77	8.093	50.945	46.041	82.0	36.0	71.9	25.9	2.78	0.22	59.0	23.0	48.9
104	348.4	0.641	70.9	10.1	6.78	8.169	51.019	46.070	82.0	36.0	71.9	25.9	2.78	0.22	59.0	23.0	48.9
105	348.4	0.646	70.8	10.0	6.79	8.246	51.019	46.031	82.0	36.0	72.0	26.0	2.77	0.22	59.0	23.0	49.0
106	348.5	0.650	70.7	9.9	6.79	8.322	51.037	46.009	82.0	36.0	72.1	26.1	2.76	0.21	59.0	23.0	49.1
107	348.9	0.655	70.6	9.8	6.80	8.399	51.093	46.020	82.0	36.0	72.2	26.2	2.76	0.21	59.0	23.0	49.2
108	349.5	0.659	70.6	9.8	6.80	8.475	51.185	46.066	82.0	36.0	72.3	26.2	2.76	0.21	59.0	23.0	49.2
109	349.7	0.665	70.6	9.8	6.81	8.561	51.223	46.056	82.0	36.0	72.3	26.2	2.76	0.21	59.0	23.0	49.2
110	350.1	0.669	70.5	9.7	6.81	8.638	51.297	46.084	82.1	36.0	72.3	26.3	2.76	0.21	59.0	23.0	49.3
111	350.4	0.674	70.5	9.7	6.82	8.714	51.334	46.079	82.1	36.0	72.4	26.3	2.75	0.21	59.0	23.0	49.3
112	350.7	0.678	70.4	9.6	6.83	8.791	51.389	46.090	82.1	36.0	72.5	26.4	2.75	0.21	59.0	23.0	49.4
113	350.1	0.683	70.3	9.5	6.83	8.867	51.297	45.967	81.9	36.0	72.5	26.5	2.73	0.21	59.0	23.0	49.5
114	350.5	0.687	70.3	9.4	6.84	8.934	51.352	45.983	82.0	36.0	72.5	26.5	2.73	0.21	59.0	23.0	49.5
115	351.2	0.692	70.3	9.4	6.84	9.020	51.463	46.040	82.0	36.0	72.6	26.5	2.73	0.21	59.0	23.0	49.6
116	351.6	0.697	70.3	9.4	6.85	9.097	51.537	46.068	82.0	36.0	72.6	26.5	2.74	0.20	59.0	23.0	49.6
117	351.6	0.701	70.2	9.4	6.85	9.174	51.537	46.028	82.0	36.0	72.6	26.6	2.73	0.20	59.0	23.0	49.6
118	352.0	0.706	70.2	9.4	6.86	9.250	51.593	46.039	82.0	36.0	72.7	26.6	2.73	0.20	59.0	23.0	49.6
119	352.5	0.710	70.1	9.2	6.87	9.327	51.667	46.067	82.0	36.0	72.8	26.7	2.72	0.20	59.0	23.0	49.8
120	352.1	0.715	70.0	9.2	6.87	9.403	51.611	45.977	82.0	36.0	72.8	26.8	2.71	0.20	59.0	23.0	49.8
121	352.8	0.719	69.9	9.1	6.88	9.480	51.723	46.038	82.0	36.0	72.9	26.9	2.71	0.20	59.0	23.0	49.9
122	353.1	0.724	69.9	9.1	6.88	9.556	51.778	46.049	82.0	36.0	72.9	26.9	2.71	0.20	59.0	23.0	49.9
123	353.6	0.729	69.9	9.1	6.89	9.642	51.852	46.071	82.1	36.0	72.9	26.9	2.72	0.20	59.0	23.0	49.9
124	354.0	0.734	69.9	9.1	6.90	9.719	51.908	46.082	82.1	36.0	72.9	26.9	2.72	0.20	59.0	23.0	49.9
125	354.4	0.738	69.9	9.0	6.90	9.795	51.982	46.109	82.1	36.0	73.0	26.9	2.71	0.20	59.0	23.1	50.0
126	354.9	0.743	69.8	9.0	6.91	9.872	52.056	46.136	82.1	36.0	73.2	27.0	2.71	0.19	59.0	23.1	50.1
127	354.9	0.747	69.7	8.9	6.91	9.948	52.056	46.096	82.1	36.0	73.2	27.1	2.70	0.19	59.0	23.0	50.1
128	355.0	0.752	69.7	8.8	6.92	10.025	52.074	46.073	82.1	36.0	73.2	27.1	2.70	0.19	59.0	23.0	50.2
129	355.2	0.757	69.7	8.8	6.93	10.111	52.111	46.061	82.0	36.0	73.2	27.1	2.70	0.19	59.0	23.0	50.2
130	355.3	0.762	69.7	8.8	6.93	10.187	52.130	46.038	82.0	36.0	73.2	27.1	2.70	0.19	59.0	23.0	50.2
131	355.1	0.766	69.7	8.8	6.94	10.264	52.093	45.965	81.9	36.0	73.1	27.1	2.69	0.19	59.0	23.0	50.1
132	355.1	0.771	69.5	8.7	6.94	10.341	52.093	45.925	81.9	36.0	73.2	27.3	2.68	0.19	58.9	23.0	50.2
133	355.7	0.775	69.5	8.6	6.95	10.417	52.185	45.968	81.9	36.0	73.3	27.3	2.68	0.19	59.0	23.0	50.3
134	356.0	0.780	69.4	8.6	6.96	10.503	52.241	45.973	82.0	36.0	73.4	27.4	2.68	0.19	59.0	23.0	50.4
135	356.5	0.785	69.4	8.6	6.96	10.580	52.315	45.999	82.0	36.0	73.4	27.4	2.68	0.19	59.0	23.0	50.4
136	356.6	0.790	69.4	8.6	6.97	10.656	52.334	45.975	82.0	36.0	73.4	27.4	2.68	0.19	59.0	23.0	50.4
137	356.7	0.795	69.4	8.6	6.98	10.742	52.352	45.947	81.9	36.0	73.3	27.4	2.68	0.19	59.0	23.0	50.4
138	356.4	0.799	69.4	8.6	6.98	10.819	52.297	45.857	81.8	36.0	73.3	27.4	2.67	0.19	58.9	22.9	50.3
139	356.4	0.803	69.3	8.5	6.99	10.886	52.297	45.822	81.8	36.0	73.3	27.5	2.67	0.19	58.9	22.9	50.4
140	356.7	0.808	69.2	8.4	6.99	10.972	52.352	45.827	81.8	36.0	73.4	27.6	2.66	0.18	58.9	22.9	50.5
141	357.9	0.813	69.2	8.4	7.00	11.048	52.537	45.951	81.9	36.0	73.6	27.6	2.66	0.18	59.0	23.0	50.6

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	359.6	0.818	69.2	8.4	7.01	11.125	52.815	46.158	82.1	36.0	73.8	27.6	2.67	0.18	59.1	23.1	50.7
143	360.6	0.822	69.2	8.4	7.01	11.201	52.982	46.266	82.2	36.0	73.9	27.6	2.68	0.18	59.1	23.1	50.7
144	360.6	0.827	69.2	8.4	7.02	11.278	52.982	46.225	82.2	36.0	73.8	27.6	2.68	0.18	59.1	23.1	50.7
145	360.4	0.831	69.1	8.3	7.02	11.355	52.945	46.152	82.1	36.0	73.8	27.7	2.67	0.18	59.1	23.1	50.7
146	361.0	0.836	69.1	8.2	7.03	11.431	53.037	46.193	82.2	36.0	73.9	27.7	2.67	0.18	59.1	23.1	50.8
147	361.7	0.840	69.0	8.2	7.04	11.508	53.148	46.251	82.2	36.0	74.1	27.8	2.66	0.18	59.1	23.1	50.9
148	362.3	0.845	68.9	8.1	7.04	11.584	53.241	46.292	82.3	36.0	74.1	27.9	2.66	0.18	59.1	23.1	51.0
149	362.5	0.849	68.9	8.1	7.05	11.651	53.278	46.289	82.3	36.0	74.1	27.9	2.66	0.18	59.1	23.1	51.0
150	362.7	0.854	69.0	8.2	7.05	11.728	53.315	46.281	82.3	36.0	74.1	27.8	2.66	0.18	59.1	23.1	51.0
151	362.7	0.858	69.0	8.2	7.06	11.804	53.315	46.240	82.2	36.0	74.1	27.8	2.66	0.18	59.1	23.1	50.9
152	363.4	0.863	68.9	8.1	7.07	11.881	53.426	46.297	82.3	36.0	74.2	27.9	2.66	0.17	59.1	23.1	51.0
153	364.1	0.867	68.8	8.0	7.07	11.957	53.537	46.354	82.3	36.0	74.4	28.0	2.65	0.17	59.2	23.2	51.2
154	363.9	0.872	68.7	7.9	7.08	12.043	53.500	46.276	82.3	36.0	74.3	28.1	2.65	0.17	59.1	23.1	51.2
155	364.0	0.876	68.7	7.9	7.08	12.110	53.519	46.256	82.2	36.0	74.3	28.1	2.65	0.17	59.1	23.1	51.2
156	364.2	0.882	68.7	7.9	7.09	12.196	53.556	46.243	82.2	36.0	74.3	28.1	2.65	0.17	59.1	23.1	51.2
157	364.3	0.886	68.7	7.9	7.10	12.273	53.574	46.218	82.2	36.0	74.3	28.1	2.65	0.17	59.1	23.1	51.2
158	364.3	0.891	68.7	7.9	7.10	12.349	53.574	46.177	82.2	36.0	74.3	28.1	2.64	0.17	59.1	23.1	51.2
159	364.6	0.895	68.6	7.8	7.11	12.426	53.611	46.168	82.1	36.0	74.3	28.2	2.64	0.17	59.1	23.1	51.3
160	364.4	0.900	68.5	7.7	7.12	12.502	53.593	46.111	82.1	36.0	74.4	28.3	2.63	0.17	59.0	23.1	51.3
161	364.7	0.905	68.5	7.7	7.12	12.588	53.630	46.097	82.1	36.0	74.4	28.3	2.63	0.17	59.0	23.0	51.3
162	364.8	0.910	68.5	7.7	7.13	12.665	53.648	46.072	82.1	36.0	74.3	28.3	2.63	0.17	59.0	23.0	51.3
163	365.4	0.914	68.5	7.7	7.13	12.742	53.741	46.112	82.1	36.0	74.4	28.3	2.63	0.17	59.0	23.1	51.3
164	365.9	0.919	68.5	7.7	7.14	12.818	53.834	46.152	82.1	36.0	74.4	28.3	2.63	0.17	59.1	23.1	51.3
165	366.3	0.924	68.5	7.6	7.15	12.904	53.889	46.154	82.1	36.0	74.5	28.3	2.63	0.17	59.1	23.1	51.4
166	365.6	0.928	68.4	7.6	7.15	12.981	53.778	46.016	82.0	36.0	74.4	28.4	2.62	0.16	59.0	23.0	51.4
167	365.4	0.933	68.3	7.5	7.16	13.057	53.741	45.943	81.9	36.0	74.4	28.5	2.61	0.16	59.0	23.0	51.5
168	365.5	0.937	68.3	7.5	7.17	13.134	53.760	45.918	81.9	36.0	74.4	28.5	2.61	0.16	58.9	23.0	51.5
169	366.1	0.942	68.3	7.5	7.17	13.210	53.852	45.957	81.9	36.0	74.5	28.5	2.61	0.16	59.0	23.0	51.5
170	366.2	0.947	68.3	7.5	7.18	13.287	53.871	45.932	81.9	36.0	74.4	28.5	2.61	0.16	58.9	23.0	51.5
171	366.2	0.952	68.3	7.4	7.19	13.373	53.871	45.885	81.9	36.0	74.4	28.5	2.61	0.16	58.9	22.9	51.5
172	366.2	0.956	68.2	7.4	7.19	13.449	53.871	45.844	81.8	36.0	74.5	28.6	2.60	0.16	58.9	22.9	51.5
173	365.9	0.961	68.1	7.3	7.20	13.526	53.834	45.771	81.8	36.0	74.5	28.7	2.59	0.16	58.9	22.9	51.6
174	366.5	0.965	68.1	7.2	7.21	13.602	53.926	45.810	81.8	36.0	74.5	28.7	2.59	0.16	58.9	22.9	51.6
175	367.0	0.970	68.1	7.2	7.21	13.679	54.000	45.832	81.8	36.0	74.6	28.7	2.59	0.16	58.9	22.9	51.7
176	367.1	0.975	68.1	7.3	7.22	13.755	54.019	45.807	81.8	36.0	74.5	28.7	2.60	0.16	58.9	22.9	51.6
177	368.1	0.979	68.1	7.2	7.23	13.832	54.186	45.909	81.9	36.0	74.6	28.7	2.60	0.16	58.9	23.0	51.7
178	368.8	0.984	68.0	7.2	7.23	13.909	54.297	45.963	81.9	36.0	74.7	28.8	2.60	0.16	59.0	23.0	51.8
179	368.7	0.988	67.9	7.1	7.24	13.985	54.278	45.906	81.9	36.0	74.8	28.9	2.59	0.16	58.9	23.0	51.8
180	369.4	0.993	67.9	7.0	7.24	14.062	54.389	45.960	81.9	36.0	74.9	28.9	2.59	0.15	59.0	23.0	51.9
181	369.3	0.997	67.9	7.0	7.25	14.138	54.371	45.902	81.9	36.0	74.8	28.9	2.59	0.15	58.9	23.0	51.9
182	368.6	1.002	67.9	7.0	7.26	14.215	54.260	45.765	81.7	36.0	74.7	28.9	2.58	0.15	58.9	22.9	51.8

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	369.3	1.007	67.9	7.1	7.26	14.291	54.371	45.819	81.8	36.0	74.7	28.9	2.59	0.15	58.9	22.9	51.8
184	368.8	1.011	67.9	7.0	7.27	14.368	54.297	45.714	81.7	36.0	74.7	28.9	2.58	0.15	58.8	22.9	51.8
185	369.2	1.016	67.8	7.0	7.28	14.444	54.352	45.720	81.7	36.0	74.7	29.0	2.58	0.15	58.8	22.9	51.8
186	369.6	1.021	67.7	6.9	7.28	14.530	54.426	45.737	81.7	36.0	74.8	29.1	2.57	0.15	58.8	22.9	51.9
187	370.3	1.025	67.7	6.9	7.29	14.607	54.537	45.790	81.8	36.0	74.9	29.1	2.57	0.15	58.9	22.9	52.0
188	370.6	1.030	67.7	6.9	7.30	14.683	54.574	45.780	81.8	36.0	74.9	29.1	2.57	0.15	58.9	22.9	52.0
189	370.3	1.035	67.7	6.9	7.30	14.760	54.537	45.706	81.7	36.0	74.8	29.1	2.57	0.15	58.8	22.9	52.0
190	371.1	1.040	67.7	6.9	7.31	14.846	54.667	45.770	81.7	36.0	74.9	29.1	2.57	0.15	58.9	22.9	52.0
191	371.1	1.044	67.7	6.9	7.32	14.923	54.667	45.728	81.7	36.0	74.8	29.1	2.57	0.15	58.8	22.9	52.0
192	371.1	1.049	67.6	6.8	7.32	14.999	54.667	45.686	81.7	36.0	74.9	29.2	2.57	0.15	58.8	22.8	52.0
193	371.8	1.053	67.6	6.8	7.33	15.076	54.778	45.739	81.7	36.0	75.0	29.2	2.57	0.15	58.8	22.9	52.1
194	372.7	1.058	67.5	6.7	7.34	15.152	54.926	45.822	81.8	36.0	75.1	29.3	2.57	0.15	58.9	22.9	52.2
195	373.3	1.063	67.5	6.7	7.34	15.229	55.019	45.859	81.8	36.0	75.1	29.3	2.57	0.15	58.9	22.9	52.2
196	375.3	1.067	67.6	6.8	7.35	15.305	55.334	46.083	82.1	36.0	75.3	29.2	2.58	0.15	59.0	23.0	52.2
197	376.0	1.072	67.6	6.8	7.36	15.382	55.445	46.135	82.1	36.0	75.4	29.2	2.58	0.15	59.0	23.1	52.3
198	376.1	1.076	67.6	6.8	7.36	15.458	55.463	46.108	82.1	36.0	75.3	29.2	2.58	0.15	59.0	23.1	52.3
199	376.3	1.081	67.5	6.7	7.37	15.535	55.500	46.097	82.1	36.0	75.4	29.3	2.57	0.14	59.0	23.0	52.3
200	377.1	1.085	67.5	6.6	7.38	15.611	55.630	46.164	82.1	36.0	75.5	29.3	2.57	0.14	59.1	23.1	52.4
201	377.5	1.090	67.4	6.6	7.38	15.688	55.686	46.168	82.1	36.0	75.5	29.4	2.57	0.14	59.1	23.1	52.5
202	377.8	1.094	67.4	6.6	7.39	15.764	55.741	46.172	82.2	36.0	75.6	29.4	2.57	0.14	59.1	23.1	52.5
203	378.9	1.099	67.4	6.6	7.40	15.841	55.908	46.270	82.2	36.0	75.6	29.4	2.58	0.14	59.1	23.1	52.5
204	379.2	1.104	67.4	6.6	7.40	15.917	55.963	46.274	82.3	36.0	75.7	29.4	2.58	0.14	59.1	23.1	52.5
205	379.1	1.108	67.4	6.6	7.41	15.994	55.945	46.216	82.2	36.0	75.6	29.4	2.57	0.14	59.1	23.1	52.5
206	379.5	1.113	67.4	6.6	7.42	16.070	56.019	46.235	82.2	36.0	75.7	29.4	2.57	0.14	59.1	23.1	52.5
207	380.9	1.117	67.3	6.5	7.42	16.147	56.241	46.378	82.4	36.0	75.8	29.5	2.57	0.14	59.2	23.2	52.6
208	381.6	1.122	67.3	6.4	7.43	16.223	56.352	46.429	82.4	36.0	76.0	29.5	2.57	0.14	59.2	23.2	52.8
209	382.0	1.126	67.3	6.4	7.44	16.300	56.408	46.432	82.4	36.0	76.0	29.5	2.57	0.14	59.2	23.2	52.8
210	382.4	1.131	67.3	6.4	7.45	16.377	56.482	46.451	82.4	36.0	76.0	29.5	2.57	0.14	59.2	23.2	52.8
211	382.9	1.136	67.3	6.4	7.45	16.453	56.556	46.469	82.4	36.0	76.0	29.5	2.57	0.14	59.2	23.2	52.8
212	383.2	1.140	67.3	6.4	7.46	16.530	56.611	46.472	82.5	36.0	76.0	29.5	2.57	0.14	59.2	23.2	52.8
213	383.5	1.145	67.2	6.4	7.47	16.606	56.648	46.460	82.4	36.0	76.1	29.6	2.57	0.14	59.2	23.2	52.8
214	383.9	1.149	67.1	6.3	7.47	16.683	56.723	46.478	82.5	36.0	76.2	29.7	2.57	0.14	59.2	23.2	52.9
215	383.8	1.154	67.0	6.2	7.48	16.759	56.704	46.420	82.4	36.0	76.2	29.8	2.56	0.13	59.2	23.2	53.0
216	384.4	1.159	67.1	6.2	7.49	16.845	56.797	46.448	82.4	36.0	76.2	29.7	2.56	0.13	59.2	23.2	53.0
217	384.5	1.163	67.1	6.3	7.49	16.912	56.815	46.425	82.4	36.0	76.1	29.7	2.56	0.14	59.2	23.2	52.9
218	384.9	1.168	67.1	6.3	7.50	16.998	56.871	46.422	82.4	36.0	76.1	29.7	2.56	0.14	59.2	23.2	52.9
219	385.4	1.173	67.1	6.2	7.51	17.075	56.963	46.456	82.4	36.0	76.2	29.7	2.56	0.13	59.2	23.2	53.0
220	384.9	1.177	67.0	6.2	7.51	17.151	56.871	46.335	82.3	36.0	76.2	29.8	2.55	0.13	59.1	23.2	53.0
221	385.4	1.182	66.9	6.1	7.52	17.228	56.963	46.368	82.3	36.0	76.3	29.9	2.55	0.13	59.2	23.2	53.1
222	385.7	1.186	66.9	6.1	7.53	17.304	57.000	46.355	82.3	36.0	76.3	29.9	2.55	0.13	59.2	23.2	53.1
223	385.9	1.192	66.9	6.1	7.54	17.390	57.037	46.337	82.3	36.0	76.2	29.9	2.55	0.13	59.1	23.2	53.1

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	386.3	1.196	66.9	6.1	7.54	17.457	57.111	46.360	82.3	36.0	76.2	29.9	2.55	0.13	59.2	23.2	53.0
225	386.7	1.201	66.9	6.1	7.55	17.544	57.167	46.357	82.3	36.0	76.3	29.9	2.55	0.13	59.2	23.2	53.1
226	387.0	1.205	66.8	6.0	7.56	17.620	57.223	46.359	82.3	36.0	76.3	30.0	2.55	0.13	59.2	23.2	53.2
227	387.6	1.210	66.8	6.0	7.56	17.697	57.315	46.391	82.4	36.0	76.4	30.0	2.55	0.13	59.2	23.2	53.2
228	388.3	1.214	66.7	5.9	7.57	17.773	57.426	46.438	82.4	36.0	76.5	30.1	2.54	0.13	59.2	23.2	53.3
229	389.1	1.219	66.7	5.9	7.58	17.850	57.556	46.501	82.5	36.0	76.6	30.1	2.55	0.13	59.2	23.3	53.3
230	390.0	1.224	66.7	5.9	7.59	17.936	57.704	46.573	82.6	36.0	76.6	30.1	2.55	0.13	59.3	23.3	53.3
231	390.3	1.229	66.7	5.9	7.59	18.012	57.741	46.559	82.5	36.0	76.6	30.1	2.55	0.13	59.3	23.3	53.3
232	390.8	1.233	66.7	5.9	7.60	18.089	57.834	46.591	82.6	36.0	76.6	30.1	2.55	0.13	59.3	23.3	53.4
233	391.0	1.238	66.7	5.8	7.61	18.165	57.852	46.562	82.5	36.0	76.7	30.1	2.54	0.13	59.3	23.3	53.4
234	391.1	1.242	66.6	5.8	7.61	18.242	57.871	46.533	82.5	36.0	76.8	30.2	2.54	0.12	59.2	23.3	53.5
235	390.7	1.247	66.6	5.8	7.62	18.318	57.815	46.443	82.4	36.0	76.7	30.2	2.54	0.12	59.2	23.2	53.4
236	390.8	1.251	66.6	5.8	7.63	18.395	57.834	46.414	82.4	36.0	76.6	30.2	2.54	0.12	59.2	23.2	53.4
237	391.0	1.256	66.6	5.8	7.64	18.471	57.852	46.385	82.4	36.0	76.6	30.2	2.54	0.12	59.2	23.2	53.4
238	391.8	1.261	66.6	5.8	7.64	18.548	57.982	46.446	82.4	36.0	76.6	30.2	2.54	0.12	59.2	23.2	53.4
239	391.5	1.266	66.5	5.7	7.65	18.634	57.945	46.366	82.3	36.0	76.6	30.3	2.53	0.12	59.2	23.2	53.4
240	392.2	1.270	66.5	5.7	7.66	18.701	58.056	46.417	82.4	36.0	76.7	30.3	2.53	0.12	59.2	23.2	53.5
241	393.6	1.275	66.4	5.6	7.67	18.787	58.278	46.548	82.5	36.0	76.9	30.4	2.53	0.12	59.3	23.3	53.7
242	393.6	1.279	66.4	5.6	7.67	18.864	58.278	46.503	82.5	36.0	76.9	30.4	2.53	0.12	59.2	23.3	53.6
243	394.5	1.284	66.5	5.6	7.68	18.940	58.426	46.579	82.6	36.0	76.9	30.3	2.54	0.12	59.3	23.3	53.6
244	395.3	1.289	66.5	5.7	7.69	19.017	58.556	46.639	82.6	36.0	76.9	30.3	2.54	0.12	59.3	23.3	53.6
245	396.0	1.293	66.5	5.7	7.70	19.093	58.667	46.684	82.7	36.0	77.0	30.3	2.54	0.12	59.3	23.3	53.6
246	396.0	1.297	66.5	5.6	7.70	19.160	58.667	46.645	82.6	36.0	77.0	30.3	2.54	0.12	59.3	23.3	53.7
247	396.5	1.302	66.4	5.6	7.71	19.237	58.741	46.660	82.6	36.0	77.1	30.4	2.53	0.12	59.3	23.3	53.7
248	396.6	1.306	66.3	5.5	7.72	19.313	58.760	46.630	82.6	36.0	77.1	30.5	2.53	0.12	59.3	23.3	53.8
249	398.9	1.311	66.3	5.5	7.72	19.390	59.130	46.883	82.9	36.0	77.3	30.5	2.54	0.12	59.4	23.4	53.9
250	400.4	1.315	66.3	5.5	7.73	19.466	59.371	47.032	83.0	36.0	77.5	30.5	2.54	0.12	59.5	23.5	54.0
251	401.5	1.320	66.3	5.5	7.74	19.543	59.537	47.121	83.1	36.0	77.6	30.5	2.55	0.12	59.5	23.6	54.0
252	401.1	1.325	66.3	5.5	7.75	19.619	59.482	47.031	83.0	36.0	77.5	30.5	2.54	0.12	59.5	23.5	54.0
253	401.8	1.329	66.3	5.4	7.75	19.696	59.593	47.074	83.1	36.0	77.6	30.5	2.54	0.12	59.5	23.5	54.1
254	401.5	1.334	66.2	5.4	7.76	19.772	59.537	46.984	83.0	36.0	77.6	30.6	2.53	0.11	59.5	23.5	54.1
255	402.1	1.338	66.2	5.4	7.77	19.849	59.649	47.028	83.0	36.0	77.6	30.6	2.54	0.11	59.5	23.5	54.1
256	402.7	1.343	66.2	5.4	7.78	19.925	59.741	47.056	83.0	36.0	77.7	30.6	2.54	0.11	59.5	23.5	54.1
257	402.7	1.347	66.2	5.4	7.78	20.002	59.741	47.010	83.0	36.0	77.6	30.6	2.54	0.11	59.5	23.5	54.1
258	403.0	1.348	66.2	5.4	7.78	20.011	59.778	47.034	83.0	36.0	77.6	30.6	2.54	0.11	59.5	23.5	54.1

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. U-2412B

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project 39406.1.1 **County** GUILFORD **Owner**

Date: Sampled 3/22/13 **Received** 4/15/13 **Reported** 4/17/13

Sampled from **By** NEIL ROBERSON

Submitted by TED HOWARD 1995 **Standard Specifications**

784717 TO 784718
5/2/13

TEST RESULTS

Proj. Sample No.		ST-35#1	ST-35#2				
Lab. Sample No.		784717	784718				
Retained #4 Sieve	%	-	-				
Passing #10 Sieve	%	100	97				
Passing #40 Sieve	%	87	83				
Passing #200 Sieve	%	67	65				

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	19.3	20.1				
Fine Sand Ret - #270	%	19.9	18.4				
Silt 0.05 - 0.005 mm	%	54.8	57.4				
Clay < 0.005 mm	%	6.1	4.1				
T-#		T-5666	T-5666				
Specific Gravity		2.742	2.755				

L. L.		39	41				
P. I.		5	7				
AASHTO Classification		A-4(4)	A-5(5)				
Station		404+50	404+50				
Offset		94' RT	94' RT				
Alignment		L	L				
Location							
Depth (Ft)		49.20	49.20				
	to	50.70	50.70				
Final Moisture (%)		23.82	22.81				

cc: NEIL ROBERSON
GREG BODENHEIMER

Soils Engineer

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	18.12	20.70	**Plastic Limits:**	0	
Dry Density (pcf):	104.81	111.52	**Plasticity Index (%):**	0	
Saturation (%):	78.64	106.39			
Void Ratio:	0.6304	0.5322	**Specific Gravity:**	2.738	Measured

Soil Description: Dry and brittle yellowish tan clayey silt

Project Number: 39406.1.1 **Depth:** 49.2 - 50.7 ft

Sample Number: ST-35 **Boring Number:**

Project: U-2412B

Client: T-5666

Location: Guilford County (Sta. 404+50)

Remarks:
Solid Height = 0.61546 inches ; Est. blows/feet = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	18.12	20.70	**Plastic Limits:**	0	
Dry Density (pcf):	104.81	111.52	**Plasticity Index (%):**	0	
Saturation (%):	78.64	106.39			
Void Ratio:	0.6304	0.5322	**Specific Gravity:**	2.738	Measured

Soil Description: Dry and brittle yellowish tan clayey silt

Project Number: 39406.1.1 **Depth:** 49.2 - 50.7 ft

Sample Number: ST-35 **Boring Number:**

Project: U-2412B

Client: T-5666

Location: Guilford County (Sta. 404+50)

Remarks: Solid Height = 0.61546 inches ; Est. blows/feet = NA

Consolidation Test
Test Results

	Before	After			
			Liquid Limits:	0	**Test Date:**
Moisture (%):	18.12	20.70	**Plastic Limits:**	0	
Dry Density (pcf):	104.81	111.52	**Plasticity Index (%):**	0	
Saturation (%):	78.64	106.39			
Void Ratio:	0.6304	0.5322	**Specific Gravity:**	2.738	Measured

Soil Description: Dry and brittle yellowish tan clayey silt

Project Number: 39406.1.1 **Depth:** 49.2 - 50.7 ft

Sample Number: ST-35 **Boring Number:**

Project: U-2412B

Client: T-5666

Location: Guilford County (Sta. 404+50)

Remarks: Solid Height = 0.61546 inches ; Est. blows/feet = NA

Consolidation Test Results
Summary

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County (Sta. 404+50)
Job Number: T-5666

Sample Number: ST-35
Boring Number:
Depth: 49.2 - 50.7 ft
Sample Type: Undisturbed

Soil Description:
Dry and brittle yellowish tan clayey silt
Remarks:
Solid Height = 0.61546 inches ; Est. blows/feet = NA

Test Number:
Test Date:

Index	Load Sequence (tsf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	1.0011	0.3871	0.00	0.6304	0.000		0.000	
1	0.031	0.0008	1.0003	0.3863	0.08	0.6291	0.141		5506.858	
2	0.063	0.0023	0.9988	0.3848	0.23	0.6266	0.208		3707.704	
3	0.125	0.0048	0.9963	0.3823	0.48	0.6226	0.331		2323.304	
4	0.250	0.0095	0.9916	0.3776	0.95	0.6149	0.431		1766.554	
5	0.500	0.0166	0.9845	0.3705	1.66	0.6033	1.653		453.719	
6	1.000	0.0246	0.9765	0.3625	2.46	0.5903	0.534		1381.499	
7	2.000	0.0368	0.9643	0.3503	3.68	0.5704	1.085		663.167	
8	4.000	0.0510	0.9501	0.3361	5.09	0.5473	0.250		2794.006	
9	2.000	0.0488	0.9523	0.3383	4.87	0.5509	0.000		0.000	
10	1.000	0.0454	0.9557	0.3417	4.54	0.5564	0.000		0.000	
11	0.500	0.0420	0.9591	0.3451	4.20	0.5620	0.000		0.000	
12	1.000	0.0436	0.9575	0.3435	4.36	0.5594	0.000		0.000	
13	2.000	0.0473	0.9538	0.3398	4.72	0.5533	0.000		0.000	
14	4.000	0.0535	0.9476	0.3336	5.34	0.5433	0.000		0.000	
15	8.000	0.0719	0.9292	0.3152	7.18	0.5133	0.391		1710.467	
16	16.000	0.0969	0.9042	0.2902	9.68	0.4726	0.678		932.824	
17	4.000	0.0913	0.9098	0.2958	9.12	0.4817	0.000		0.000	
18	0.016	0.0603	0.9408	0.3268	6.02	0.5322	0.000		0.000	

Tested By: **Checked By:**

Consolidation Test
Consolidation Specimen Information

Project: U-2412B **Project Number:** 39406.1.1
Location: Guilford County (Sta. 404+50)
Job Number: T-5666 **Test Date:**

Sample Number: ST-35 **Soil Description:**
Boring Number: Dry and brittle yellowish tan clayey silt
Depth: 49.2 - 50.7 ft **Remarks:**
Sample Type: Undisturbed Solid Height = 0.61546 inches ; Est. blows/feet = NA

Test Number:
Liquid Limit: 0.0000 **Initial Void Ratio:** 0.6304 **Initial Height (in):** 1.0011
Plastic Limit: 0.0000 **Plasticity Index (%):** 0.0000 **Initial Diameter (in):** 2.4999
Specific Gravity: 2.7380 Measured **Weight of Ring (g):** 111.1300

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	159.68	163.16
Dry Soil + Container (g)	135.18	135.18
Weight of Container (g)	0.00	0.00
Moisture Content (%)	18.12	20.70
Void Ratio	0.6304	0.5322
Saturation (%)	78.64	106.39
Dry Density (pcf)	104.81	111.52

Tested By: **Checked By:**

ncdot

Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date :

Tested By:

Effective Stress at Maximum Deviator Stress Criterion

Deviator Stress Vs. Axial Strain

Initial	Specimen A	B	C	D
Water Content (%)	21.0	20.2		
Dry Density (pcf)	104.6	106.4		
Saturation (%)	90.23	90.06		
Void Ratio	0.632	0.612		
Diameter (in)	2.861	2.856		
Height (in)	6.115	6.126		
Specific Gravity	2.74	2.76		
Liquid Limit	0	0		
Plastic Limit	0	0		
After Consolidation	**A**	**B**	**C**	**D**
B-Value	0.00	0.00		
Water Content (%)	22.1	22.1		
Dry Density (pcf)	107.47	110.72		
Saturation (%)	100.00	100.00		
Void Ratio	0.593	0.553		
Effective Stress (psi)	9.0	18.0		
Back Press. (psi)	60.3	60.2		
Rate of Strain	0.009	0.009		

Maximium Deviator Stress Criterion		After Shear	A	B	C	D
C (psi)	0.0	σ'1 at Failure (psi)	63.19	49.60		
C' (psi)	0.0	σ'3 at Failure (psi)	15.54	12.41		
Ø (deg)	0.0					
Ø' (deg)	0.0					

Project:	U-2412B
Location:	Guilford County (Sta. 404+50)
Project Number:	39406.1.1
Boring Number:	0
Sample Number:	ST-35
Depth:	49.2 - 50.7 ft
Sample Type:	Undisturbed
Description:	
Test Type	Consolidated Undrained
Remarks	Can only get 2 cuts from this tube for triaxial test.

Failure Photographs (not to scale)

ncdot

Consolidated Undrained Triaxial Test (ASTM D4767)

Materials & Tests Unit

NCDOT

Date:

Checked By:

Date:

Tested By:

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)

Change in Pore Pressure vs. Axial Strain

Deviator Stress vs. Axial Strain

Principal Stress Ratio vs. Axial Strain

Change in Pore Pressure vs. Axial Strain
Change in Pore Pressure (psi)
9.0
7.0
5.0
3.0
1.0
-1.0
-3.0
-5.0
-7.0
-9.0
-11.0
0.000
5.000
10.000
15.000
20.000
25.000
Axial Strain (%)
Specimen A
Specimen B
Specimen C
Specimen D

Mohr Stress Circles at Maximum Deviator Stress Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at Maximum Principal Stress Ratio Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Mohr Stress Circles at 15% Axial Strain Criterion

Effective Stress

(C' = 0.0 Ø' = 0.0)

Total Stress

(C = 0.0 Ø = 0.0)

Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)
Q (psi)
P' (psi)
0.0
10.0
20.0
30.0
40.0
50.0
Specimen A
Specimen B
Specimen C
Specimen D
Tangent Line

Stress Paths (Total)
(C' = 0.0 Ø' = 0.0)
Q (psi)
P (psi)
0.0
10.0
20.0
30.0
40.0

Specimen A Shear Data

CU Triaxial Test

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File Location
T-5666.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client:
Sample Location: Guilford County (Sta. 404+50)
Sample Description: Yellowish tan colored silt
Remarks: 26° shear plane.
Specimen was taken from top of tube.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.7420001
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.861	2.830	
Height (in)	6.115	6.082	
Weight (grams)	1305.00		1336.00
Moisture (%)	20.95		23.82
Dry Density (pcf)	104.59	107.47	
Saturation (%)	90.23	100.00	
Void Ratio	0.632	0.593	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 69.300
Effective Confining Stress (psi): 9.0
Corrected Peak Deviator Stress (psi): 47.656 at reading number: 112

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	19.7	0.074	60.3	0.0	6.29	0.000	0.000	0.000	9.0	9.0	9.0	9.0	1.00	0.00	9.0	0.0	9.0
1	36.2	0.080	61.1	0.9	6.29	0.098	2.629	2.588	11.6	9.0	10.8	8.2	1.32	0.33	10.3	1.3	9.5
2	42.0	0.082	61.5	1.2	6.30	0.136	3.554	3.497	12.5	9.0	11.3	7.8	1.45	0.35	10.8	1.7	9.5
3	47.7	0.086	61.9	1.6	6.30	0.197	4.461	4.376	13.4	9.0	11.8	7.4	1.59	0.37	11.2	2.2	9.6
4	51.0	0.090	62.2	1.9	6.30	0.257	4.980	4.867	13.9	9.0	12.0	7.1	1.68	0.39	11.5	2.4	9.6
5	55.4	0.094	62.5	2.2	6.31	0.325	5.683	5.538	14.6	9.0	12.4	6.8	1.81	0.40	11.8	2.8	9.6
6	59.5	0.097	62.6	2.4	6.31	0.386	6.331	6.157	15.2	9.0	12.8	6.7	1.93	0.39	12.1	3.1	9.7
7	63.6	0.101	62.9	2.6	6.32	0.446	6.979	6.775	15.8	9.0	13.2	6.4	2.05	0.38	12.4	3.4	9.8
8	67.5	0.105	63.0	2.7	6.32	0.514	7.608	7.370	16.4	9.0	13.7	6.3	2.17	0.37	12.7	3.7	10.0
9	70.4	0.109	63.1	2.9	6.33	0.582	8.071	7.798	16.8	9.0	13.9	6.2	2.27	0.37	12.9	3.9	10.1
10	72.8	0.114	63.3	3.0	6.33	0.650	8.441	8.134	17.2	9.0	14.2	6.0	2.35	0.37	13.1	4.1	10.1
11	76.8	0.118	63.4	3.1	6.33	0.718	9.089	8.745	17.8	9.0	14.7	5.9	2.47	0.35	13.4	4.4	10.3
12	80.1	0.122	63.4	3.2	6.34	0.786	9.608	9.227	18.3	9.0	15.1	5.9	2.58	0.34	13.6	4.6	10.5
13	83.0	0.126	63.5	3.2	6.34	0.862	10.071	9.649	18.7	9.0	15.4	5.8	2.66	0.34	13.9	4.8	10.6
14	86.0	0.131	63.6	3.3	6.35	0.930	10.552	10.092	19.1	9.0	15.8	5.7	2.76	0.33	14.1	5.0	10.8
15	89.5	0.135	63.6	3.3	6.35	1.005	11.107	10.605	19.6	9.0	16.3	5.7	2.86	0.31	14.3	5.3	11.0
16	91.9	0.140	63.6	3.4	6.36	1.081	11.477	10.933	20.0	9.0	16.6	5.7	2.92	0.31	14.5	5.5	11.1
17	95.2	0.144	63.6	3.4	6.36	1.149	12.014	11.430	20.5	9.0	17.1	5.7	3.02	0.30	14.7	5.7	11.4
18	98.0	0.148	63.6	3.4	6.37	1.217	12.459	11.834	20.9	9.0	17.5	5.7	3.09	0.29	15.0	5.9	11.6

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	101.9	0.152	63.7	3.4	6.37	1.285	13.069	12.402	21.4	9.0	18.0	5.6	3.21	0.28	15.2	6.2	11.8
20	104.3	0.156	63.7	3.4	6.37	1.353	13.458	12.750	21.8	9.0	18.4	5.6	3.27	0.27	15.4	6.4	12.0
21	107.5	0.160	63.6	3.4	6.38	1.421	13.958	13.207	22.2	9.0	18.9	5.7	3.34	0.26	15.6	6.6	12.3
22	111.5	0.165	63.6	3.4	6.38	1.489	14.606	13.810	22.8	9.0	19.5	5.7	3.44	0.25	15.9	6.9	12.6
23	114.4	0.169	63.6	3.4	6.39	1.557	15.069	14.229	23.3	9.0	19.9	5.7	3.50	0.24	16.1	7.1	12.8
24	117.5	0.173	63.6	3.3	6.39	1.633	15.550	14.661	23.7	9.0	20.4	5.7	3.57	0.23	16.4	7.3	13.0
25	120.6	0.177	63.6	3.3	6.40	1.701	16.050	15.116	24.2	9.0	20.9	5.7	3.63	0.22	16.6	7.6	13.3
26	123.9	0.182	63.5	3.2	6.40	1.769	16.568	15.588	24.6	9.0	21.4	5.8	3.69	0.21	16.8	7.8	13.6
27	127.2	0.186	63.5	3.2	6.41	1.837	17.105	16.077	25.1	9.0	21.9	5.8	3.76	0.20	17.1	8.0	13.9
28	130.4	0.190	63.4	3.1	6.41	1.912	17.605	16.525	25.6	9.0	22.4	5.9	3.81	0.19	17.3	8.3	14.1
29	133.3	0.194	63.4	3.1	6.42	1.980	18.068	16.940	26.0	9.0	22.9	5.9	3.85	0.18	17.5	8.5	14.4
30	136.7	0.199	63.3	3.0	6.42	2.056	18.605	17.445	26.5	9.0	23.4	6.0	3.91	0.17	17.8	8.7	14.7
31	139.5	0.203	63.2	3.0	6.43	2.124	19.049	17.867	26.9	9.0	23.9	6.1	3.95	0.17	18.0	8.9	15.0
32	143.0	0.207	63.1	2.9	6.43	2.192	19.604	18.397	27.4	9.0	24.5	6.2	3.99	0.16	18.2	9.2	15.3
33	146.3	0.212	63.1	2.8	6.43	2.268	20.141	18.907	27.9	9.0	25.1	6.2	4.04	0.15	18.5	9.5	15.7
34	148.8	0.216	63.0	2.7	6.44	2.336	20.530	19.273	28.3	9.0	25.6	6.3	4.06	0.14	18.7	9.6	15.9
35	151.8	0.221	62.9	2.6	6.44	2.411	21.011	19.727	28.8	9.0	26.1	6.4	4.09	0.13	18.9	9.9	16.3
36	155.1	0.225	62.9	2.6	6.45	2.479	21.529	20.218	29.3	9.0	26.7	6.4	4.14	0.13	19.1	10.1	16.6
37	157.6	0.229	62.8	2.5	6.45	2.547	21.937	20.600	29.6	9.0	27.1	6.5	4.15	0.12	19.3	10.3	16.8
38	161.5	0.234	62.7	2.4	6.46	2.623	22.548	21.179	30.2	9.0	27.8	6.6	4.20	0.11	19.6	10.6	17.2
39	165.0	0.238	62.6	2.3	6.46	2.691	23.103	21.704	30.7	9.0	28.4	6.7	4.23	0.11	19.9	10.9	17.6
40	168.3	0.242	62.5	2.2	6.47	2.767	23.640	22.208	31.2	9.0	29.0	6.8	4.25	0.10	20.1	11.1	17.9
41	170.8	0.246	62.4	2.1	6.47	2.835	24.029	22.570	31.6	9.0	29.5	6.9	4.26	0.09	20.3	11.3	18.2
42	174.2	0.251	62.3	2.0	6.48	2.910	24.565	23.073	32.1	9.0	30.1	7.0	4.29	0.09	20.6	11.5	18.5
43	176.6	0.256	62.2	1.9	6.48	2.986	24.954	23.432	32.5	9.0	30.6	7.1	4.29	0.08	20.8	11.7	18.8
44	180.9	0.260	62.1	1.8	6.49	3.054	25.639	24.079	33.1	9.0	31.3	7.2	4.34	0.08	21.1	12.0	19.3
45	183.5	0.264	62.0	1.7	6.49	3.129	26.046	24.454	33.5	9.0	31.8	7.3	4.34	0.07	21.3	12.2	19.6
46	187.2	0.269	61.9	1.6	6.50	3.198	26.639	25.010	34.0	9.0	32.4	7.4	4.37	0.06	21.5	12.5	19.9
47	190.7	0.273	61.8	1.5	6.50	3.273	27.194	25.527	34.6	9.0	33.1	7.5	4.39	0.06	21.8	12.8	20.3
48	193.9	0.278	61.6	1.4	6.51	3.349	27.712	26.007	35.0	9.0	33.7	7.7	4.40	0.05	22.0	13.0	20.7
49	197.3	0.282	61.6	1.3	6.51	3.417	28.249	26.507	35.5	9.0	34.2	7.7	4.42	0.05	22.3	13.3	21.0
50	200.9	0.286	61.4	1.2	6.52	3.492	28.823	27.039	36.1	9.0	34.9	7.9	4.44	0.04	22.6	13.5	21.4
51	203.7	0.291	61.3	1.1	6.52	3.568	29.268	27.446	36.5	9.0	35.4	8.0	4.44	0.04	22.8	13.7	21.7
52	206.9	0.295	61.2	0.9	6.53	3.636	29.767	27.908	36.9	9.0	36.0	8.1	4.45	0.03	23.0	14.0	22.0
53	210.0	0.300	61.1	0.8	6.53	3.712	30.267	28.366	37.4	9.0	36.6	8.2	4.45	0.03	23.2	14.2	22.4
54	212.8	0.304	61.0	0.7	6.54	3.787	30.711	28.771	37.8	9.0	37.1	8.3	4.45	0.02	23.4	14.4	22.7
55	216.9	0.309	60.9	0.6	6.54	3.863	31.359	29.371	38.4	9.0	37.8	8.4	4.49	0.02	23.7	14.7	23.1
56	219.3	0.313	60.8	0.5	6.55	3.931	31.748	29.723	38.8	9.0	38.3	8.5	4.48	0.02	23.9	14.9	23.4
57	222.6	0.318	60.6	0.4	6.55	4.006	32.266	30.196	39.2	9.0	38.8	8.7	4.49	0.01	24.1	15.1	23.8
58	225.3	0.322	60.5	0.3	6.56	4.082	32.692	30.580	39.6	9.0	39.4	8.8	4.49	0.01	24.3	15.3	24.1
59	228.5	0.327	60.4	0.1	6.56	4.158	33.211	31.052	40.1	9.0	39.9	8.9	4.49	0.00	24.6	15.5	24.4

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	231.5	0.331	60.3	0.0	6.57	4.226	33.692	31.491	40.5	9.0	40.5	9.0	4.50	0.00	24.8	15.7	24.8
61	234.5	0.336	60.1	-0.1	6.57	4.301	34.155	31.908	40.9	9.0	41.1	9.2	4.49	0.00	25.0	16.0	25.1
62	238.0	0.340	60.0	-0.2	6.58	4.377	34.710	32.413	41.4	9.0	41.7	9.3	4.50	-0.01	25.2	16.2	25.5
63	240.5	0.344	59.9	-0.4	6.58	4.445	35.117	32.779	41.8	9.0	42.2	9.4	4.49	-0.01	25.4	16.4	25.8
64	243.4	0.349	59.8	-0.5	6.59	4.513	35.580	33.197	42.2	9.0	42.7	9.5	4.49	-0.01	25.6	16.6	26.1
65	246.4	0.353	59.7	-0.6	6.59	4.581	36.061	33.632	42.7	9.0	43.3	9.6	4.49	-0.02	25.9	16.8	26.4
66	249.6	0.357	59.6	-0.7	6.60	4.656	36.561	34.081	43.1	9.0	43.8	9.7	4.50	-0.02	26.1	17.0	26.8
67	254.5	0.361	59.4	-0.9	6.60	4.724	37.339	34.797	43.8	9.0	44.7	9.9	4.52	-0.02	26.4	17.4	27.3
68	256.0	0.366	59.3	-1.0	6.61	4.800	37.579	34.998	44.0	9.0	45.0	10.0	4.50	-0.03	26.5	17.5	27.5
69	259.0	0.370	59.2	-1.1	6.61	4.868	38.061	35.430	44.5	9.0	45.6	10.1	4.50	-0.03	26.8	17.7	27.8
70	261.1	0.375	59.1	-1.2	6.62	4.944	38.394	35.718	44.8	9.0	46.0	10.2	4.49	-0.03	26.9	17.9	28.1
71	264.0	0.379	58.9	-1.3	6.62	5.012	38.857	36.132	45.2	9.0	46.5	10.4	4.49	-0.04	27.1	18.1	28.4
72	266.8	0.383	58.8	-1.4	6.63	5.080	39.301	36.527	45.6	9.0	47.0	10.5	4.49	-0.04	27.3	18.3	28.7
73	270.9	0.388	58.7	-1.6	6.63	5.155	39.949	37.112	46.1	9.0	47.7	10.6	4.49	-0.04	27.6	18.6	29.2
74	273.5	0.392	58.6	-1.7	6.64	5.223	40.356	37.471	46.5	9.0	48.2	10.7	4.49	-0.05	27.8	18.7	29.5
75	275.7	0.396	58.4	-1.8	6.64	5.291	40.708	37.776	46.8	9.0	48.6	10.9	4.48	-0.05	27.9	18.9	29.7
76	278.5	0.400	58.3	-1.9	6.65	5.367	41.152	38.166	47.2	9.0	49.1	11.0	4.48	-0.05	28.1	19.1	30.1
77	281.6	0.405	58.2	-2.1	6.65	5.435	41.652	38.611	47.6	9.0	49.7	11.1	4.47	-0.05	28.3	19.3	30.4
78	284.5	0.409	58.1	-2.2	6.66	5.511	42.115	39.017	48.1	9.0	50.3	11.2	4.47	-0.06	28.5	19.5	30.8
79	287.5	0.414	57.9	-2.3	6.66	5.586	42.596	39.439	48.5	9.0	50.8	11.4	4.47	-0.06	28.8	19.7	31.1
80	290.3	0.418	57.8	-2.5	6.67	5.654	43.040	39.829	48.9	9.0	51.3	11.5	4.46	-0.06	28.9	19.9	31.4
81	292.7	0.423	57.7	-2.6	6.67	5.730	43.411	40.146	49.2	9.0	51.8	11.6	4.45	-0.06	29.1	20.1	31.7
82	294.8	0.427	57.5	-2.7	6.68	5.805	43.744	40.427	49.5	9.0	52.2	11.8	4.43	-0.07	29.2	20.2	32.0
83	297.7	0.432	57.4	-2.9	6.68	5.881	44.207	40.829	49.9	9.0	52.7	11.9	4.43	-0.07	29.4	20.4	32.3
84	300.2	0.436	57.3	-3.0	6.69	5.957	44.614	41.179	50.2	9.0	53.2	12.0	4.43	-0.07	29.6	20.6	32.6
85	302.9	0.440	57.1	-3.1	6.69	6.025	45.040	41.549	50.6	9.0	53.7	12.2	4.42	-0.08	29.8	20.8	32.9
86	306.1	0.445	57.0	-3.2	6.70	6.100	45.540	41.984	51.0	9.0	54.3	12.3	4.42	-0.08	30.0	21.0	33.3
87	308.3	0.450	56.9	-3.4	6.70	6.176	45.891	42.280	51.3	9.0	54.7	12.4	4.40	-0.08	30.2	21.1	33.6
88	310.7	0.454	56.8	-3.5	6.71	6.251	46.280	42.609	51.6	9.0	55.1	12.5	4.40	-0.08	30.3	21.3	33.8
89	312.8	0.459	56.6	-3.6	6.71	6.327	46.613	42.887	51.9	9.0	55.5	12.7	4.39	-0.08	30.5	21.4	34.1
90	315.3	0.463	56.5	-3.8	6.72	6.395	47.002	43.219	52.3	9.0	56.0	12.8	4.38	-0.09	30.6	21.6	34.4
91	318.3	0.468	56.4	-3.9	6.72	6.471	47.483	43.633	52.7	9.0	56.6	12.9	4.38	-0.09	30.9	21.8	34.7
92	319.6	0.472	56.2	-4.0	6.73	6.546	47.687	43.788	52.8	9.0	56.9	13.1	4.35	-0.09	30.9	21.9	35.0
93	322.0	0.477	56.1	-4.1	6.73	6.622	48.076	44.115	53.1	9.0	57.3	13.2	4.35	-0.09	31.1	22.1	35.2
94	324.1	0.481	56.0	-4.3	6.74	6.690	48.409	44.393	53.4	9.0	57.7	13.3	4.33	-0.10	31.2	22.2	35.5
95	326.1	0.486	55.9	-4.4	6.74	6.765	48.724	44.650	53.7	9.0	58.1	13.4	4.32	-0.10	31.4	22.3	35.8
96	328.3	0.490	55.7	-4.6	6.75	6.841	49.075	44.941	54.0	9.0	58.5	13.6	4.31	-0.10	31.5	22.5	36.1
97	330.5	0.494	55.6	-4.7	6.76	6.909	49.427	45.235	54.3	9.0	58.9	13.7	4.30	-0.10	31.7	22.6	36.3
98	332.0	0.499	55.4	-4.8	6.76	6.985	49.668	45.421	54.5	9.0	59.3	13.9	4.28	-0.11	31.7	22.7	36.6
99	334.2	0.503	55.3	-4.9	6.77	7.060	50.019	45.711	54.7	9.0	59.7	14.0	4.27	-0.11	31.9	22.9	36.8
100	336.2	0.508	55.2	-5.1	6.77	7.128	50.334	45.969	55.0	9.0	60.1	14.1	4.26	-0.11	32.0	23.0	37.1

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	338.1	0.512	55.1	-5.2	6.78	7.204	50.630	46.206	55.2	9.0	60.4	14.2	4.24	-0.11	32.1	23.1	37.3
102	340.2	0.517	54.9	-5.3	6.78	7.279	50.964	46.476	55.5	9.0	60.8	14.4	4.24	-0.11	32.3	23.2	37.6
103	341.9	0.521	54.8	-5.4	6.79	7.347	51.241	46.699	55.7	9.0	61.2	14.5	4.23	-0.12	32.4	23.3	37.8
104	343.9	0.526	54.7	-5.6	6.79	7.423	51.556	46.951	56.0	9.0	61.5	14.6	4.22	-0.12	32.5	23.5	38.1
105	345.6	0.530	54.6	-5.7	6.80	7.499	51.834	47.169	56.2	9.0	61.9	14.7	4.20	-0.12	32.6	23.6	38.3
106	346.8	0.534	54.4	-5.8	6.80	7.567	52.019	47.305	56.3	9.0	62.2	14.9	4.18	-0.12	32.7	23.7	38.5
107	346.7	0.539	54.3	-5.9	6.81	7.642	52.000	47.249	56.3	9.0	62.2	15.0	4.15	-0.13	32.7	23.6	38.6
108	347.6	0.543	54.2	-6.1	6.81	7.710	52.148	47.350	56.4	9.0	62.4	15.1	4.14	-0.13	32.7	23.7	38.8
109	348.5	0.548	54.1	-6.2	6.82	7.786	52.296	47.447	56.5	9.0	62.7	15.2	4.12	-0.13	32.8	23.7	38.9
110	349.7	0.552	54.0	-6.3	6.83	7.862	52.482	47.578	56.6	9.0	62.9	15.3	4.11	-0.13	32.8	23.8	39.1
111	349.8	0.556	53.9	-6.4	6.83	7.930	52.500	47.560	56.6	9.0	63.0	15.4	4.08	-0.13	32.8	23.8	39.2
112	350.8	0.561	53.8	-6.5	6.84	8.005	52.648	47.656	56.7	9.0	63.2	15.5	4.07	-0.14	32.9	23.8	39.4
113	351.0	0.566	53.7	-6.6	6.84	8.081	52.685	47.650	56.7	9.0	63.3	15.6	4.05	-0.14	32.9	23.8	39.5
114	350.8	0.570	53.6	-6.7	6.85	8.156	52.648	47.577	56.6	9.0	63.3	15.7	4.03	-0.14	32.8	23.8	39.5
115	350.5	0.574	53.5	-6.8	6.85	8.224	52.611	47.507	56.5	9.0	63.3	15.8	4.00	-0.14	32.8	23.8	39.6
116	351.7	0.578	53.4	-6.9	6.86	8.292	52.796	47.641	56.7	9.0	63.5	15.9	4.00	-0.14	32.9	23.8	39.7
117	351.8	0.583	53.3	-6.9	6.86	8.368	52.815	47.618	56.7	9.0	63.6	16.0	3.98	-0.15	32.8	23.8	39.8
118	351.0	0.587	53.2	-7.0	6.87	8.436	52.685	47.463	56.5	9.0	63.5	16.1	3.95	-0.15	32.8	23.7	39.8
119	350.9	0.592	53.1	-7.1	6.87	8.512	52.667	47.406	56.4	9.0	63.6	16.2	3.93	-0.15	32.7	23.7	39.9
120	350.3	0.596	53.1	-7.2	6.88	8.580	52.574	47.286	56.3	9.0	63.5	16.2	3.91	-0.15	32.7	23.6	39.9
121	350.5	0.600	53.0	-7.3	6.88	8.655	52.611	47.280	56.3	9.0	63.6	16.3	3.89	-0.15	32.7	23.6	40.0
122	351.1	0.605	52.9	-7.4	6.89	8.723	52.704	47.329	56.4	9.0	63.7	16.4	3.88	-0.16	32.7	23.7	40.1
123	350.6	0.609	52.8	-7.4	6.90	8.799	52.630	47.221	56.3	9.0	63.7	16.5	3.87	-0.16	32.6	23.6	40.1
124	349.8	0.613	52.7	-7.5	6.90	8.867	52.500	47.067	56.1	9.0	63.6	16.6	3.84	-0.16	32.6	23.5	40.1
125	349.5	0.618	52.7	-7.6	6.91	8.942	52.445	46.977	56.0	9.0	63.6	16.6	3.83	-0.16	32.5	23.5	40.1
126	348.9	0.622	52.6	-7.7	6.91	9.011	52.352	46.857	55.9	9.0	63.6	16.7	3.80	-0.16	32.5	23.4	40.1
127	348.0	0.627	52.5	-7.7	6.92	9.086	52.204	46.683	55.7	9.0	63.5	16.8	3.78	-0.17	32.4	23.3	40.1
128	348.0	0.631	52.4	-7.8	6.92	9.154	52.204	46.648	55.7	9.0	63.5	16.9	3.77	-0.17	32.4	23.3	40.2
129	347.3	0.635	52.4	-7.9	6.93	9.230	52.093	46.507	55.5	9.0	63.4	16.9	3.75	-0.17	32.3	23.3	40.2
130	346.2	0.640	52.3	-7.9	6.93	9.305	51.926	46.317	55.4	9.0	63.3	17.0	3.73	-0.17	32.2	23.2	40.1
131	345.1	0.644	52.2	-8.0	6.94	9.373	51.741	46.114	55.1	9.0	63.2	17.1	3.70	-0.17	32.1	23.1	40.1
132	342.7	0.649	52.1	-8.1	6.94	9.449	51.371	45.739	54.8	9.0	62.9	17.2	3.67	-0.18	31.9	22.9	40.0
133	341.6	0.653	52.1	-8.2	6.95	9.525	51.186	45.533	54.6	9.0	62.7	17.2	3.64	-0.18	31.8	22.8	40.0
134	339.0	0.658	52.0	-8.3	6.96	9.600	50.778	45.126	54.2	9.0	62.4	17.3	3.61	-0.18	31.6	22.6	39.9
135	337.7	0.663	51.9	-8.3	6.96	9.676	50.575	44.904	53.9	9.0	62.3	17.4	3.59	-0.19	31.5	22.5	39.8
136	335.2	0.667	51.9	-8.4	6.97	9.751	50.168	44.498	53.5	9.0	61.9	17.4	3.55	-0.19	31.3	22.2	39.7
137	333.2	0.672	51.8	-8.4	6.97	9.827	49.853	44.176	53.2	9.0	61.7	17.5	3.53	-0.19	31.1	22.1	39.6
138	331.0	0.676	51.8	-8.5	6.98	9.902	49.501	43.822	52.9	9.0	61.4	17.5	3.50	-0.19	30.9	21.9	39.5
139	329.1	0.681	51.7	-8.6	6.99	9.978	49.205	43.518	52.6	9.0	61.1	17.6	3.47	-0.20	30.8	21.8	39.4
140	326.7	0.686	51.7	-8.6	6.99	10.054	48.816	43.131	52.2	9.0	60.8	17.6	3.45	-0.20	30.6	21.6	39.2
141	325.0	0.690	51.6	-8.6	7.00	10.129	48.557	42.861	51.9	9.0	60.5	17.7	3.43	-0.20	30.5	21.4	39.1

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	323.3	0.695	51.6	-8.7	7.00	10.205	48.279	42.575	51.6	9.0	60.3	17.7	3.41	-0.20	30.3	21.3	39.0
143	321.1	0.699	51.6	-8.7	7.01	10.280	47.928	42.223	51.3	9.0	59.9	17.7	3.39	-0.20	30.1	21.1	38.8
144	319.8	0.703	51.6	-8.7	7.01	10.348	47.724	42.008	51.0	9.0	59.8	17.7	3.37	-0.21	30.0	21.0	38.7
145	318.0	0.708	51.6	-8.7	7.02	10.424	47.446	41.723	50.8	9.0	59.5	17.7	3.35	-0.21	29.9	20.9	38.6
146	316.6	0.713	51.5	-8.7	7.03	10.500	47.224	41.488	50.5	9.0	59.3	17.8	3.33	-0.21	29.8	20.7	38.5
147	316.6	0.717	51.5	-8.7	7.03	10.575	47.224	41.453	50.5	9.0	59.2	17.8	3.33	-0.21	29.8	20.7	38.5
148	315.3	0.722	51.5	-8.7	7.04	10.651	47.002	41.218	50.3	9.0	59.0	17.8	3.32	-0.21	29.6	20.6	38.4
149	314.9	0.726	51.5	-8.7	7.04	10.726	46.946	41.133	50.2	9.0	58.9	17.8	3.31	-0.21	29.6	20.6	38.3
150	314.7	0.731	51.5	-8.8	7.05	10.802	46.909	41.065	50.1	9.0	58.9	17.8	3.31	-0.21	29.6	20.5	38.3
151	312.0	0.735	51.5	-8.8	7.06	10.870	46.484	40.653	49.7	9.0	58.5	17.8	3.28	-0.22	29.4	20.3	38.1
152	312.5	0.740	51.5	-8.8	7.06	10.946	46.558	40.684	49.7	9.0	58.5	17.8	3.29	-0.22	29.4	20.3	38.1
153	311.8	0.744	51.5	-8.8	7.07	11.021	46.447	40.550	49.6	9.0	58.4	17.8	3.28	-0.22	29.3	20.3	38.1
154	311.1	0.749	51.5	-8.8	7.07	11.089	46.336	40.420	49.5	9.0	58.2	17.8	3.27	-0.22	29.2	20.2	38.0
155	310.1	0.753	51.5	-8.8	7.08	11.165	46.187	40.253	49.3	9.0	58.1	17.8	3.26	-0.22	29.2	20.1	38.0
156	309.8	0.757	51.5	-8.8	7.08	11.233	46.132	40.173	49.2	9.0	58.0	17.8	3.25	-0.22	29.1	20.1	37.9
157	310.2	0.762	51.5	-8.8	7.09	11.308	46.206	40.203	49.2	9.0	58.0	17.8	3.25	-0.22	29.1	20.1	37.9
158	309.4	0.766	51.5	-8.8	7.10	11.384	46.076	40.054	49.1	9.0	57.9	17.8	3.25	-0.22	29.1	20.0	37.9
159	308.3	0.771	51.5	-8.8	7.10	11.460	45.891	39.855	48.9	9.0	57.7	17.8	3.23	-0.22	29.0	19.9	37.8
160	308.6	0.775	51.5	-8.8	7.11	11.528	45.947	39.873	48.9	9.0	57.7	17.8	3.24	-0.22	29.0	19.9	37.8
161	307.9	0.780	51.5	-8.8	7.11	11.611	45.836	39.736	48.8	9.0	57.6	17.8	3.23	-0.22	28.9	19.9	37.7
162	307.8	0.784	51.5	-8.8	7.12	11.679	45.817	39.689	48.7	9.0	57.5	17.8	3.23	-0.22	28.9	19.8	37.7
163	307.3	0.789	51.4	-8.8	7.13	11.754	45.743	39.589	48.6	9.0	57.5	17.9	3.22	-0.22	28.8	19.8	37.7
164	306.6	0.793	51.4	-8.8	7.13	11.823	45.632	39.460	48.5	9.0	57.3	17.9	3.21	-0.22	28.8	19.7	37.6
165	306.6	0.798	51.4	-8.8	7.14	11.906	45.632	39.422	48.5	9.0	57.3	17.9	3.21	-0.22	28.7	19.7	37.6
166	306.3	0.802	51.5	-8.8	7.14	11.974	45.577	39.342	48.4	9.0	57.2	17.8	3.21	-0.22	28.7	19.7	37.5
167	306.8	0.807	51.5	-8.8	7.15	12.049	45.651	39.373	48.4	9.0	57.2	17.8	3.21	-0.22	28.7	19.7	37.5
168	306.5	0.811	51.5	-8.8	7.16	12.125	45.614	39.306	48.3	9.0	57.1	17.8	3.20	-0.22	28.7	19.7	37.5
169	306.6	0.816	51.5	-8.8	7.16	12.200	45.632	39.287	48.3	9.0	57.1	17.8	3.20	-0.22	28.7	19.6	37.5
170	306.3	0.821	51.5	-8.8	7.17	12.276	45.577	39.204	48.2	9.0	57.0	17.8	3.20	-0.22	28.6	19.6	37.4
171	306.5	0.825	51.5	-8.8	7.17	12.344	45.614	39.206	48.2	9.0	57.0	17.8	3.20	-0.22	28.6	19.6	37.4
172	307.1	0.829	51.5	-8.8	7.18	12.420	45.706	39.252	48.3	9.0	57.1	17.8	3.20	-0.22	28.7	19.6	37.5
173	306.6	0.834	51.5	-8.8	7.19	12.495	45.632	39.153	48.2	9.0	57.0	17.8	3.20	-0.22	28.6	19.6	37.4
174	306.9	0.839	51.5	-8.8	7.19	12.571	45.669	39.151	48.2	9.0	57.0	17.8	3.20	-0.22	28.6	19.6	37.4
175	299.5	0.843	51.5	-8.8	7.20	12.639	44.503	38.101	47.1	9.0	55.9	17.8	3.14	-0.23	28.1	19.1	36.9
176	303.4	0.847	51.5	-8.8	7.20	12.707	45.114	38.604	47.6	9.0	56.4	17.8	3.17	-0.23	28.3	19.3	37.1
177	302.9	0.851	51.5	-8.8	7.21	12.783	45.040	38.505	47.5	9.0	56.3	17.8	3.16	-0.23	28.3	19.3	37.1
178	303.6	0.856	51.5	-8.8	7.22	12.858	45.151	38.568	47.6	9.0	56.4	17.8	3.17	-0.23	28.3	19.3	37.1
179	303.0	0.860	51.5	-8.8	7.22	12.926	45.058	38.456	47.5	9.0	56.3	17.8	3.16	-0.23	28.3	19.2	37.0
180	303.8	0.865	51.5	-8.8	7.23	13.002	45.188	38.535	47.6	9.0	56.3	17.8	3.16	-0.23	28.3	19.3	37.1
181	304.1	0.869	51.5	-8.8	7.23	13.070	45.225	38.537	47.6	9.0	56.3	17.8	3.16	-0.23	28.3	19.3	37.1
182	304.9	0.874	51.5	-8.8	7.24	13.145	45.354	38.615	47.7	9.0	56.4	17.8	3.17	-0.23	28.3	19.3	37.1

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	304.4	0.878	51.5	-8.8	7.25	13.221	45.280	38.516	47.6	9.0	56.3	17.8	3.16	-0.23	28.3	19.3	37.1
184	303.7	0.882	51.5	-8.8	7.25	13.289	45.169	38.389	47.4	9.0	56.2	17.8	3.16	-0.23	28.2	19.2	37.0
185	303.5	0.887	51.5	-8.8	7.26	13.365	45.132	38.323	47.4	9.0	56.1	17.8	3.15	-0.23	28.2	19.2	37.0
186	303.7	0.891	51.5	-8.8	7.26	13.433	45.169	38.324	47.4	9.0	56.1	17.8	3.15	-0.23	28.2	19.2	37.0
187	303.5	0.896	51.5	-8.8	7.27	13.508	45.132	38.258	47.3	9.0	56.1	17.8	3.15	-0.23	28.2	19.1	36.9
188	303.7	0.900	51.5	-8.8	7.28	13.584	45.169	38.256	47.3	9.0	56.1	17.8	3.15	-0.23	28.2	19.1	36.9
189	303.0	0.904	51.5	-8.8	7.28	13.652	45.058	38.130	47.2	9.0	56.0	17.8	3.14	-0.23	28.1	19.1	36.9
190	300.0	0.909	51.5	-8.8	7.29	13.727	44.577	37.680	46.7	9.0	55.5	17.8	3.12	-0.23	27.9	18.8	36.6
191	299.7	0.914	51.5	-8.8	7.30	13.803	44.521	37.599	46.6	9.0	55.4	17.8	3.11	-0.23	27.8	18.8	36.6
192	300.0	0.918	51.5	-8.8	7.30	13.871	44.577	37.616	46.7	9.0	55.4	17.8	3.11	-0.23	27.8	18.8	36.6
193	299.8	0.922	51.5	-8.8	7.31	13.947	44.540	37.551	46.6	9.0	55.4	17.8	3.11	-0.23	27.8	18.8	36.6
194	300.7	0.927	51.5	-8.8	7.31	14.022	44.688	37.644	46.7	9.0	55.4	17.8	3.11	-0.23	27.9	18.8	36.6
195	300.2	0.931	51.5	-8.8	7.32	14.090	44.614	37.550	46.6	9.0	55.4	17.8	3.11	-0.23	27.8	18.8	36.6
196	300.7	0.936	51.5	-8.8	7.33	14.166	44.688	37.580	46.6	9.0	55.4	17.8	3.11	-0.23	27.8	18.8	36.6
197	301.3	0.940	51.5	-8.8	7.33	14.241	44.781	37.626	46.7	9.0	55.4	17.8	3.11	-0.23	27.8	18.8	36.6
198	301.7	0.944	51.5	-8.8	7.34	14.309	44.855	37.659	46.7	9.0	55.5	17.8	3.11	-0.23	27.9	18.8	36.7
199	301.2	0.949	51.5	-8.8	7.35	14.385	44.762	37.546	46.6	9.0	55.4	17.8	3.11	-0.23	27.8	18.8	36.6
200	302.1	0.954	51.5	-8.8	7.35	14.461	44.910	37.638	46.7	9.0	55.5	17.8	3.11	-0.23	27.9	18.8	36.7
201	302.4	0.958	51.5	-8.8	7.36	14.529	44.966	37.655	46.7	9.0	55.5	17.8	3.11	-0.23	27.9	18.8	36.7
202	302.9	0.962	51.5	-8.8	7.36	14.604	45.040	37.685	46.7	9.0	55.5	17.8	3.11	-0.23	27.9	18.8	36.7
203	298.5	0.966	51.5	-8.8	7.37	14.672	44.336	37.054	46.1	9.0	54.9	17.8	3.08	-0.24	27.6	18.5	36.4
204	299.8	0.971	51.5	-8.8	7.38	14.748	44.540	37.194	46.2	9.0	55.0	17.8	3.09	-0.24	27.6	18.6	36.4
205	299.5	0.975	51.5	-8.8	7.38	14.816	44.503	37.132	46.2	9.0	55.0	17.8	3.08	-0.24	27.6	18.6	36.4
206	300.1	0.980	51.5	-8.8	7.39	14.892	44.595	37.177	46.2	9.0	55.0	17.8	3.08	-0.24	27.6	18.6	36.4
207	300.3	0.984	51.4	-8.8	7.39	14.960	44.632	37.178	46.2	9.0	55.0	17.9	3.08	-0.24	27.6	18.6	36.5
208	300.7	0.989	51.4	-8.8	7.40	15.035	44.688	37.192	46.2	9.0	55.1	17.9	3.08	-0.24	27.6	18.6	36.5
209	300.8	0.993	51.4	-8.8	7.41	15.103	44.707	37.177	46.2	9.0	55.0	17.9	3.08	-0.24	27.6	18.6	36.5
210	301.5	0.997	51.4	-8.8	7.41	15.179	44.818	37.237	46.3	9.0	55.1	17.9	3.08	-0.24	27.7	18.6	36.5
211	302.1	1.001	51.4	-8.8	7.42	15.247	44.910	37.285	46.3	9.0	55.1	17.9	3.09	-0.24	27.7	18.6	36.5
212	302.0	1.006	51.4	-8.9	7.43	15.322	44.892	37.236	46.3	9.0	55.1	17.9	3.08	-0.24	27.7	18.6	36.5
213	302.3	1.011	51.4	-8.9	7.43	15.398	44.947	37.249	46.3	9.0	55.1	17.9	3.08	-0.24	27.7	18.6	36.5
214	302.4	1.015	51.4	-8.9	7.44	15.466	44.966	37.234	46.3	9.0	55.1	17.9	3.08	-0.24	27.7	18.6	36.5
215	295.5	1.019	51.3	-8.9	7.45	15.542	43.855	36.262	45.3	9.0	54.2	18.0	3.02	-0.25	27.2	18.1	36.1
216	299.5	1.023	51.4	-8.9	7.45	15.610	44.503	36.779	45.8	9.0	54.7	17.9	3.06	-0.24	27.4	18.4	36.3
217	300.1	1.028	51.4	-8.9	7.46	15.685	44.595	36.823	45.9	9.0	54.7	17.9	3.06	-0.24	27.4	18.4	36.3
218	301.2	1.033	51.4	-8.9	7.47	15.761	44.762	36.930	46.0	9.0	54.9	17.9	3.06	-0.24	27.5	18.5	36.4
219	302.1	1.037	51.4	-8.9	7.47	15.836	44.910	37.021	46.1	9.0	54.9	17.9	3.07	-0.24	27.5	18.5	36.4
220	303.0	1.042	51.4	-8.9	7.48	15.912	45.058	37.111	46.1	9.0	55.0	17.9	3.07	-0.24	27.6	18.6	36.5
221	302.4	1.046	51.4	-8.9	7.48	15.980	44.966	37.003	46.0	9.0	54.9	17.9	3.06	-0.24	27.5	18.5	36.4
222	302.4	1.051	51.4	-8.9	7.49	16.063	44.966	36.965	46.0	9.0	54.9	17.9	3.06	-0.24	27.5	18.5	36.4
223	302.9	1.056	51.3	-8.9	7.50	16.139	45.040	36.993	46.0	9.0	54.9	18.0	3.06	-0.24	27.5	18.5	36.4

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	304.5	1.060	51.3	-8.9	7.50	16.207	45.299	37.180	46.2	9.0	55.1	18.0	3.07	-0.24	27.6	18.6	36.5
225	304.4	1.064	51.3	-8.9	7.51	16.282	45.280	37.130	46.2	9.0	55.1	18.0	3.07	-0.24	27.6	18.6	36.5
226	304.3	1.069	51.3	-8.9	7.52	16.358	45.262	37.080	46.1	9.0	55.1	18.0	3.06	-0.24	27.6	18.5	36.5
227	300.1	1.073	51.3	-8.9	7.52	16.426	44.595	36.493	45.5	9.0	54.5	18.0	3.03	-0.25	27.3	18.2	36.2
228	300.2	1.078	51.3	-8.9	7.53	16.502	44.614	36.474	45.5	9.0	54.5	18.0	3.03	-0.25	27.3	18.2	36.2
229	300.8	1.082	51.3	-8.9	7.54	16.577	44.707	36.518	45.6	9.0	54.5	18.0	3.03	-0.24	27.3	18.3	36.2
230	302.2	1.086	51.3	-8.9	7.54	16.645	44.929	36.673	45.7	9.0	54.7	18.0	3.04	-0.24	27.4	18.3	36.3
231	302.8	1.091	51.3	-8.9	7.55	16.721	45.021	36.716	45.8	9.0	54.7	18.0	3.04	-0.24	27.4	18.4	36.3
232	303.3	1.096	51.3	-9.0	7.56	16.796	45.095	36.743	45.8	9.0	54.8	18.0	3.04	-0.24	27.4	18.4	36.4
233	303.7	1.100	51.3	-9.0	7.56	16.864	45.169	36.774	45.8	9.0	54.8	18.0	3.04	-0.24	27.4	18.4	36.4
234	305.1	1.104	51.3	-9.0	7.57	16.932	45.391	36.928	46.0	9.0	54.9	18.0	3.05	-0.24	27.5	18.5	36.5
235	304.9	1.109	51.3	-9.0	7.58	17.008	45.354	36.863	45.9	9.0	54.9	18.0	3.05	-0.24	27.5	18.4	36.4
236	305.1	1.113	51.3	-9.0	7.58	17.076	45.391	36.863	45.9	9.0	54.9	18.0	3.04	-0.24	27.5	18.4	36.5
237	305.9	1.117	51.3	-9.0	7.59	17.152	45.521	36.936	46.0	9.0	55.0	18.0	3.05	-0.24	27.5	18.5	36.5
238	302.2	1.122	51.2	-9.0	7.60	17.227	44.929	36.411	45.4	9.0	54.5	18.1	3.02	-0.25	27.2	18.2	36.3
239	303.3	1.126	51.2	-9.0	7.60	17.295	45.095	36.518	45.6	9.0	54.6	18.1	3.02	-0.25	27.3	18.3	36.3
240	302.2	1.131	51.2	-9.0	7.61	17.371	44.929	36.347	45.4	9.0	54.4	18.1	3.01	-0.25	27.2	18.2	36.2
241	301.9	1.135	51.2	-9.0	7.62	17.439	44.873	36.270	45.3	9.0	54.3	18.1	3.01	-0.25	27.2	18.1	36.2
242	301.9	1.139	51.2	-9.1	7.62	17.515	44.873	36.236	45.3	9.0	54.3	18.1	3.00	-0.25	27.2	18.1	36.2
243	302.2	1.143	51.2	-9.1	7.63	17.583	44.929	36.252	45.3	9.0	54.4	18.1	3.00	-0.25	27.2	18.1	36.2
244	302.9	1.148	51.2	-9.1	7.64	17.651	45.040	36.312	45.3	9.0	54.4	18.1	3.01	-0.25	27.2	18.2	36.3
245	305.5	1.152	51.2	-9.1	7.64	17.726	45.447	36.613	45.6	9.0	54.7	18.1	3.02	-0.25	27.3	18.3	36.4
246	307.1	1.157	51.2	-9.1	7.65	17.802	45.706	36.792	45.8	9.0	54.9	18.1	3.03	-0.25	27.4	18.4	36.5
247	307.3	1.161	51.2	-9.1	7.66	17.877	45.743	36.788	45.8	9.0	54.9	18.1	3.03	-0.25	27.4	18.4	36.5
248	307.6	1.166	51.1	-9.1	7.66	17.945	45.780	36.787	45.8	9.0	54.9	18.2	3.03	-0.25	27.4	18.4	36.6
249	307.0	1.170	51.1	-9.1	7.67	18.021	45.688	36.677	45.7	9.0	54.8	18.2	3.02	-0.25	27.4	18.3	36.5
250	303.7	1.175	51.1	-9.2	7.68	18.097	45.169	36.218	45.3	9.0	54.4	18.2	2.99	-0.25	27.1	18.1	36.3
251	304.8	1.179	51.1	-9.2	7.69	18.172	45.336	36.320	45.4	9.0	54.5	18.2	3.00	-0.25	27.2	18.2	36.3
252	305.2	1.183	51.1	-9.2	7.69	18.240	45.410	36.350	45.4	9.0	54.5	18.2	3.00	-0.25	27.2	18.2	36.4
253	306.3	1.188	51.1	-9.2	7.70	18.316	45.577	36.451	45.5	9.0	54.7	18.2	3.00	-0.25	27.3	18.2	36.4
254	306.5	1.193	51.1	-9.2	7.71	18.391	45.614	36.447	45.5	9.0	54.7	18.2	3.00	-0.25	27.3	18.2	36.4
255	307.5	1.197	51.1	-9.2	7.71	18.459	45.762	36.537	45.6	9.0	54.8	18.2	3.01	-0.25	27.3	18.3	36.5
256	307.8	1.201	51.1	-9.2	7.72	18.535	45.817	36.548	45.6	9.0	54.8	18.2	3.00	-0.25	27.3	18.3	36.5
257	309.0	1.206	51.1	-9.2	7.73	18.611	46.002	36.664	45.7	9.0	54.9	18.2	3.01	-0.25	27.4	18.3	36.6
258	309.3	1.210	51.0	-9.2	7.73	18.679	46.058	36.677	45.7	9.0	55.0	18.3	3.01	-0.25	27.4	18.3	36.6
259	310.2	1.215	51.0	-9.2	7.74	18.754	46.206	36.763	45.8	9.0	55.0	18.3	3.01	-0.25	27.4	18.4	36.7
260	306.5	1.219	51.0	-9.3	7.75	18.830	45.614	36.247	45.3	9.0	54.6	18.3	2.98	-0.26	27.2	18.1	36.4
261	307.8	1.223	51.0	-9.3	7.75	18.898	45.817	36.381	45.4	9.0	54.7	18.3	2.99	-0.25	27.2	18.2	36.5
262	308.8	1.228	51.0	-9.3	7.76	18.966	45.984	36.485	45.5	9.0	54.8	18.3	2.99	-0.25	27.3	18.2	36.6
263	309.0	1.232	51.0	-9.3	7.77	19.041	46.002	36.465	45.5	9.0	54.8	18.3	2.99	-0.26	27.3	18.2	36.6
264	310.4	1.237	50.9	-9.3	7.77	19.117	46.225	36.610	45.6	9.0	55.0	18.4	2.99	-0.25	27.3	18.3	36.7

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
265	310.5	1.241	50.9	-9.3	7.78	19.193	46.243	36.590	45.6	9.0	55.0	18.4	2.99	-0.25	27.3	18.3	36.7
266	311.3	1.246	50.9	-9.4	7.79	19.261	46.373	36.663	45.7	9.0	55.1	18.4	2.99	-0.26	27.4	18.3	36.7
267	311.9	1.250	50.9	-9.4	7.80	19.336	46.465	36.703	45.7	9.0	55.1	18.4	3.00	-0.25	27.4	18.4	36.7
268	311.9	1.254	50.9	-9.4	7.80	19.404	46.465	36.671	45.7	9.0	55.1	18.4	2.99	-0.26	27.4	18.3	36.7
269	312.9	1.259	50.9	-9.4	7.81	19.480	46.632	36.770	45.8	9.0	55.2	18.4	3.00	-0.26	27.4	18.4	36.8
270	309.9	1.263	50.8	-9.4	7.82	19.548	46.150	36.352	45.4	9.0	54.8	18.5	2.97	-0.26	27.2	18.2	36.6
271	310.1	1.268	50.8	-9.4	7.82	19.624	46.187	36.346	45.4	9.0	54.8	18.5	2.97	-0.26	27.2	18.2	36.6
272	310.7	1.272	50.8	-9.4	7.83	19.699	46.280	36.386	45.4	9.0	54.9	18.5	2.97	-0.26	27.2	18.2	36.7
273	311.9	1.276	50.8	-9.4	7.84	19.767	46.465	36.503	45.5	9.0	55.0	18.5	2.98	-0.26	27.3	18.3	36.7
274	312.5	1.281	50.8	-9.5	7.85	19.843	46.558	36.542	45.6	9.0	55.1	18.5	2.97	-0.26	27.3	18.3	36.8
275	314.4	1.286	50.8	-9.5	7.85	19.918	46.872	36.759	45.8	9.0	55.3	18.5	2.99	-0.26	27.4	18.4	36.9
276	315.4	1.290	50.8	-9.5	7.86	19.986	47.021	36.845	45.9	9.0	55.4	18.5	2.99	-0.26	27.5	18.4	36.9
277	315.9	1.291	50.8	-9.5	7.86	20.002	47.113	36.912	45.9	9.0	55.5	18.5	2.99	-0.26	27.5	18.5	37.0

Specimen B Shear Data

CU Triaxial Test

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File Location
T-5666.HSD

Project Information

Project No. 39406.1.1
Project Name: U-2412B
Client:
Sample Location: Guilford County (Sta. 404+50)
Sample Description: Yellowish tan colored clayey silt
Remarks: 31° shear plane with slicken side.
Specimen was taken from bottom of tube.

Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.7550001
LL: 0.000
PL: 0.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.856	2.805	
Height (in)	6.126	6.101	
Weight (grams)	1317.00		1346.00
Moisture (%)	20.16		22.81
Dry Density (pcf)	106.38	110.72	
Saturation (%)	90.06	100.00	
Void Ratio	0.612	0.553	

Test Data

Rate of Strain: 0.009
Cell Pressure (psi): 78.200
Effective Confining Stress (psi): 18.0
Corrected Peak Deviator Stress (psi): 37.192 at reading number: 52

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	14.4	0.065	60.2	0.0	6.18	0.000	0.000	0.000	18.0	18.0	18.0	18.0	1.00	0.00	18.0	0.0	18.0
1	20.8	0.069	60.3	0.1	6.19	0.075	1.042	1.012	19.0	18.0	18.9	17.9	1.06	0.12	18.5	0.5	18.4
2	25.3	0.073	60.8	0.6	6.19	0.141	1.768	1.710	19.7	18.0	19.1	17.4	1.10	0.35	18.9	0.9	18.3
3	30.0	0.078	61.2	1.0	6.19	0.216	2.531	2.440	20.5	18.0	19.4	17.0	1.14	0.43	19.2	1.2	18.2
4	32.4	0.082	61.5	1.4	6.20	0.282	2.921	2.802	20.8	18.0	19.5	16.7	1.17	0.49	19.4	1.4	18.1
5	41.1	0.087	62.1	2.0	6.20	0.357	4.317	4.161	22.2	18.0	20.2	16.1	1.26	0.47	20.1	2.1	18.1
6	50.5	0.091	62.9	2.7	6.21	0.423	5.843	5.652	23.7	18.0	21.0	15.3	1.37	0.47	20.8	2.8	18.2
7	59.2	0.095	63.6	3.4	6.21	0.499	7.257	7.025	25.0	18.0	21.6	14.6	1.48	0.49	21.5	3.5	18.1
8	66.9	0.099	64.3	4.1	6.22	0.564	8.504	8.234	26.3	18.0	22.1	13.9	1.59	0.50	22.1	4.1	18.0
9	67.9	0.104	64.6	4.4	6.22	0.640	8.653	8.346	26.4	18.0	21.9	13.6	1.61	0.53	22.2	4.2	17.7
10	78.1	0.108	65.1	5.0	6.23	0.715	10.309	9.955	28.0	18.0	23.0	13.1	1.76	0.50	23.0	5.0	18.0
11	84.4	0.113	65.6	5.4	6.23	0.790	11.332	10.933	29.0	18.0	23.5	12.6	1.87	0.49	23.5	5.5	18.1
12	89.8	0.118	65.9	5.8	6.24	0.865	12.207	11.762	29.8	18.0	24.0	12.3	1.96	0.49	23.9	5.9	18.1
13	94.7	0.122	66.2	6.1	6.24	0.941	12.988	12.497	30.5	18.0	24.5	12.0	2.04	0.48	24.3	6.2	18.2
14	98.9	0.126	66.5	6.3	6.24	1.007	13.677	13.144	31.2	18.0	24.9	11.7	2.12	0.48	24.6	6.6	18.3
15	102.7	0.131	66.7	6.5	6.25	1.082	14.291	13.712	31.7	18.0	25.2	11.5	2.19	0.47	24.9	6.9	18.4
16	107.4	0.135	66.8	6.7	6.25	1.148	15.054	14.431	32.5	18.0	25.8	11.4	2.27	0.46	25.2	7.2	18.6
17	111.9	0.139	67.0	6.9	6.26	1.223	15.779	15.107	33.1	18.0	26.3	11.2	2.35	0.45	25.6	7.6	18.7
18	116.6	0.144	67.2	7.0	6.26	1.298	16.542	15.818	33.8	18.0	26.8	11.0	2.44	0.44	25.9	7.9	18.9

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	119.9	0.148	67.3	7.1	6.27	1.364	17.063	16.296	34.3	18.0	27.2	10.9	2.49	0.44	26.2	8.1	19.1
20	124.7	0.152	67.4	7.2	6.27	1.430	17.845	17.029	35.0	18.0	27.8	10.8	2.58	0.42	26.5	8.5	19.3
21	127.9	0.155	67.5	7.3	6.27	1.477	18.366	17.515	35.5	18.0	28.2	10.7	2.63	0.42	26.8	8.8	19.5
22	132.6	0.160	67.5	7.3	6.28	1.552	19.129	18.223	36.2	18.0	28.9	10.7	2.71	0.40	27.1	9.1	19.8
23	137.8	0.164	67.6	7.4	6.28	1.618	19.966	19.008	37.0	18.0	29.6	10.6	2.79	0.39	27.5	9.5	20.1
24	143.4	0.168	67.6	7.5	6.29	1.693	20.878	19.860	37.9	18.0	30.4	10.6	2.88	0.38	27.9	9.9	20.5
25	148.7	0.173	67.7	7.5	6.29	1.768	21.734	20.656	38.7	18.0	31.2	10.5	2.96	0.36	28.3	10.3	20.9
26	154.2	0.177	67.7	7.5	6.30	1.844	22.627	21.487	39.5	18.0	32.0	10.5	3.05	0.35	28.8	10.7	21.2
27	159.9	0.181	67.7	7.5	6.30	1.910	23.539	22.340	40.4	18.0	32.8	10.5	3.13	0.34	29.2	11.2	21.7
28	165.5	0.187	67.8	7.6	6.31	1.994	24.450	23.181	41.2	18.0	33.6	10.4	3.22	0.33	29.6	11.6	22.0
29	170.8	0.191	67.8	7.6	6.31	2.069	25.306	23.998	42.0	18.0	34.4	10.4	3.30	0.32	30.0	12.0	22.4
30	175.8	0.196	67.7	7.5	6.32	2.154	26.106	24.760	42.8	18.0	35.2	10.5	3.36	0.30	30.4	12.4	22.9
31	181.4	0.201	67.7	7.5	6.32	2.229	27.018	25.632	43.7	18.0	36.2	10.5	3.43	0.29	30.8	12.8	23.3
32	187.1	0.206	67.6	7.5	6.33	2.314	27.949	26.518	44.5	18.0	37.1	10.6	3.51	0.28	31.3	13.3	23.8
33	193.0	0.210	67.6	7.4	6.33	2.380	28.898	27.426	45.4	18.0	38.0	10.6	3.59	0.27	31.7	13.7	24.3
34	198.9	0.215	67.5	7.3	6.34	2.455	29.847	28.330	46.3	18.0	39.0	10.7	3.65	0.26	32.2	14.2	24.9
35	205.4	0.219	67.4	7.3	6.34	2.521	30.907	29.344	47.4	18.0	40.1	10.8	3.73	0.25	32.7	14.7	25.4
36	212.1	0.223	67.4	7.2	6.35	2.587	31.986	30.375	48.4	18.0	41.2	10.8	3.80	0.24	33.2	15.2	26.0
37	216.6	0.227	67.3	7.1	6.35	2.653	32.712	31.060	49.1	18.0	42.0	10.9	3.84	0.23	33.5	15.5	26.5
38	217.6	0.228	67.2	7.1	6.35	2.681	32.880	31.214	49.2	18.0	42.2	11.0	3.85	0.23	33.6	15.6	26.6
39	219.6	0.230	67.2	7.0	6.35	2.700	33.196	31.515	49.5	18.0	42.5	11.0	3.86	0.22	33.8	15.8	26.8
40	221.4	0.230	67.2	7.0	6.35	2.709	33.494	31.802	49.8	18.0	42.9	11.0	3.88	0.22	33.9	15.9	26.9
41	223.3	0.231	67.1	6.9	6.35	2.719	33.791	32.089	50.1	18.0	43.2	11.1	3.89	0.22	34.1	16.0	27.1
42	227.3	0.232	67.1	6.9	6.36	2.747	34.443	32.712	50.7	18.0	43.8	11.1	3.94	0.21	34.4	16.4	27.5
43	230.0	0.234	67.0	6.8	6.36	2.766	34.889	33.140	51.2	18.0	44.3	11.2	3.96	0.21	34.6	16.6	27.8
44	233.0	0.235	67.0	6.8	6.36	2.794	35.373	33.601	51.6	18.0	44.8	11.2	3.99	0.20	34.8	16.8	28.0
45	237.5	0.238	66.9	6.7	6.36	2.831	36.099	34.292	52.3	18.0	45.6	11.3	4.03	0.20	35.2	17.1	28.5
46	242.6	0.242	66.7	6.5	6.37	2.897	36.917	35.064	53.1	18.0	46.6	11.5	4.04	0.19	35.6	17.5	29.1
47	246.6	0.246	66.5	6.3	6.37	2.963	37.569	35.671	53.7	18.0	47.4	11.7	4.05	0.18	35.9	17.8	29.5
48	250.3	0.250	66.4	6.2	6.38	3.038	38.164	36.220	54.2	18.0	48.0	11.8	4.07	0.17	36.1	18.1	29.9
49	252.9	0.254	66.2	6.1	6.38	3.104	38.592	36.610	54.6	18.0	48.6	12.0	4.06	0.17	36.3	18.3	30.3
50	254.9	0.259	66.1	5.9	6.38	3.179	38.908	36.887	54.9	18.0	49.0	12.1	4.04	0.16	36.5	18.4	30.6
51	256.5	0.263	65.9	5.8	6.39	3.255	39.169	37.110	55.1	18.0	49.4	12.3	4.03	0.16	36.6	18.6	30.8
52	257.2	0.267	65.8	5.6	6.39	3.321	39.281	37.192	55.2	18.0	49.6	12.4	4.00	0.15	36.6	18.6	31.0
53	257.0	0.272	65.7	5.5	6.40	3.396	39.243	37.127	55.1	18.0	49.7	12.5	3.96	0.15	36.6	18.6	31.1
54	257.1	0.277	65.5	5.4	6.40	3.471	39.262	37.115	55.1	18.0	49.8	12.7	3.93	0.14	36.6	18.6	31.2
55	256.5	0.281	65.4	5.2	6.41	3.546	39.169	36.996	55.0	18.0	49.8	12.8	3.90	0.14	36.5	18.5	31.3
56	256.0	0.286	65.3	5.1	6.41	3.622	39.094	36.894	54.9	18.0	49.8	12.9	3.86	0.14	36.5	18.4	31.3
57	255.3	0.291	65.2	5.0	6.42	3.706	38.983	36.754	54.8	18.0	49.8	13.0	3.82	0.14	36.4	18.4	31.4
58	254.5	0.296	65.1	4.9	6.42	3.782	38.853	36.599	54.6	18.0	49.7	13.1	3.80	0.13	36.3	18.3	31.4
59	254.1	0.301	65.0	4.8	6.43	3.866	38.778	36.495	54.5	18.0	49.7	13.2	3.77	0.13	36.3	18.2	31.4

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	252.6	0.305	64.9	4.8	6.44	3.941	38.536	36.233	54.3	18.0	49.5	13.3	3.73	0.13	36.1	18.1	31.4
61	251.8	0.310	64.8	4.6	6.44	4.026	38.406	36.076	54.1	18.0	49.4	13.4	3.70	0.13	36.1	18.0	31.4
62	251.8	0.315	64.7	4.6	6.45	4.101	38.406	36.047	54.1	18.0	49.5	13.5	3.68	0.13	36.0	18.0	31.5
63	252.5	0.320	64.7	4.5	6.45	4.177	38.518	36.125	54.1	18.0	49.7	13.5	3.67	0.12	36.1	18.1	31.6
64	253.0	0.324	64.6	4.4	6.46	4.252	38.611	36.185	54.2	18.0	49.8	13.6	3.66	0.12	36.1	18.1	31.7
65	252.4	0.329	64.5	4.3	6.46	4.327	38.499	36.049	54.1	18.0	49.7	13.7	3.63	0.12	36.0	18.0	31.7
66	251.7	0.333	64.5	4.3	6.47	4.402	38.387	35.913	53.9	18.0	49.6	13.7	3.62	0.12	36.0	18.0	31.7
67	251.8	0.338	64.4	4.2	6.47	4.478	38.406	35.902	53.9	18.0	49.7	13.8	3.61	0.12	36.0	18.0	31.7
68	250.9	0.343	64.3	4.2	6.48	4.553	38.257	35.731	53.8	18.0	49.6	13.9	3.58	0.12	35.9	17.9	31.7
69	249.7	0.347	64.3	4.1	6.48	4.628	38.071	35.525	53.5	18.0	49.5	13.9	3.55	0.12	35.8	17.8	31.7
70	249.9	0.352	64.2	4.0	6.49	4.703	38.108	35.532	53.6	18.0	49.5	14.0	3.54	0.11	35.8	17.8	31.8
71	249.0	0.356	64.1	4.0	6.49	4.779	37.959	35.361	53.4	18.0	49.4	14.1	3.52	0.11	35.7	17.7	31.7
72	248.4	0.361	64.1	3.9	6.50	4.854	37.866	35.244	53.3	18.0	49.3	14.1	3.50	0.11	35.6	17.6	31.7
73	247.9	0.366	64.0	3.8	6.50	4.929	37.773	35.127	53.1	18.0	49.3	14.2	3.48	0.11	35.6	17.6	31.7
74	248.0	0.370	64.0	3.8	6.51	5.004	37.792	35.117	53.1	18.0	49.3	14.2	3.47	0.11	35.6	17.6	31.8
75	247.6	0.375	63.9	3.8	6.51	5.080	37.736	35.035	53.1	18.0	49.3	14.3	3.46	0.11	35.5	17.5	31.8
76	247.0	0.379	63.9	3.7	6.52	5.155	37.624	34.901	52.9	18.0	49.2	14.3	3.43	0.11	35.5	17.5	31.8
77	246.0	0.384	63.8	3.6	6.52	5.230	37.476	34.731	52.8	18.0	49.1	14.4	3.42	0.10	35.4	17.4	31.7
78	245.8	0.389	63.8	3.6	6.53	5.305	37.438	34.668	52.7	18.0	49.1	14.4	3.41	0.10	35.4	17.3	31.7
79	246.0	0.393	63.7	3.6	6.53	5.371	37.476	34.679	52.7	18.0	49.1	14.5	3.40	0.10	35.4	17.3	31.8
80	244.2	0.397	63.7	3.5	6.54	5.437	37.178	34.372	52.4	18.0	48.9	14.5	3.36	0.10	35.2	17.2	31.7
81	244.0	0.401	63.6	3.4	6.54	5.512	37.141	34.309	52.3	18.0	48.9	14.6	3.35	0.10	35.2	17.2	31.7
82	244.1	0.406	63.6	3.4	6.55	5.588	37.159	34.299	52.3	18.0	48.9	14.6	3.35	0.10	35.2	17.1	31.8
83	244.9	0.410	63.5	3.4	6.55	5.653	37.290	34.397	52.4	18.0	49.1	14.7	3.35	0.10	35.2	17.2	31.9
84	244.1	0.414	63.5	3.3	6.56	5.719	37.159	34.250	52.3	18.0	49.0	14.7	3.32	0.10	35.1	17.1	31.9
85	244.9	0.418	63.4	3.2	6.56	5.795	37.290	34.345	52.4	18.0	49.1	14.8	3.32	0.09	35.2	17.2	31.9
86	245.0	0.422	63.4	3.2	6.57	5.860	37.308	34.338	52.4	18.0	49.1	14.8	3.32	0.09	35.2	17.2	31.9
87	245.9	0.426	63.4	3.2	6.57	5.926	37.457	34.453	52.5	18.0	49.3	14.8	3.33	0.09	35.2	17.2	32.0
88	247.0	0.431	63.3	3.1	6.58	6.002	37.624	34.582	52.6	18.0	49.5	14.9	3.32	0.09	35.3	17.3	32.2
89	247.2	0.435	63.3	3.1	6.58	6.067	37.662	34.592	52.6	18.0	49.5	14.9	3.32	0.09	35.3	17.3	32.2
90	247.0	0.440	63.2	3.0	6.59	6.143	37.624	34.529	52.5	18.0	49.5	15.0	3.31	0.09	35.3	17.3	32.2
91	247.0	0.444	63.2	3.0	6.59	6.208	37.624	34.504	52.5	18.0	49.5	15.0	3.30	0.09	35.3	17.3	32.3
92	247.0	0.448	63.1	3.0	6.60	6.284	37.624	34.476	52.5	18.0	49.5	15.1	3.29	0.09	35.3	17.2	32.3
93	247.0	0.452	63.1	2.9	6.60	6.350	37.624	34.451	52.5	18.0	49.5	15.1	3.28	0.08	35.2	17.2	32.3
94	247.6	0.457	63.1	2.9	6.61	6.425	37.736	34.527	52.5	18.0	49.7	15.1	3.28	0.08	35.3	17.3	32.4
95	247.2	0.461	63.0	2.8	6.61	6.500	37.662	34.429	52.4	18.0	49.6	15.2	3.27	0.08	35.2	17.2	32.4
96	248.3	0.466	62.9	2.8	6.62	6.575	37.848	34.575	52.6	18.0	49.8	15.3	3.27	0.08	35.3	17.3	32.5
97	248.1	0.471	62.9	2.7	6.62	6.651	37.811	34.512	52.5	18.0	49.8	15.3	3.26	0.08	35.3	17.3	32.6
98	241.8	0.475	62.9	2.8	6.63	6.726	36.787	33.529	51.5	18.0	48.8	15.3	3.20	0.08	34.8	16.8	32.0
99	243.4	0.480	62.9	2.7	6.63	6.810	37.048	33.740	51.8	18.0	49.0	15.3	3.21	0.08	34.9	16.9	32.2
100	244.5	0.485	62.9	2.7	6.64	6.886	37.234	33.886	51.9	18.0	49.2	15.3	3.21	0.08	35.0	16.9	32.3

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	245.5	0.490	62.8	2.6	6.64	6.970	37.383	33.993	52.0	18.0	49.4	15.4	3.21	0.08	35.0	17.0	32.4
102	245.3	0.495	62.7	2.6	6.65	7.046	37.364	33.947	52.0	18.0	49.4	15.5	3.20	0.08	35.0	17.0	32.4
103	244.8	0.500	62.7	2.5	6.66	7.130	37.271	33.829	51.8	18.0	49.3	15.5	3.18	0.07	34.9	16.9	32.4
104	244.3	0.505	62.7	2.5	6.66	7.215	37.197	33.729	51.7	18.0	49.3	15.5	3.17	0.07	34.9	16.9	32.4
105	244.7	0.510	62.6	2.4	6.67	7.290	37.252	33.752	51.8	18.0	49.3	15.6	3.17	0.07	34.9	16.9	32.5
106	244.9	0.514	62.6	2.4	6.67	7.365	37.290	33.759	51.8	18.0	49.4	15.6	3.16	0.07	34.9	16.9	32.5
107	243.7	0.519	62.5	2.4	6.68	7.441	37.103	33.559	51.6	18.0	49.2	15.7	3.14	0.07	34.8	16.8	32.4
108	244.2	0.523	62.5	2.3	6.68	7.516	37.178	33.599	51.6	18.0	49.3	15.7	3.14	0.07	34.8	16.8	32.5
109	244.1	0.528	62.5	2.3	6.69	7.591	37.159	33.554	51.6	18.0	49.3	15.7	3.13	0.07	34.8	16.8	32.5
110	244.5	0.533	62.4	2.2	6.69	7.667	37.234	33.595	51.6	18.0	49.4	15.8	3.13	0.07	34.8	16.8	32.6
111	244.8	0.537	62.4	2.2	6.70	7.742	37.271	33.601	51.6	18.0	49.4	15.8	3.13	0.07	34.8	16.8	32.6
112	244.7	0.541	62.4	2.2	6.70	7.808	37.252	33.560	51.6	18.0	49.4	15.8	3.12	0.07	34.8	16.8	32.6
113	245.3	0.546	62.3	2.2	6.71	7.883	37.364	33.634	51.7	18.0	49.5	15.9	3.12	0.06	34.8	16.8	32.7
114	245.2	0.550	62.3	2.1	6.72	7.958	37.345	33.589	51.6	18.0	49.5	15.9	3.11	0.06	34.8	16.8	32.7
115	245.3	0.555	62.3	2.1	6.72	8.033	37.364	33.578	51.6	18.0	49.5	15.9	3.11	0.06	34.8	16.8	32.7
116	239.7	0.560	62.2	2.0	6.73	8.109	36.452	32.712	50.7	18.0	48.7	16.0	3.05	0.06	34.4	16.4	32.3
117	242.0	0.564	62.2	2.0	6.73	8.184	36.824	33.027	51.0	18.0	49.0	16.0	3.07	0.06	34.5	16.5	32.5
118	243.2	0.569	62.2	2.0	6.74	8.259	37.010	33.170	51.2	18.0	49.2	16.0	3.07	0.06	34.6	16.6	32.6
119	243.6	0.573	62.1	2.0	6.74	8.325	37.085	33.213	51.2	18.0	49.3	16.1	3.07	0.06	34.6	16.6	32.7
120	244.5	0.577	62.1	1.9	6.75	8.400	37.234	33.322	51.3	18.0	49.4	16.1	3.07	0.06	34.7	16.7	32.8
121	245.0	0.582	62.1	1.9	6.75	8.485	37.308	33.358	51.4	18.0	49.5	16.1	3.07	0.06	34.7	16.7	32.8
122	245.2	0.587	62.0	1.8	6.76	8.551	37.345	33.368	51.4	18.0	49.5	16.2	3.06	0.06	34.7	16.7	32.9
123	245.2	0.591	61.9	1.8	6.76	8.617	37.345	33.343	51.4	18.0	49.6	16.3	3.05	0.05	34.7	16.7	32.9
124	245.5	0.595	61.9	1.7	6.77	8.692	37.383	33.349	51.4	18.0	49.6	16.3	3.05	0.05	34.7	16.7	33.0
125	246.0	0.599	61.9	1.7	6.77	8.758	37.476	33.409	51.4	18.0	49.7	16.3	3.05	0.05	34.7	16.7	33.0
126	246.1	0.604	61.9	1.7	6.78	8.833	37.494	33.398	51.4	18.0	49.7	16.3	3.04	0.05	34.7	16.7	33.0
127	246.8	0.608	61.8	1.6	6.79	8.899	37.606	33.475	51.5	18.0	49.9	16.4	3.04	0.05	34.8	16.7	33.1
128	247.4	0.612	61.8	1.6	6.79	8.974	37.699	33.532	51.6	18.0	49.9	16.4	3.04	0.05	34.8	16.8	33.2
129	248.2	0.616	61.7	1.6	6.80	9.040	37.829	33.625	51.6	18.0	50.1	16.5	3.04	0.05	34.8	16.8	33.3
130	248.2	0.620	61.7	1.5	6.80	9.106	37.829	33.600	51.6	18.0	50.1	16.5	3.04	0.05	34.8	16.8	33.3
131	245.7	0.625	61.7	1.5	6.81	9.181	37.420	33.200	51.2	18.0	49.7	16.5	3.01	0.05	34.6	16.6	33.1
132	248.6	0.629	61.7	1.5	6.81	9.247	37.885	33.598	51.6	18.0	50.1	16.5	3.03	0.04	34.8	16.8	33.3
133	250.2	0.634	61.7	1.5	6.82	9.322	38.146	33.805	51.8	18.0	50.3	16.5	3.04	0.04	34.9	16.9	33.4
134	250.7	0.638	61.6	1.4	6.82	9.388	38.239	33.865	51.9	18.0	50.4	16.6	3.04	0.04	35.0	16.9	33.5
135	251.9	0.642	61.5	1.4	6.83	9.463	38.425	34.004	52.0	18.0	50.7	16.7	3.04	0.04	35.0	17.0	33.7
136	253.4	0.647	61.5	1.3	6.83	9.538	38.667	34.194	52.2	18.0	50.9	16.7	3.05	0.04	35.1	17.1	33.8
137	253.2	0.651	61.5	1.3	6.84	9.604	38.629	34.135	52.2	18.0	50.8	16.7	3.04	0.04	35.1	17.1	33.8
138	252.9	0.655	61.4	1.2	6.84	9.680	38.592	34.072	52.1	18.0	50.8	16.8	3.03	0.04	35.1	17.0	33.8
139	253.6	0.660	61.4	1.2	6.85	9.755	38.704	34.144	52.2	18.0	50.9	16.8	3.04	0.04	35.1	17.1	33.8
140	252.7	0.665	61.4	1.2	6.86	9.830	38.555	33.981	52.0	18.0	50.8	16.8	3.02	0.04	35.0	17.0	33.8
141	253.5	0.670	61.3	1.2	6.86	9.915	38.685	34.065	52.1	18.0	50.9	16.9	3.02	0.03	35.1	17.0	33.9

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	254.7	0.674	61.3	1.1	6.87	9.990	38.871	34.204	52.2	18.0	51.1	16.9	3.02	0.03	35.1	17.1	34.0
143	255.8	0.679	61.2	1.0	6.87	10.065	39.057	34.342	52.4	18.0	51.3	17.0	3.02	0.03	35.2	17.2	34.1
144	256.0	0.684	61.2	1.0	6.88	10.150	39.094	34.342	52.4	18.0	51.4	17.0	3.02	0.03	35.2	17.2	34.2
145	255.9	0.689	61.2	1.0	6.89	10.225	39.076	34.296	52.3	18.0	51.3	17.0	3.02	0.03	35.2	17.1	34.2
146	254.0	0.693	61.1	1.0	6.89	10.300	38.760	33.983	52.0	18.0	51.0	17.1	2.99	0.03	35.0	17.0	34.0
147	255.6	0.698	61.1	0.9	6.90	10.376	39.020	34.187	52.2	18.0	51.3	17.1	2.99	0.03	35.1	17.1	34.2
148	256.6	0.703	61.0	0.8	6.90	10.460	39.188	34.304	52.3	18.0	51.5	17.2	3.00	0.02	35.2	17.2	34.3
149	256.8	0.708	61.0	0.8	6.91	10.536	39.225	34.308	52.3	18.0	51.5	17.2	2.99	0.02	35.2	17.2	34.4
150	258.0	0.712	60.9	0.8	6.92	10.611	39.411	34.445	52.5	18.0	51.7	17.3	3.00	0.02	35.2	17.2	34.5
151	257.9	0.717	60.9	0.7	6.92	10.686	39.392	34.399	52.4	18.0	51.7	17.3	2.99	0.02	35.2	17.2	34.5
152	258.8	0.721	60.9	0.7	6.93	10.761	39.541	34.502	52.5	18.0	51.8	17.3	2.99	0.02	35.3	17.3	34.5
153	258.9	0.725	60.9	0.7	6.93	10.827	39.560	34.492	52.5	18.0	51.8	17.3	2.99	0.02	35.3	17.2	34.6
154	258.1	0.730	60.8	0.6	6.94	10.902	39.429	34.346	52.4	18.0	51.7	17.4	2.98	0.02	35.2	17.2	34.6
155	259.3	0.735	60.7	0.6	6.94	10.978	39.615	34.482	52.5	18.0	51.9	17.5	2.98	0.02	35.3	17.2	34.7
156	260.1	0.739	60.7	0.6	6.95	11.053	39.746	34.568	52.6	18.0	52.0	17.5	2.98	0.02	35.3	17.3	34.7
157	260.6	0.744	60.7	0.5	6.96	11.128	39.839	34.621	52.6	18.0	52.1	17.5	2.98	0.02	35.3	17.3	34.8
158	261.2	0.748	60.7	0.5	6.96	11.194	39.932	34.678	52.7	18.0	52.2	17.5	2.98	0.01	35.4	17.3	34.9
159	261.7	0.752	60.6	0.4	6.97	11.269	40.006	34.714	52.7	18.0	52.3	17.6	2.97	0.01	35.4	17.4	35.0
160	262.7	0.757	60.5	0.4	6.97	11.345	40.174	34.832	52.9	18.0	52.5	17.7	2.97	0.01	35.4	17.4	35.1
161	263.1	0.762	60.5	0.3	6.98	11.420	40.230	34.851	52.9	18.0	52.6	17.7	2.97	0.01	35.4	17.4	35.1
162	264.7	0.766	60.5	0.3	6.98	11.495	40.490	35.052	53.1	18.0	52.8	17.7	2.98	0.01	35.5	17.5	35.3
163	262.9	0.771	60.4	0.2	6.99	11.570	40.211	34.774	52.8	18.0	52.6	17.8	2.96	0.01	35.4	17.4	35.2
164	262.7	0.775	60.4	0.2	7.00	11.646	40.174	34.711	52.7	18.0	52.5	17.8	2.95	0.01	35.4	17.4	35.2
165	262.2	0.780	60.3	0.2	7.00	11.721	40.099	34.615	52.6	18.0	52.5	17.9	2.94	0.00	35.3	17.3	35.2
166	263.4	0.784	60.3	0.1	7.01	11.787	40.285	34.753	52.8	18.0	52.7	17.9	2.94	0.00	35.4	17.4	35.3
167	264.8	0.789	60.3	0.1	7.01	11.862	40.509	34.919	52.9	18.0	52.9	17.9	2.95	0.00	35.5	17.5	35.4
168	264.9	0.793	60.2	0.0	7.02	11.928	40.527	34.909	52.9	18.0	52.9	18.0	2.94	0.00	35.5	17.5	35.4
169	265.9	0.797	60.2	0.0	7.02	11.994	40.695	35.030	53.0	18.0	53.0	18.0	2.94	0.00	35.5	17.5	35.5
170	266.7	0.801	60.1	0.0	7.03	12.069	40.825	35.114	53.1	18.0	53.2	18.1	2.94	0.00	35.6	17.6	35.6
171	267.9	0.805	60.1	0.0	7.04	12.135	41.011	35.250	53.3	18.0	53.3	18.1	2.95	0.00	35.6	17.6	35.7
172	269.6	0.809	60.1	-0.1	7.04	12.201	41.290	35.468	53.5	18.0	53.6	18.1	2.96	0.00	35.8	17.7	35.8
173	270.6	0.814	60.1	-0.1	7.05	12.276	41.458	35.584	53.6	18.0	53.7	18.1	2.96	0.00	35.8	17.8	35.9
174	272.1	0.818	60.0	-0.2	7.05	12.342	41.700	35.769	53.8	18.0	54.0	18.2	2.96	-0.01	35.9	17.9	36.1
175	273.9	0.822	59.9	-0.2	7.06	12.408	41.979	35.986	54.0	18.0	54.2	18.3	2.97	-0.01	36.0	18.0	36.3
176	274.6	0.826	59.9	-0.2	7.06	12.483	42.090	36.052	54.1	18.0	54.3	18.3	2.97	-0.01	36.0	18.0	36.3
177	275.5	0.830	59.9	-0.3	7.07	12.549	42.239	36.155	54.2	18.0	54.5	18.3	2.98	-0.01	36.1	18.1	36.4
178	276.7	0.835	59.9	-0.3	7.07	12.624	42.444	36.302	54.3	18.0	54.6	18.3	2.98	-0.01	36.2	18.2	36.5
179	277.1	0.839	59.8	-0.4	7.08	12.690	42.500	36.322	54.3	18.0	54.7	18.4	2.98	-0.01	36.2	18.2	36.5
180	277.5	0.844	59.8	-0.4	7.09	12.765	42.574	36.355	54.4	18.0	54.8	18.4	2.97	-0.01	36.2	18.2	36.6
181	277.4	0.848	59.7	-0.5	7.09	12.840	42.555	36.307	54.3	18.0	54.8	18.5	2.96	-0.01	36.2	18.2	36.7
182	278.2	0.853	59.7	-0.5	7.10	12.915	42.686	36.388	54.4	18.0	54.9	18.5	2.96	-0.01	36.2	18.2	36.7

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	277.2	0.857	59.6	-0.6	7.10	12.991	42.518	36.211	54.2	18.0	54.8	18.6	2.95	-0.02	36.1	18.1	36.7
184	277.4	0.862	59.6	-0.6	7.11	13.066	42.555	36.211	54.2	18.0	54.8	18.6	2.94	-0.02	36.1	18.1	36.7
185	277.2	0.867	59.5	-0.6	7.12	13.141	42.518	36.147	54.2	18.0	54.8	18.7	2.94	-0.02	36.1	18.1	36.7
186	278.5	0.871	59.5	-0.7	7.12	13.217	42.723	36.292	54.3	18.0	55.0	18.7	2.94	-0.02	36.2	18.1	36.8
187	278.0	0.876	59.5	-0.7	7.13	13.292	42.649	36.196	54.2	18.0	54.9	18.7	2.93	-0.02	36.1	18.1	36.8
188	277.9	0.881	59.4	-0.8	7.14	13.376	42.630	36.143	54.2	18.0	54.9	18.8	2.92	-0.02	36.1	18.1	36.9
189	277.5	0.886	59.4	-0.8	7.14	13.452	42.574	36.063	54.1	18.0	54.9	18.8	2.92	-0.02	36.1	18.0	36.9
190	277.8	0.890	59.3	-0.8	7.15	13.527	42.611	36.063	54.1	18.0	54.9	18.9	2.91	-0.02	36.1	18.0	36.9
191	278.6	0.895	59.3	-0.9	7.15	13.602	42.742	36.144	54.2	18.0	55.0	18.9	2.91	-0.02	36.1	18.1	37.0
192	278.8	0.900	59.3	-0.9	7.16	13.687	42.779	36.140	54.2	18.0	55.1	18.9	2.91	-0.03	36.1	18.1	37.0
193	279.6	0.904	59.2	-1.0	7.17	13.762	42.909	36.220	54.2	18.0	55.2	19.0	2.90	-0.03	36.1	18.1	37.1
194	279.0	0.909	59.1	-1.0	7.17	13.837	42.816	36.107	54.1	18.0	55.2	19.1	2.89	-0.03	36.1	18.1	37.1
195	278.9	0.914	59.1	-1.0	7.18	13.913	42.797	36.059	54.1	18.0	55.1	19.1	2.89	-0.03	36.0	18.0	37.1
196	279.5	0.918	59.1	-1.1	7.19	13.988	42.890	36.107	54.1	18.0	55.2	19.1	2.89	-0.03	36.1	18.1	37.2
197	279.6	0.923	59.1	-1.1	7.19	14.063	42.909	36.090	54.1	18.0	55.2	19.1	2.89	-0.03	36.1	18.0	37.2
198	280.3	0.927	59.0	-1.2	7.20	14.138	43.021	36.154	54.2	18.0	55.3	19.2	2.88	-0.03	36.1	18.1	37.3
199	280.4	0.932	59.0	-1.2	7.21	14.214	43.039	36.138	54.2	18.0	55.4	19.2	2.88	-0.03	36.1	18.1	37.3
200	280.4	0.937	58.9	-1.3	7.21	14.289	43.039	36.105	54.1	18.0	55.4	19.3	2.87	-0.04	36.1	18.1	37.4
201	281.3	0.941	58.9	-1.3	7.22	14.364	43.188	36.200	54.2	18.0	55.5	19.3	2.87	-0.04	36.1	18.1	37.4
202	281.0	0.946	58.8	-1.4	7.22	14.439	43.132	36.120	54.1	18.0	55.5	19.4	2.86	-0.04	36.1	18.1	37.4
203	281.6	0.950	58.8	-1.4	7.23	14.515	43.225	36.167	54.2	18.0	55.6	19.4	2.86	-0.04	36.1	18.1	37.5
204	282.0	0.955	58.8	-1.4	7.24	14.590	43.300	36.198	54.2	18.0	55.6	19.4	2.86	-0.04	36.1	18.1	37.5
205	282.5	0.960	58.7	-1.4	7.24	14.665	43.374	36.229	54.2	18.0	55.7	19.5	2.86	-0.04	36.1	18.1	37.6
206	282.8	0.964	58.7	-1.5	7.25	14.740	43.430	36.244	54.3	18.0	55.7	19.5	2.86	-0.04	36.1	18.1	37.6
207	283.0	0.969	58.6	-1.6	7.26	14.816	43.449	36.227	54.2	18.0	55.8	19.6	2.85	-0.04	36.1	18.1	37.7
208	283.2	0.973	58.6	-1.6	7.26	14.882	43.486	36.230	54.3	18.0	55.9	19.6	2.85	-0.04	36.1	18.1	37.7
209	283.5	0.977	58.5	-1.6	7.27	14.957	43.542	36.245	54.3	18.0	55.9	19.7	2.84	-0.05	36.1	18.1	37.8
210	283.4	0.981	58.5	-1.6	7.27	15.023	43.523	36.201	54.2	18.0	55.9	19.7	2.84	-0.05	36.1	18.1	37.8
211	283.2	0.985	58.5	-1.7	7.28	15.088	43.486	36.140	54.2	18.0	55.8	19.7	2.83	-0.05	36.1	18.1	37.8
212	284.3	0.990	58.5	-1.7	7.29	15.164	43.672	36.265	54.3	18.0	56.0	19.7	2.84	-0.05	36.2	18.1	37.9
213	284.6	0.994	58.4	-1.8	7.29	15.230	43.709	36.268	54.3	18.0	56.1	19.8	2.83	-0.05	36.2	18.1	37.9
214	284.3	0.999	58.4	-1.8	7.30	15.305	43.672	36.204	54.2	18.0	56.0	19.8	2.83	-0.05	36.1	18.1	37.9
215	284.4	1.003	58.3	-1.8	7.30	15.371	43.691	36.191	54.2	18.0	56.1	19.9	2.82	-0.05	36.1	18.1	38.0
216	284.9	1.007	58.3	-1.9	7.31	15.446	43.765	36.221	54.2	18.0	56.1	19.9	2.82	-0.05	36.1	18.1	38.0
217	285.9	1.011	58.3	-1.9	7.32	15.512	43.932	36.334	54.4	18.0	56.3	19.9	2.82	-0.05	36.2	18.2	38.1
218	286.5	1.016	58.2	-2.0	7.32	15.587	44.025	36.379	54.4	18.0	56.4	20.0	2.82	-0.05	36.2	18.2	38.2
219	287.1	1.020	58.2	-2.0	7.33	15.653	44.119	36.429	54.4	18.0	56.5	20.0	2.82	-0.05	36.2	18.2	38.2
220	288.0	1.024	58.1	-2.0	7.33	15.719	44.267	36.525	54.5	18.0	56.6	20.1	2.82	-0.06	36.3	18.3	38.3
221	288.9	1.028	58.1	-2.1	7.34	15.794	44.416	36.617	54.6	18.0	56.7	20.1	2.82	-0.06	36.3	18.3	38.4
222	289.9	1.032	58.1	-2.1	7.35	15.860	44.565	36.713	54.7	18.0	56.8	20.1	2.83	-0.06	36.4	18.4	38.5
223	290.1	1.037	58.1	-2.1	7.35	15.935	44.602	36.711	54.7	18.0	56.9	20.1	2.82	-0.06	36.4	18.4	38.5

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	290.7	1.042	58.0	-2.2	7.36	16.010	44.695	36.755	54.8	18.0	56.9	20.2	2.82	-0.06	36.4	18.4	38.6
225	291.0	1.046	58.0	-2.2	7.37	16.086	44.751	36.769	54.8	18.0	57.0	20.2	2.82	-0.06	36.4	18.4	38.6
226	290.8	1.051	58.0	-2.2	7.37	16.161	44.714	36.704	54.7	18.0	56.9	20.2	2.81	-0.06	36.4	18.4	38.6
227	290.9	1.055	57.9	-2.3	7.38	16.236	44.733	36.686	54.7	18.0	57.0	20.3	2.81	-0.06	36.4	18.3	38.6
228	291.6	1.060	57.9	-2.3	7.39	16.311	44.844	36.745	54.8	18.0	57.1	20.3	2.81	-0.06	36.4	18.4	38.7
229	292.8	1.065	57.9	-2.3	7.39	16.387	45.049	36.883	54.9	18.0	57.2	20.3	2.81	-0.06	36.5	18.4	38.8
230	293.4	1.070	57.8	-2.4	7.40	16.471	45.142	36.922	54.9	18.0	57.3	20.4	2.81	-0.06	36.5	18.5	38.8
231	294.3	1.074	57.8	-2.4	7.41	16.547	45.291	37.013	55.0	18.0	57.4	20.4	2.82	-0.06	36.5	18.5	38.9
232	294.6	1.079	57.8	-2.4	7.41	16.622	45.328	37.010	55.0	18.0	57.4	20.4	2.81	-0.06	36.5	18.5	38.9
233	293.9	1.084	57.7	-2.4	7.42	16.706	45.216	36.878	54.9	18.0	57.3	20.5	2.80	-0.07	36.5	18.4	38.9
234	293.7	1.089	57.7	-2.5	7.43	16.782	45.179	36.813	54.8	18.0	57.3	20.5	2.80	-0.07	36.4	18.4	38.9
235	293.3	1.094	57.7	-2.5	7.44	16.866	45.123	36.728	54.7	18.0	57.3	20.5	2.79	-0.07	36.4	18.4	38.9
236	294.2	1.098	57.7	-2.5	7.44	16.942	45.272	36.818	54.8	18.0	57.4	20.5	2.79	-0.07	36.4	18.4	39.0
237	294.0	1.103	57.6	-2.6	7.45	17.017	45.235	36.753	54.8	18.0	57.3	20.6	2.79	-0.07	36.4	18.4	39.0
238	294.2	1.108	57.6	-2.6	7.46	17.092	45.272	36.750	54.8	18.0	57.4	20.6	2.78	-0.07	36.4	18.4	39.0
239	294.0	1.112	57.5	-2.6	7.46	17.158	45.235	36.689	54.7	18.0	57.4	20.7	2.78	-0.07	36.4	18.3	39.0
240	294.5	1.117	57.5	-2.7	7.47	17.243	45.309	36.713	54.7	18.0	57.4	20.7	2.77	-0.07	36.4	18.4	39.1
241	294.6	1.121	57.5	-2.7	7.48	17.308	45.328	36.698	54.7	18.0	57.4	20.7	2.77	-0.07	36.4	18.3	39.1
242	294.9	1.125	57.5	-2.7	7.48	17.384	45.384	36.710	54.7	18.0	57.5	20.7	2.77	-0.07	36.4	18.4	39.1
243	295.8	1.130	57.5	-2.7	7.49	17.459	45.533	36.799	54.8	18.0	57.5	20.7	2.77	-0.07	36.4	18.4	39.1
244	296.1	1.135	57.4	-2.8	7.50	17.534	45.570	36.795	54.8	18.0	57.6	20.8	2.77	-0.08	36.4	18.4	39.2
245	296.2	1.139	57.4	-2.8	7.50	17.609	45.589	36.776	54.8	18.0	57.6	20.8	2.77	-0.08	36.4	18.4	39.2
246	296.1	1.143	57.3	-2.8	7.51	17.675	45.570	36.731	54.8	18.0	57.6	20.9	2.76	-0.08	36.4	18.4	39.2
247	296.6	1.148	57.3	-2.9	7.52	17.751	45.663	36.773	54.8	18.0	57.7	20.9	2.76	-0.08	36.4	18.4	39.3
248	296.2	1.152	57.3	-2.9	7.52	17.826	45.589	36.678	54.7	18.0	57.6	20.9	2.75	-0.08	36.4	18.3	39.3
249	294.6	1.157	57.2	-3.0	7.53	17.901	45.328	36.430	54.4	18.0	57.4	21.0	2.74	-0.08	36.2	18.2	39.2
250	295.1	1.162	57.2	-3.0	7.54	17.976	45.421	36.472	54.5	18.0	57.5	21.0	2.74	-0.08	36.3	18.2	39.2
251	295.8	1.166	57.2	-3.0	7.54	18.052	45.533	36.529	54.5	18.0	57.6	21.0	2.74	-0.08	36.3	18.3	39.3
252	296.5	1.171	57.2	-3.0	7.55	18.127	45.644	36.586	54.6	18.0	57.6	21.0	2.74	-0.08	36.3	18.3	39.3
253	296.8	1.175	57.1	-3.0	7.56	18.193	45.682	36.587	54.6	18.0	57.7	21.1	2.74	-0.08	36.3	18.3	39.4
254	297.7	1.179	57.1	-3.1	7.56	18.259	45.830	36.678	54.7	18.0	57.8	21.1	2.74	-0.08	36.4	18.3	39.4
255	298.3	1.183	57.1	-3.1	7.57	18.324	45.923	36.724	54.7	18.0	57.9	21.1	2.74	-0.09	36.4	18.4	39.5
256	299.2	1.187	57.1	-3.1	7.58	18.400	46.072	36.811	54.8	18.0	58.0	21.1	2.74	-0.08	36.4	18.4	39.6
257	299.4	1.191	57.1	-3.1	7.58	18.465	46.110	36.811	54.8	18.0	58.0	21.1	2.74	-0.08	36.4	18.4	39.6
258	299.6	1.196	57.0	-3.2	7.59	18.541	46.147	36.807	54.8	18.0	58.0	21.2	2.74	-0.09	36.4	18.4	39.6
259	300.2	1.200	57.0	-3.2	7.59	18.607	46.240	36.852	54.9	18.0	58.1	21.2	2.74	-0.09	36.4	18.4	39.7
260	300.8	1.205	56.9	-3.2	7.60	18.682	46.333	36.893	54.9	18.0	58.2	21.3	2.73	-0.09	36.5	18.4	39.7
261	301.5	1.209	56.9	-3.2	7.61	18.748	46.444	36.953	55.0	18.0	58.2	21.3	2.74	-0.09	36.5	18.5	39.7
262	301.4	1.213	56.9	-3.3	7.61	18.823	46.426	36.903	54.9	18.0	58.2	21.3	2.73	-0.09	36.5	18.5	39.8
263	302.4	1.218	56.9	-3.3	7.62	18.898	46.593	37.004	55.0	18.0	58.3	21.3	2.74	-0.09	36.5	18.5	39.8
264	301.8	1.222	56.9	-3.3	7.63	18.964	46.500	36.898	54.9	18.0	58.2	21.3	2.73	-0.09	36.5	18.4	39.8

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
265	301.4	1.226	56.8	-3.4	7.64	19.039	46.426	36.803	54.8	18.0	58.2	21.4	2.72	-0.09	36.4	18.4	39.8
266	302.4	1.231	56.8	-3.4	7.64	19.115	46.593	36.903	54.9	18.0	58.3	21.4	2.72	-0.09	36.5	18.5	39.9
267	303.7	1.236	56.8	-3.4	7.65	19.190	46.798	37.033	55.1	18.0	58.5	21.4	2.73	-0.09	36.5	18.5	39.9
268	303.3	1.240	56.7	-3.4	7.66	19.265	46.742	36.953	55.0	18.0	58.4	21.5	2.72	-0.09	36.5	18.5	39.9
269	303.8	1.245	56.7	-3.5	7.66	19.340	46.817	36.978	55.0	18.0	58.5	21.5	2.72	-0.09	36.5	18.5	40.0
270	304.5	1.249	56.7	-3.5	7.67	19.416	46.928	37.033	55.1	18.0	58.5	21.5	2.72	-0.09	36.5	18.5	40.0
271	304.3	1.253	56.7	-3.5	7.68	19.481	46.910	36.987	55.0	18.0	58.5	21.5	2.72	-0.10	36.5	18.5	40.0
272	303.9	1.259	56.7	-3.5	7.69	19.566	46.835	36.887	54.9	18.0	58.4	21.5	2.71	-0.10	36.5	18.4	40.0
273	303.1	1.263	56.6	-3.6	7.69	19.641	46.705	36.747	54.8	18.0	58.4	21.6	2.70	-0.10	36.4	18.4	40.0
274	303.8	1.268	56.6	-3.6	7.70	19.717	46.817	36.802	54.8	18.0	58.4	21.6	2.70	-0.10	36.4	18.4	40.0
275	303.8	1.272	56.5	-3.6	7.71	19.792	46.817	36.767	54.8	18.0	58.4	21.7	2.70	-0.10	36.4	18.4	40.0
276	303.1	1.277	56.5	-3.7	7.71	19.867	46.705	36.642	54.7	18.0	58.3	21.7	2.69	-0.10	36.3	18.3	40.0
277	303.2	1.281	56.5	-3.7	7.72	19.942	46.724	36.622	54.6	18.0	58.3	21.7	2.69	-0.10	36.3	18.3	40.0
278	302.6	1.286	56.5	-3.7	7.73	20.008	46.631	36.516	54.5	18.0	58.2	21.7	2.68	-0.10	36.3	18.3	40.0