GEOTECHNICAL INVESTIGATION
GREEN CITY LOFTS
4050 ADELINE STREET
EMERYVILLE/OAKLAND, CALIFORNIA
SCI. 1316.001

SCI

Subsurface Consultants, Inc.
Geotechnical & Environmental Engineers

12/28/00

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SCI. 1316.001

Prepared for:

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1.0 INTRODUCTION

This report presents the results of a geotechnical investigation by Subsurface Consultants, Inc. (SCI) for the proposed Green City Lofts project in Emeryville and Oakland, California. The project site is located at 4050 Adeline Street, at the southeast corner of the intersection of Adeline and 41st Streets, as shown on the Vicinity Map, Plate 1.

The proposed Green City Lofts will consist of five, 3- to 4-story multi-unit residential structures. The general configuration of the proposed structures is shown on the Site Plan, Plate 2. One level of below-grade parking will be provided beneath the entire site, connecting all five structures. The below-grade space will extend to depths of about 10 feet below adjacent street grades.

Information regarding the project was obtained through discussions with Mr. Martin Samuels of Green City Development, Mr. Dewitt Brock, and Mr. David Burton of Swatt Architects, the project architect. It is our understanding that building loads for the proposed development are not available at this time. We have developed our conclusions and recommendations for this report on the basis that the design building loads will be typical for these types of structures and that there will not be any seismic uplift loads beyond what can be resisted by the dead weight of the buildings.

The purpose of our work was to explore subsurface conditions and provide recommendations for the geotechnical aspects of the project. The scope of our geotechnical investigation, as outlined in our proposal dated August 9, 2000, consisted of performing test borings and cone penetration tests (CPTs), performing geotechnical laboratory testing and engineering analyses, and preparation of this report.

An environmental report was previously prepared by Block Environmental Services (BES) for the site. This report is titled "Evaluation of Site Contamination and Recent Groundwater Sampling, ONE, Dunne Paints, California Linen, Oakland/Emeryville, California," dated February 25, 1999. Data on groundwater levels contained in this report were reviewed for our geotechnical investigation. The scope of our geotechnical investigation did not include consideration of the potential impact of soil or groundwater contamination at the site.

2.0 FIELD INVESTIGATION AND LABORATORY TESTING

The field investigation consisted of both test borings and CPTs. Test borings were performed using a truck-mounted drill rig equipped with 8-inch-diameter hollow stem augers. Two exploratory borings were drilled on November 17, 2000, to a depth of approximately 51½ feet. CPTs were performed using a truck rig. Three CPTs were advanced on November 29, 2000, to depths of about 48¾ feet. The approximate locations of the borings and CPTs are shown on the Site Plan, Plate 2. Logs of the borings and CPTs, and details regarding the field exploration are included in Appendix A. The results of our laboratory tests are discussed in Appendix B. The subsurface conditions encountered during our exploration are summarized in Section 3 below.

3.0 SITE CONDITIONS

3.1 Geologic and Seismic Setting

The site is located in the Coast Ranges geomorphic province, which is characterized by northwest-southeast trending valleys and ridges. These are controlled by folds and faults that resulted from the collision of the Farallon and North American plates and subsequent strike-slip faulting along the San Andreas fault zone. According to published geologic maps, the site is underlain by Holocene Age (less than 10,000 years old) basin deposits generally consisting of unconsolidated plastic silt and silty clay.

The site is located in a seismically active area of California. Several major fault systems exist in the area. Earthquakes occurring along these fault systems are capable of generating strong ground shaking at the site. The site is located about 5 kilometers (3 miles) southwest of the Hayward Fault, 25 kilometers (15½ miles) west of the Calaveras Fault, and about 25 kilometers (15½ miles) northeast of the San Andreas Fault. These and other more distant faults are considered seismically active and have well-documented histories of seismic events. The site is not located within an Alquist-Priolo Special Studies Zone.

3.2 Surface Conditions

The project site is irregularly shaped and has maximum plan dimensions of about 150 by 330 feet, as shown on Plate 2. The site is bounded by Adeline Street to the west, 41st Street to the north, and by the existing developments to the east and the south. The city limit line dividing Oakland and Emeryville crosses the middle of the site in a north-south orientation, with the western portion of the site in Emeryville, and the eastern portion in Oakland.

The majority of the site is currently occupied by four adjacent 1- to 2-story concrete masonry buildings. The west side of the site is occupied by an asphalt concrete paved parking area, and the south side of the site is occupied by a concrete paved parking area. In exterior areas, site grades generally slope gently between about Elevation 51 (City of Oakland Datum) to 48 from east to west. Along the western edge of the site, site grades slope downward more steeply to match existing street grades along Adeline Street of approximately Elevation 45. The existing structures will be demolished for the proposed development.

Two single-story industrial buildings immediately to the south and east of the site are located along the site property line. The foundation support system for these adjacent buildings is not known to us at this time; however, it is anticipated that these buildings are supported on shallow spread footing foundations.

3.3 Subsurface Conditions

Subsurface conditions were investigated by drilling two test borings and advancing three CPTs at the approximate locations shown on Plate 2. This section discusses subsurface conditions based on our test borings and interpretation of the CPT results.

Both borings were drilled in paved areas. Boring B-1 was drilled in an asphalt concrete paved parking area. The pavement section encountered consisted of about 6 inches of asphalt concrete over 4 inches of aggregate base. Boring B-2 was drilled in a concrete driveway. The driveway consisted of an approximately 8-inch thick concrete slab. Beneath the pavement, fill was encountered to a depth of about 3 feet. The fill generally consists of medium stiff to stiff silty clay with sand. Below the fill, alluvial deposits generally consisting of medium stiff to very stiff lean silty clay with varying amounts of sand and gravel were encountered to the maximum depth explored of about 51½ feet. Detailed descriptions of the soils encountered in each of the exploratory borings are presented on the boring logs in Appendix A.

The CPT results correlate well with the materials encountered in the test borings. CPT correlations with soil type show the site to be underlain by layered soil deposits consisting of silt and clay to the maximum depth explored of about 50 feet. Logs of the CPTs are presented in Appendix A.

3.4 Groundwater

Free groundwater was encountered during drilling in Boring B-1 at a depth of approximately 20 feet and in Boring B-2 at a depth of approximately 24 feet below ground surface. Prior to backfilling Boring B-2 with cement grout, the groundwater level was measured at a depth of approximately 26 feet. The borings were backfilled with grout shortly after drilling and likely did not establish equilibrium with groundwater conditions. Measurements performed in CPT-1 and CPT-2 indicates groundwater at depths of approximately 8 feet. Fluctuations in the groundwater level could occur due to change in seasons, variations in rainfall, and other factors.

A review of the BES report indicates that groundwater levels were measured in monitoring wells at depths between about 5 feet to 6½ feet below street elevation on 41st Street, corresponding to approximately Elevation 41 to 42½ feet.

4.0 DISCUSSION AND CONCLUSIONS

We conclude that the proposed development is feasible from a geotechnical standpoint, provided that the conclusions and recommendations presented in this report are incorporated into the project design and specifications. The principal geotechnical considerations regarding the project are discussed in the following sections:

4.1 Seismic Considerations

4.1.1 Seismicity

The site is located in a seismically active region of California. Significant earthquakes in the Bay Area have been associated with movements along well-defined fault zones. Earthquakes occurring along the Hayward Fault or any of a number of other Bay Area faults have the potential to produce strong groundshaking at the site. For this reason, the structures should be designed to resist lateral and uplift forces generated by earthquake shaking, in accordance with local design practice.

4.1.2 Seismic Design by Uniform Building Code (UBC)

The structures should be designed to resist the lateral forces generated by earthquake shaking in accordance with local design practice. This section presents seismic design criteria for the 1997 UBC.

As defined in the 1997 UBC, we judge the following criteria to be appropriate for the site:

Seismic zone factor (Z) = 0.40

Soil profile type = S_D

Seismic coefficient: $C_a = 0.44\ N_a$

$C_v = 0.64\ N_v$

Near source factor: $N_a = 1.2$

$N_v = 1.6$

The near source factors are based on the location of the site relative to the Hayward Fault.

4.1.3 Other Seismic Hazards

Settlement can occur as a result of seismic groundshaking due to liquefaction or densification of the subsurface soils. In both liquefaction and densification, groundshaking causes predominantly granular soils to become more compact, therefore occupying less volume and resulting in settlement. Soils most susceptible to liquefaction and densification are loose, clean, poorly graded, fine-grained sands. Liquefaction can occur where this soil are saturated (submerged), and is accompanied by a temporary loss of strength (i.e., the soil "liquefies"). Densification can occur where the soils are unsaturated.

The soils encountered in our borings and CPTs consist predominantly of clay and silt and have sufficient cohesion not to be prone to liquefaction. Based on the available data, we conclude that the potential for significant liquefaction or densification to occur at the site is low.

Other geologic hazards such as slope instability, lurching, or fault rupture are considered to be unlikely at this site due to the relatively flat terrain and the distance from a known active fault.

4.2 Foundation Support and Settlement

Based on the results of our investigation and discussions with the design team, we judge that the proposed building can be supported on a shallow mat foundation system. We estimate that the long-term total and differential settlement of new mat foundations constructed as recommended in this report should be less than about ¾-inch and ½-inch, respectively.

4.3 Below-Grade Walls

Below-grade walls should be designed to resist lateral earth pressures, groundwater pressures, and any additional loads caused by surcharges. Below-grade walls should be designed using the recommended lateral pressures presented in Section 5.4.

Based on the groundwater levels measured in our CPTs and presented in the BES report, we recommend that a design groundwater level of Elevation 43 feet may be used. Below-grade walls and subfloors will extend below this design groundwater elevation. Thus, below-grade walls and subfloors should be designed to resist hydrostatic lateral and uplift pressures and appropriately waterproofed to help prevent the migration of water into the structure.

The basement level for the proposed project will extend to depths of about 10 feet and will cover the entire property area. The proposed basement will be situated immediately adjacent to existing buildings to the south and east. The foundation systems of these adjacent buildings are not known to us at this time. However, it is anticipated that these are probably supported on shallow foundation systems. If the proposed basement extends below an imaginary plane projecting downward at 45 degrees (1:1, horizontal to vertical) from existing foundations, the proposed below-grade walls must either be designed for the adjacent existing foundation loads, or the existing foundations must be underpinned so that they do not impose loads on the proposed below-grade walls.

4.4 Construction Considerations

Excavation for construction of the basement will need to be performed immediately adjacent to existing buildings, sidewalks, and pavements. On the basis of this layout, it appears that shoring and/or temporary slopes will be required during excavation, construction of the basement level, and backfilling to protect these adjacent elements. The design and maintenance of all necessary shoring and temporary excavation slopes is the responsibility of the contractor. All excavations that will be deeper than 5 feet and will be entered by workers should be shored or sloped for safety in accordance with Occupational Safety and Health Administration (OSHA) standards. SCI should review the contractor's plans for shoring for conformance with the intent of our geotechnical recommendations.

If excavation extends below an imaginary plane projecting downward at 45 degrees (1:1, horizontal to vertical) from existing foundations, the existing foundations should either be underpinned or shoring should be designed to keep construction settlement of the foundations within acceptable limits. The buildings immediately to the south and east of the site are probably supported on shallow foundation systems within the zone of influence of the anticipated excavation. Therefore, underpinning of these adjacent structures, or designing the shoring system for the anticipated building loads and to keep construction settlement of the foundations to acceptable limits would be required. As with the shoring, the design and installation of all necessary underpinning is the responsibility of the contractor.

Groundwater was measured in our CPTs and in previous monitoring wells by others at depths ranging from about 6 to 10 feet, or within the range of proposed excavation. Dewatering by the contractor may be required to control groundwater during construction.

We suggest that the contractor thoroughly document the condition of nearby buildings, streets, and utilities by video or other means prior to the commencement of site excavation. The contractor should also perform regular surveys during excavation and construction to monitor and document any observed settlement of nearby streets and structures.

5.0 RECOMMENDATIONS

5.1 Site Preparation

5.1.1 Clearing, Site Preparation and Excavation

Prior to site grading, the limits of grading should be established at the perimeter of the proposed development area including all building and sidewalk areas. Within the limits of grading, all previous improvements including old foundations, walkways, and landscaping should be removed and near-surface soils containing debris or organic material should be stripped. Site strippings are not suitable for later use as engineered fill and should be removed from the site or used as landscape material.

Prior to excavation, any existing underground utilities (e.g. electric, gas, water, telephone, storm drains, and sewers) should be identified and properly abandoned or relocated and the appropriate shoring system installed.

5.1.2 Subgrade Preparation

The areas to receive new concrete slab-on-grade floors and foundations should be properly prepared prior to construction. Any soft or loose areas should be identified and recompacted or replaced with properly compacted fill. The soil subgrade below slabs should be relatively firm and non-yielding, and should be protected from damage and drying caused by traffic or weather.

5.1.3 Fill and Backfill Materials

Fill materials may be required as backfill around footings, below-grade walls, and site utilities. Recommendations for utility pipe bedding and utility trench backfill are presented in Section 5.1.5 below. On-site fill having an organic content less than 3 percent by volume may be used as general fill except where non-expansive fill is required. Non-expansive fill should be predominantly granular and should have a liquid limit not exceeding 40 percent and a plasticity index not exceeding 15.

Both on-site and imported fill should contain no environmental contaminants or construction debris. Fill should not contain rocks or lumps larger than 4 inches in greatest dimension and contain no more than 15 percent larger than 2.5 inches.

5.1.4 Fill Placement

Soil subgrades in areas to receive backfill should be firm and non-yielding. Fill materials satisfying the criteria described in Section 5.1.3 should be moisture conditioned to near the optimum moisture content, spread in lifts not exceeding 8 inches in uncompacted thickness, and compacted to at least 90 percent relative compaction (as determined by the American Society for

Testing and Materials [ASTM] Method D1557-91). Fill placed in the upper 6 inches below pavement sections should be compacted to at least 95 percent relative compaction. Fill should be kept moist prior to the placement of slabs or pavement.

5.1.5 Pipeline Bedding/Trench Backfill

Utility pipes should be bedded in clean sands (conforming to the State of California Department of Transportation (Caltrans) Standard Specification Section 19-3.025B) that extend to at least 12 inches above the tops of the pipes. Pipeline trenches should be backfilled with fill materials satisfying the criteria described in Section 5.1.3, placed in lifts of approximately 8 inches in uncompacted thickness. However, thicker lifts can be used provided the method of compaction is approved by the geotechnical engineer and the required minimum degree of compaction is achieved. Trench backfill should be compacted to at least 90 percent relative compaction by mechanical means only (jetting should not be permitted). The upper 12 inches of the trench backfill should be compacted to at least 95 percent relative compaction.

5.1.6 Surface Drainage

The finished surface adjacent to the buildings should be graded to direct surface water away from foundations and toward suitable discharge facilities. Ponding of surface water should not be allowed adjacent to the structure. Roof downspouts should be connected to suitable discharge facilities through closed pipes or discharged to an appropriate collection point.

5.2 Foundation Support

The planned proposed structures may be supported on mat foundations that bear upon firm native soil or properly compacted fill. Where weak and/or compressible soils are present below the mat, these materials should be replaced by fill that has been placed and compacted in accordance with the recommendations presented in Section 5.1 of this report.

Mat foundations that bear on firm native soil or properly compacted fill can be designed using the maximum allowable bearing pressures presented in the following table:

Allowable Bearing Pressures
Firm Soil or On Compacted Fill

Load Condition	Allowable Bearing Pressure (pounds per square foot)
Dead load	1,000
Dead plus live loads	1,500
Total loads, including wind or seismic	2,000

We recommend that a modulus of subgrade reaction of 125 kips per cubic foot (kcf) be used for the design of mat foundations. This value is based on a 1-foot-square bearing area and needs to be scaled to account for mat foundation size effects. To obtain the modulus of subgrade reaction for a given mat foundation, the value of 125 kcf should be divided by the width of the loaded area, in feet.

Soil subgrades to support mat foundations should be firm and non-yielding. We suggest that a mud mat or "rat slab" be placed following subgrade approval to prevent disturbance to the underlying soils during the placement of reinforcing steel for the mat foundation. SCI should observe the completed mat foundation excavation prior to the placement mud mats or reinforcing steel.

5.3 Lateral Resistance

Resistance to lateral loads can be provided by friction along the base of foundations and by passive pressures developing on the sides of below-grade structural elements. A friction coefficient of 0.3 times the dead load acting on the base of the foundations should be used to evaluate frictional resistance. Passive resistance should be estimated using an equivalent fluid weight of 350 pounds per cubic foot (pcf). Where pavements cover the adjacent ground surface or floor slabs, passive resistance can be assumed to begin at the ground surface. In areas not confined by slabs or pavements, passive resistance should be neglected within 1 foot of the ground surface.

5.4 Basement Retaining Walls and Subfloors

As discussed above in Section 4.3, we recommend that below-grade walls and subfloors should be designed to resist hydrostatic lateral and uplift pressures, any additional loads caused by surcharging, and appropriately waterproofed to help prevent the migration of water into the structure. Below-grade walls should be designed using the recommended lateral pressures presented on Plate 3. Where below-grade walls are designed as lateral force resisting elements, they should be designed to resist the passive pressure presented in Section 5.3. Subfloor slab reinforcing should be provided in accordance with the anticipated use and loading of the slab.

5.5 Plan Review/Services During Construction

SCI should review geotechnical aspects of the plans and specifications to check for conformance with the intent of our recommendations. During construction, our field engineer should check and/or observe the following:

- Soil conditions exposed by site excavations, to check that they are consistent with those encountered during the field explorations,
- Shoring and underpinning design drawings and calculations, and installation of shoring and underpinning,
- Mat foundation excavations,
- Fill placement and compaction, including backfill of utilities, and
- Subgrade preparation beneath slabs-on-grade, pavements and sidewalks.

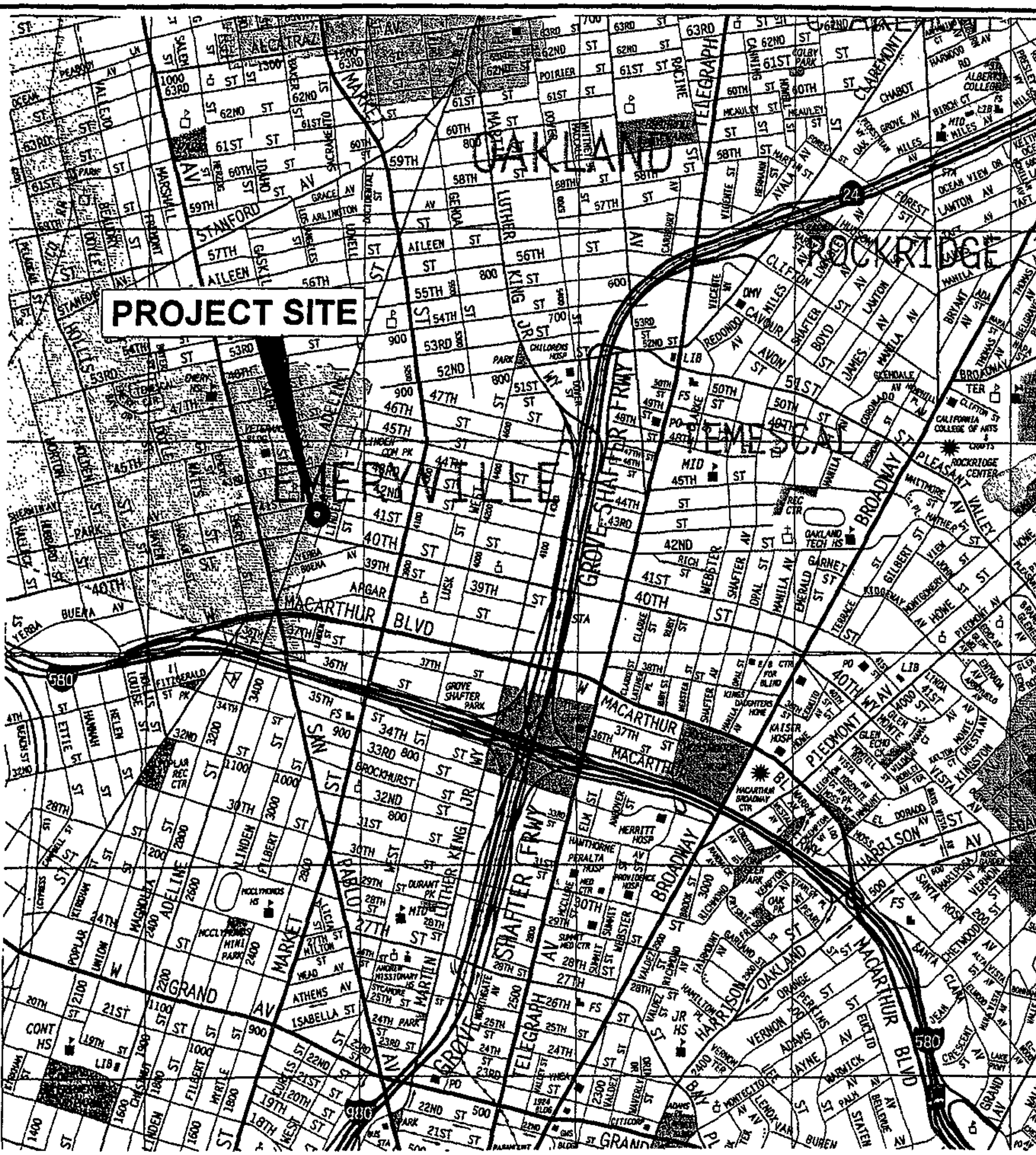
6.0 LIMITATIONS

Our services consist of professional opinions, conclusions, and recommendations that are made in accordance with generally accepted geotechnical engineering principles and practices. This warranty is in lieu of all other warranties, either expressed or implied.

The analyses and recommendations contained in this report are based on the data obtained from two exploratory borings and three CPTs, which indicate subsurface conditions only at specific locations and times, and only to the depths penetrated. Variations may exist and conditions not observed or described in this report could be encountered during construction. Our conclusions and recommendations are based on our analysis of the observed conditions. If conditions other than those described in this report are encountered, we should be notified so that we can provide additional recommendations, if warranted.

This report has been prepared for the exclusive use of Green City Development and their consultants for specific application to the proposed Green City Lofts project as described herein. In the event that there are any changes in the ownership, nature, design, or location of the proposed project, or if any future additions are planned, the conclusions and recommendations contained in this report should not be considered valid unless (1) the project changes are reviewed by SCI, and (2) conclusions and recommendations presented in this report are modified or verified in writing. Reliance on this report by others must be at their risk unless we are consulted on the use or limitations. We cannot be responsible for the impacts of any changes in geotechnical standards, practices, or regulations subsequent to performance of services without our further consultation. We can neither vouch for the accuracy of information supplied by others, nor accept consequences for unconsulted use of segregated portions of this report.

PLATES



NOTE:
This location sketch is based on a Thomas Guide Map for the Metropolitan Bay Area, map 629 and 649, year 1996.

VICINITY MAP		
GREEN CITY LOFTS EMERYVILLE AND OAKLAND, CALIFORNIA		
DRAWN BY: AHL	DATE 12/2000	PLATE 1
JOB NUMBER 1316.001	FILE NUMBER: 1316.001.01	

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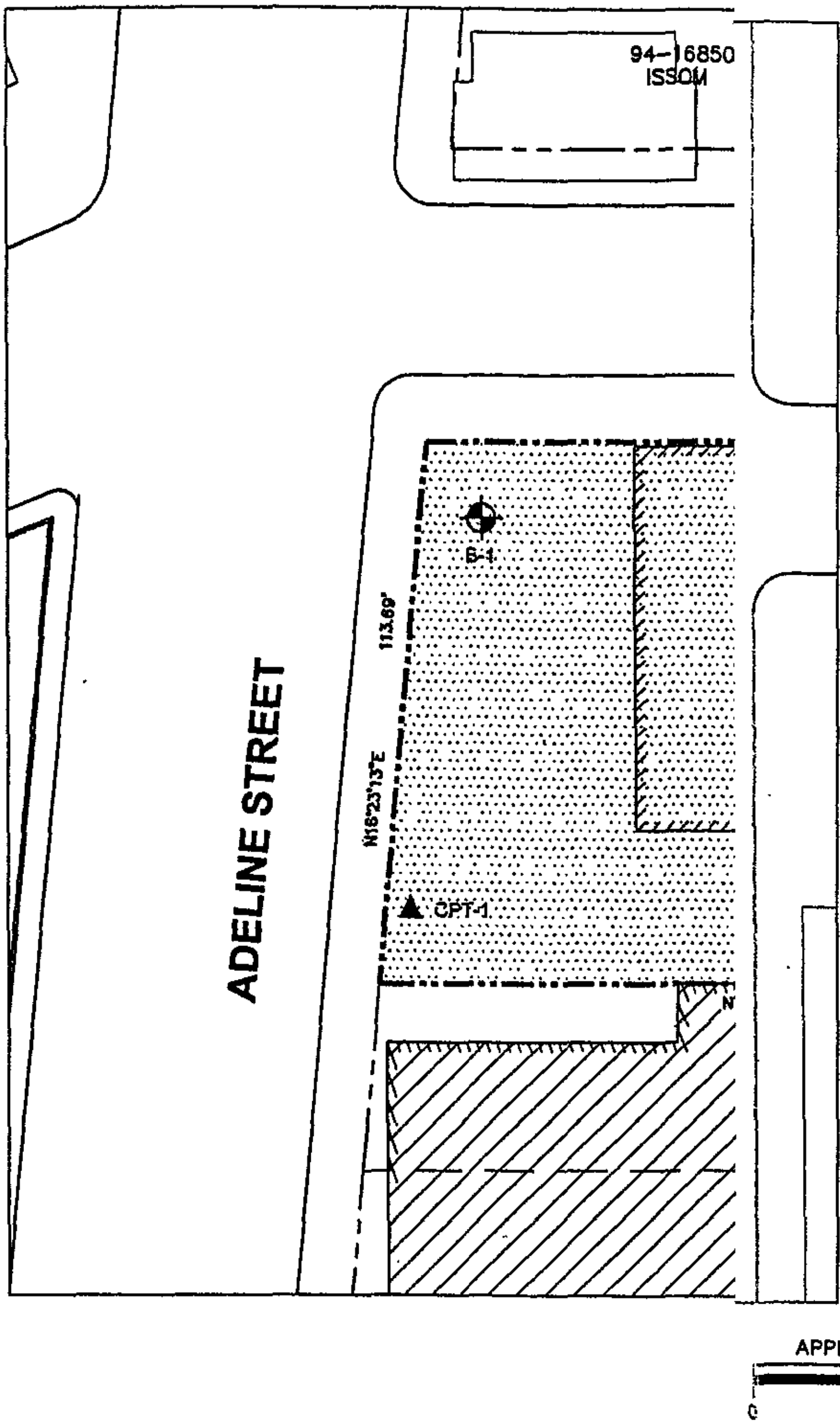

SITE PLAN

GREEN CITY LOFTS
EMERYVILLE AND OAKLAND, CALIFORNIA

DRAWN BY: AHL

DATE: 12/00

JOB NUMBER: 1316.001

FILE NUMBER: 1316.001.02

PLATE 2

SCI Subsurface Consultants, Inc.
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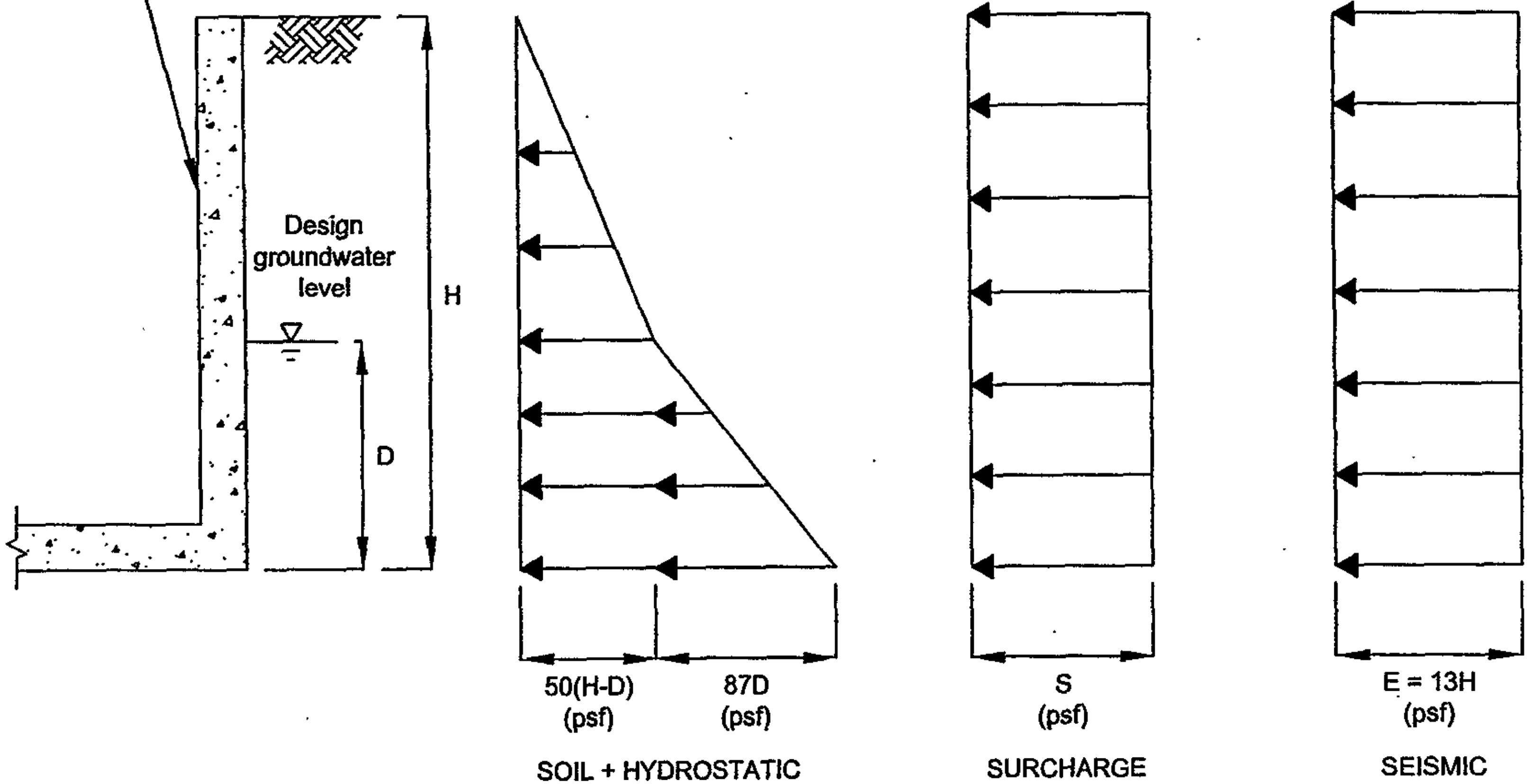
Reference:
Baseplan is provided by Swatt Architects.



H = Height of below-grade wall above bottom of basement floor slab, in feet.

D = Height of design groundwater level above bottom of basement floor slab, in feet. If walls are designed for fully drained conditions, the groundwater level can be taken as being below the basement floor slab.

S = 1/2 the surcharge loads, in psf. Wall subjected to vehicular surcharge should be designed for a uniform lateral pressure of 100 psf applied over the full height of the wall. Other surcharge loads which may need to be considered include loads of adjacent buildings.

E = Lateral pressure due to earthquake loading

NOT TO SCALE

LATERAL EARTH PRESSURES ON BELOW-GRADE WALLS	
GREEN CITY LOFTS EMERYVILLE AND OAKLAND, CALIFORNIA	
DRAWN BY: AHL — DATE 12/00	PLATE
JOB NUMBER 1316.001 — FILE NUMBER: A1316.001.03	3

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APPENDIX A
FIELD EXPLORATION

APPENDIX A
FIELD EXPLORATION

Field exploration was performed on November 17 and November 29, 2000. Our work included two exploratory borings drilled with a CME-75 drill rig equipped with 8-inch-diameter hollow-stem augers and three Cone Penetration Tests (CPTs) performed from a truck-mounted CPT rig. The borings extended to depths of approximately 51½ feet. The CPTs extended to depths ranging from approximately 48¾ feet. The approximate locations of the borings and CPTs are shown on the Site Plan, Plate 2. The soils encountered in the borings were logged in the field by our representative. The soils are described in accordance with the Unified Soil Classification System (ASTM D2487). The logs of the borings, as well as a key for the classification of the soil (Plate A-1), are included as part of this appendix.

Representative soil samples were obtained from the borings at regular intervals using a Modified California split-barrel drive sampler (outside diameter of 3.0 inches, inside diameter of 2.5 inches) and a Standard Penetration Test (SPT) split-barrel drive sampler (outside diameter of 2.0 inches, inside diameter of 1.375 inches). The samplers were driven by a 140-pound hammer falling 30 inches using an automatic trip system.

Resistance blow counts were obtained by driving the samplers into the soil with a 140-pound hammer falling 30 inches using an automatic trip hammer system. The sampler was driven 18 inches and the number of blows were recorded for each 6 inches of penetration. The number of blows required to drive the samplers the final 12 inches of each 18-inch penetration is presented on the boring logs. Due to the large diameter of the Modified California sampler, and the use of the automatic hammer system, the blow counts recorded for this sampler are not standard penetration resistance values.

The CPT consists of hydraulically pushing a steel cone tip into the ground using a string of steel rods 1.4 inches in diameter. The cone is advanced downward at a steady rate of approximately 1 inch per second using a truck weighing about 15 tons. Probe readings are taken every 6 inches. The standardized electric friction cone penetrometer (ASTM D3441-86) is composed of two electronic sensors: 1) a conical tip that measures the resistance to penetration, recorded as the Bearing Stress, Qc, and 2) a friction (cylindrical) sleeve located behind the tip that measures the friction between the sleeve and the soil, recorded as the Friction Sleeve Stress, Fs. Data plots of Qc, Fs, and Rf (the ratio of Fs to Qc) versus depth are used to separate the soil profile into layers. Published correlations of Qc and Rf values are used to assign a soil type, and to estimate SPT blow count (N[1]), friction angle (Phi) for cohesionless soils, and shear strength (Su) for cohesive soils.

Groundwater was measured during drilling in the borings at depths ranging from approximately 15 to 24 feet below the ground surface. In the CPTs, groundwater was measured at depths of

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1 Standard penetration test (SPT) blow counts (N values) are a measure of the relative density of sandy soils. The N value is the number of blow counts required to drive a standard SPT sampler the last 12 inches of an 18-inch drive using a 140-pound hammer falling 30 inches.

approximately 8 feet. Upon completion of our field investigation, the borings and CPTs were backfilled with neat cement grout.

The attached boring and CPT logs and related information show our interpretation of the subsurface conditions at the dates and locations indicated, and it is not warranted that they are representative of subsurface conditions at other locations and times.

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D2487-93)

MAJOR DIVISIONS				GROUP NAMES
COARSE-GRAINED SOILS More than 50% retained on the No. 200 sieve	GRAVELS More than 50% of coarse fraction retained on No. 4 sieve	Clean gravels less than 5% fines	GW	Well-graded gravel, Well-graded gravel with sand
			GP	Poorly graded gravel, Poorly graded gravel with sand
		Gravels with more than 12% fines	GM	Silty gravel, Silty gravel with sand
			GC	Clayey gravel, Clayey gravel with sand
	SANDS 50% or more of coarse fraction passes No. 4 sieve	Clean sand less than 5% fines	SW	Well-graded sand, Well-graded sand with gravel
			SP	Poorly graded sand, Poorly graded sand with gravel
		Sands with more than 12% fines	SM	Silty sand, Silty sand with gravel
			SC	Clayey sand, Clayey sand with gravel
FINE-GRAINED SOILS 50% or more passes the No. 200 sieve	SILTS AND CLAYS Liquid Limit Less than 50%		ML	Silt, Silt with sand or gravel, Sandy or gravelly silt, Sandy or gravelly silt with gravel or sand
			CL	Lean clay, Lean clay with sand or gravel, Sandy or gravelly lean clay, Sandy or gravelly lean clay with gravel or sand
			OL	Organic silt or clay, Organic silt or clay with sand or gravel, Sandy or gravelly organic silt or clay, Sandy or gravelly organic silt or clay with gravel or sand
	SILTS AND CLAYS Liquid Limit Greater than 50%		MH	Elastic silt, Elastic silt with sand or gravel, Sandy or gravelly elastic silt, Sandy or gravelly elastic silt with gravel or sand
			CH	Fat clay, Fat clay with sand or gravel, Sandy or gravelly fat clay, Sandy or gravelly fat clay with gravel or sand
			OH	Organic silt or clay, Organic silt or clay with sand or gravel, Sandy or gravelly organic silt or clay, Sandy or gravelly organic silt or clay with gravel or sand
HIGHLY ORGANIC SOILS			Pt	Peat

For definition of dual and borderline symbols, see ASTM D2487-93.

KEY TO TEST DATA AND SYMBOLS

Perm	-	Permeability
Consol	-	Consolidation
LL	-	Liquid Limit
PI	-	Plasticity Index
Gs	-	Specific Gravity
MA	-	Particle Size Analysis
-200	-	Percent Passing No. 200 Sieve
ND	-	Not Detected
■	-	Tube Sample
⊠	-	Bag or Bulk Sample
◫	-	Lost Sample
∇	-	First Groundwater
▼	-	Stabilized Groundwater

	Shear Strength (psf)	Confining Pressure (psf)	
TxUU	3200	(2600)	Unconsolidated-Undrained Triaxial Shear
TxCU	3200	(2600)	Consolidated-Undrained Triaxial Shear
TxCD	3200	(2600)	Consolidated-Drained Triaxial Shear
SSCU	3200	(2600)	Consolidated-Undrained Simple Shear
SSCD	3200	(2600)	Consolidated-Drained Simple Shear
DSCD	2700	(2000)	Consolidated-Drained Direct Shear
UC	470		Unconfined Compression
LVS	700		Laboratory Vane Shear
FV	300		Field Vane Shear
RFV			
TV	800		Torvane Shear
PP	400		Pocket Penetrometer *(actual reading divided by 2)*

SCI **Subsurface Consultants, Inc.**
Geotechnical & Environmental Engineers

GREEN CITY LOFTS
EMERYVILLE AND OAKLAND, CALIFORNIA

JOB NUMBER	DATE	APPROVED	PLATE
1316.001	12/2000		A1

Project Name & Location: Green City Lofts 4050 Adeline St. Emeryville and Oakland, California	Ground Surface Elevation: 46.4' feet Elevation Datum: City of Oakland
Drilling Coordinates: not surveyed	Start: Date 11/17/00 Time 08:25 — Finish: Date 11/17/00 Time 11:45
Drilling Company & Driller: Bay Area Exploration, Jeff	Drilling Fluid: — Hole Diameter: 8"
Rig Type & Drilling Method: CME 75 / Hollow Stem Auger	
Sampler Type(s): A) Modified California (3" O.D., 2.5" I.D.) B) SPT (2" O.D., 1.4" I.D.)	Logged By: NTB — ∇ Level During Drilling
Sampling Method(s): A) 140 lb automatically tripped hammer w/30" drop B) 140 lb automatically tripped hammer w/30" drop	Backfill Method: Grout — Date: 11/17/00

Depth (feet)	Sampler Type	Blows/6 Inches of Pressure	Blows/12 inches	SOIL DESCRIPTIONS: GROUP NAME (GROUP SYMBOL) color, consistency/density, moisture condition, other descriptions (Local Name or Material Type)	Moisture Content (%)	Dry Density (pcf)	Other
0				**ASPHALT - 6 inches thick** **BASE ROCK - 4 INCHES THICK** **SILTY CLAY with SAND (CL-ML)** brown, medium stiff to stiff, moist (fill)			
	A	3 5 7	12				
	B	3 3 4	7	**FAT CLAY with SAND (CH)** dark brown, medium stiff, moist			
5	A	6 11 20	31	**LEAN CLAY with SAND (CL)** olive-green, very stiff, moist, with gravel, gasoline odor	17.8	110	LL = 25, PI = 9
				SILTY, CLAYEY SAND (SC-SM) greenish gray with reddish brown staining, loose, moist			
10	B	4 4 5	9	**LEAN CLAY with SILT and SAND (CL)** yellowish brown, medium stiff to stiff, moist			
15	A	4 4 6	10	∇ **CLAYEY SILTY SAND (SC-SM)** yellowish brown, loose to medium dense, moist			
	A	4 6 13	19	Increasing sand and gravel content	24.5	102	TXUU = 1216 (994)
20	A	8 11 25	36	**POORLY GRADED GRAVEL with CLAY and SAND (GP-GC)** reddish brown, medium dense, wet, sub-rounded gravel (size up to 1"), with sandstone, serpentinite and chert fragments.			
				Increasing clay content			
25	A	11 14 22	36				
30				Continued			

Project Name & Location: Green City Lofts, 4050 Adeline St., Emeryville and Oakland, California	Start Date: 11/17/00
	Logged By: NTB

Depth (feet)	Sampler Type	Blows/6 inches of Pressure	Blows/12 inches	Sample Interval	Graphic Log	SOIL DESCRIPTIONS: GROUP NAME (GROUP SYMBOL) color, consistency/density, moisture condition, other descriptions (Local Name or Material Type)	LABORATORY DATA: Moisture Content (%)	Dry Density (pcf)	Other
30	A	3 5 5	10			**SANDY LEAN CLAY (CL)** reddish brown, medium stiff, wet			
						gravel layers			
35	A	4 4 7	11				22	105	TXUU = 907 (1699)
40	A	7 10 18	28			**SANDY LEAN CLAY (CL)** mottled olive-gray, reddish brown, very stiff, wet			
						POORLY GRADED GRAVEL with SAND (GP) reddish brown, medium dense, wet, sub-rounded gravel (size ranging from 1/4" to 2"), with sandstone, feldspare and chert fragments			
45	A	4 7 20	27						
50	A	19 22 14	36			**LEAN CLAY with SAND and GRAVEL (CL)** yellowish brown, very stiff, wet, with fine gravel			
55									
60									
65									

LOG OF BORING 1316-001.GPJ GEO-ENV.GDT 12/22/00

SCI Subsurface Consultants, Inc. Geotechnical & Environmental Engineers	Green City Lofts, Emeryville and Oakland, California		BORING
	JOB NUMBER 1316.001	DATE 12/00	B-1

Project Name & Location: Green City Lofts 4050 Adeline St. Emeryville and Oakland, California	Ground Surface Elevation: 50.7' feet Elevation Datum: City of Oakland
Drilling Coordinates: not surveyed	Start: Date 11/17/00 Time 00:00 / Finish: Date 11/17/00 Time 00:00
Drilling Company & Driller: Bay Area Exploration, Jeff	Drilling Fluid: / Hole Diameter: 8"
Rig Type & Drilling Method: CME 75 / Hollow Stem Auger	
Sampler Type(s): A) Modified California (3" O.D., 2.5" I.D.) B) SPT (2" O.D., 1.4" I.D.)	Logged By: NTB / ▽ Level During Drilling
Sampling Method(s): A) 140 lb automatically tripped hammer w/30" drop B) 140 lb automatically tripped hammer w/30" drop	Backfill Method: Grout / Date: 11/17/00

Depth (feet)	Sampler Type	Blows/6 inches of Pressure	Blows/12 inches	SOIL DESCRIPTIONS: GROUP NAME (GROUP SYMBOL) color, consistency/density, moisture condition, other descriptions (Local Name or Material Type)	Moisture Content (%)	Dry Density (pcf)	Other
0				**CONCRETE** - 8-inch thick slab			
	A	4, 4, 6	10	**SILTY CLAY with SAND (CL-ML)** black, medium stiff, moist, with trace of gravels an roots, slight hydrocarbon ordor (fill)			
	B	2, 2, 3	5	**LEAN CLAY with SAND (CL)** black, medium stiff to very stiff, moist, slight hydrocarbon odor			
5	A	4, 4, 7	11		26	92	LL = 48, PI = 26 TXUU = 989 (504)
10	A	5, 8, 13	21		21.3	105	TXUU = 2205 (806)
	B	4, 6, 12	18				
15	A	9, 12, 20	32	**LEAN CLAY with SAND (CL)** mottled yellowish brown, olive-gray, and reddish brown, very stiff, moist, strong hydrocarbon odor	17.4	112	TXUU = 4450 (979)
20	A	9, 11, 17	28	has little to no hydrocarbon odor at 21 feet			
▽							
25	A	5, 7, 15	22				
30				Continued			

Project Name & Location:	Green City Lofts 4050 Adeline St. Emeryville and Oakland, California	Start Date: 11/17/00 Logged By: NTB

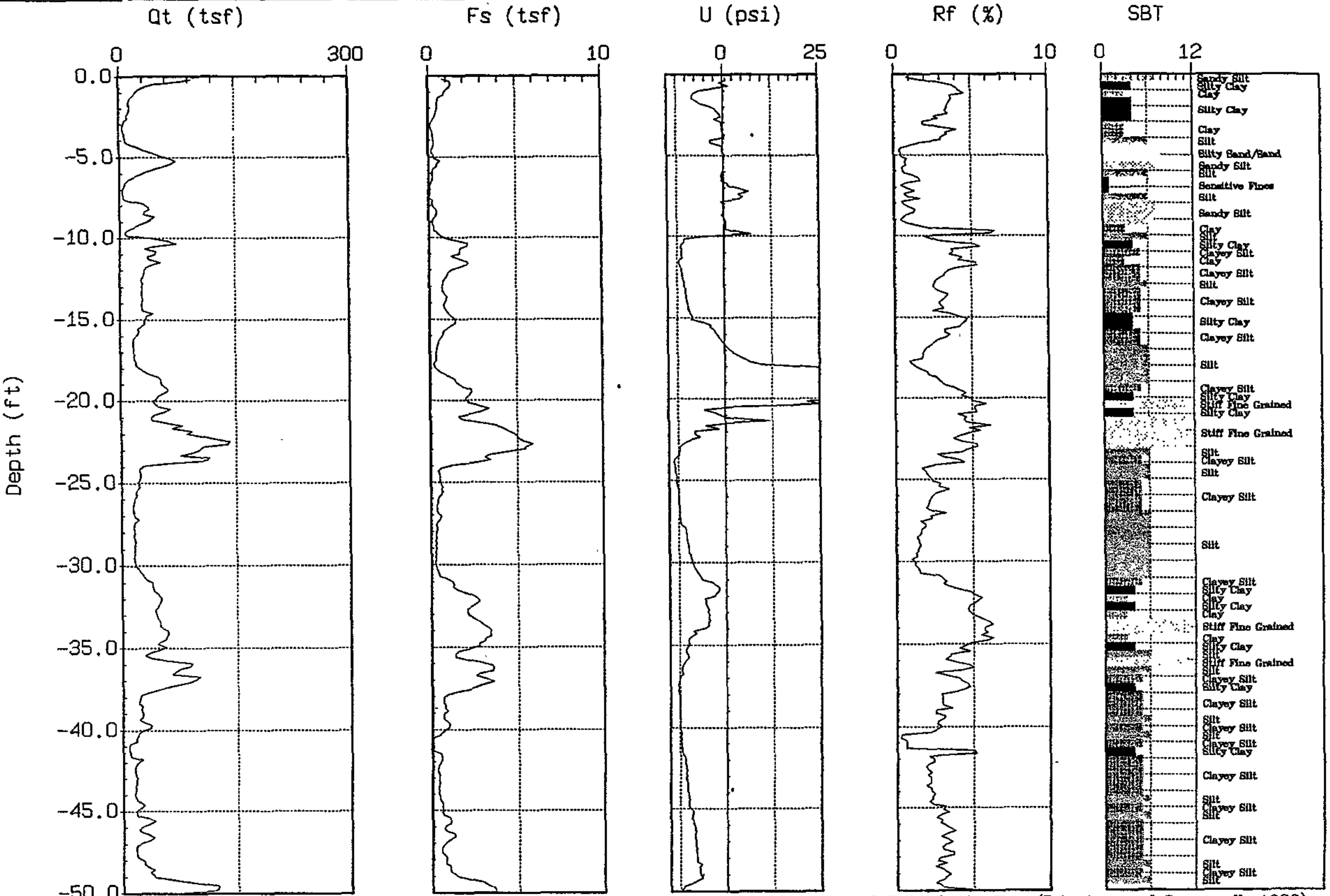
Depth (feet)	Sampler Type	Blows/6 inches of Pressure	Blows/12 inches	SOIL DESCRIPTIONS: GROUP NAME (GROUP SYMBOL) color, consistency/density, moisture condition, other descriptions (Local Name or Material Type)	LABORATORY DATA: Moisture Content (%)	Dry Density (pcf)	Other
30	A	8 11 16	27		23.5	104.5	LL = 42, PI = 24 TXUU = 2550 (1570)
				LEAN CLAY with SAND and GRAVEL (CL) reddish brown, medium stiff to stiff, wet, with sub-rounded gravel			
35	A	5 6 6	12				
	A	4 7 10	17				
				LEAN CLAY with SAND (CL) reddish brown, very stiff, moist			
40	A	7 12 18	30		22	106.7	TXUU = 1993 (1944)
45							
				CLAYEY SAND (SC) mottled reddish brown, olive-gray, medium dense to dense, wet			
50	A	9 26 23	49				
				POORLY GRADED GRAVEL with CLAY and SAND (GP-GC) reddish brown, medium dense, moist, with sub-rounded gravel (sizes up to 1")			
55							
60							
65							

GREGG

Subsurface

Site : Green City Lofts
Location : CPT-01

Engineer: R. Barllett
Date : 11:29:00 14:32



Max. Depth: 50.03 (ft)
Depth Inc.: 0.164 (ft)

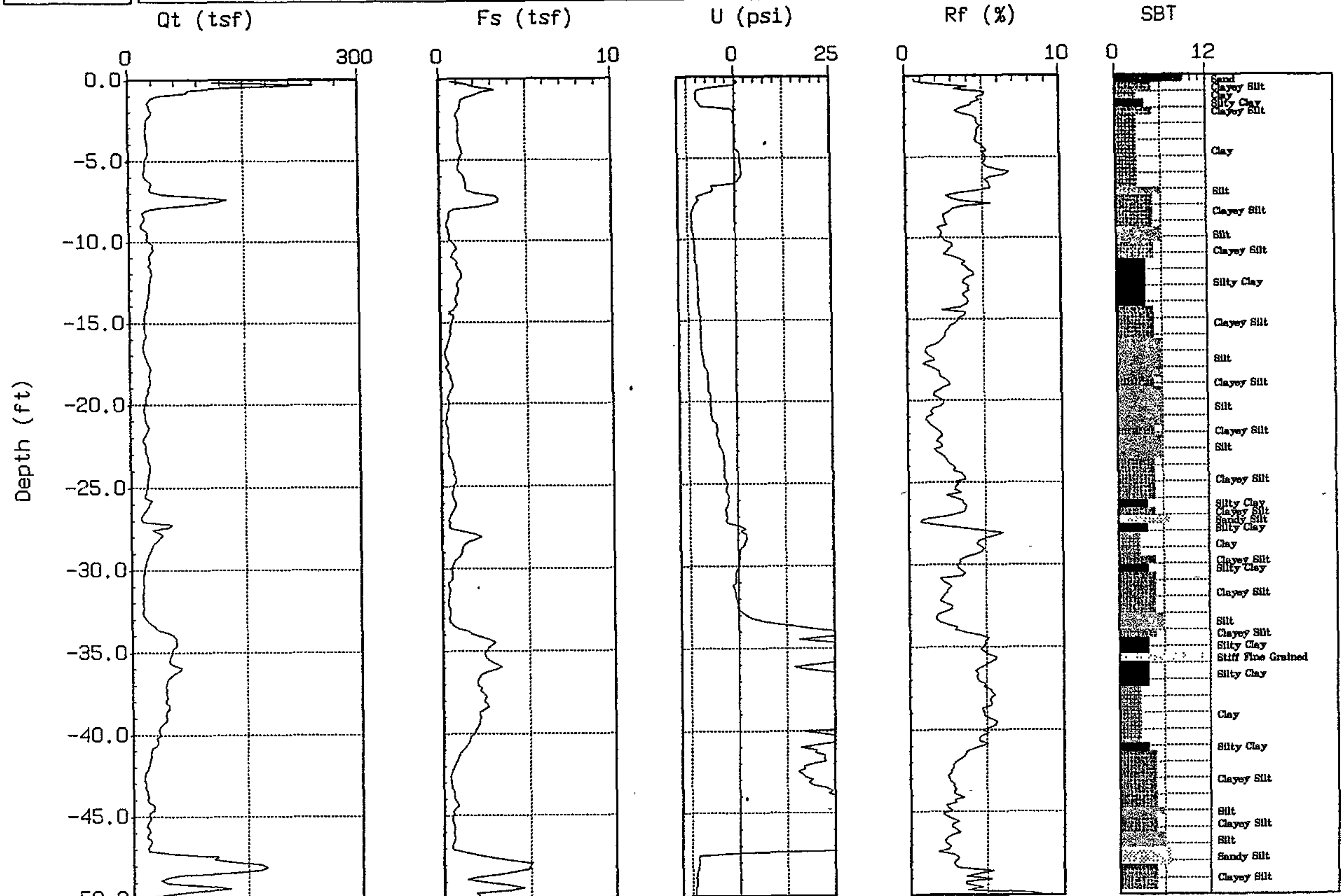
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

Subsurface

Site : Green City Lofts
Location : CPT-02

Engineer: R. Barllett
Date : 11:29:00 17:04



Max. Depth: 50.03 (ft)

Depth Inc.: 0.164 (ft)

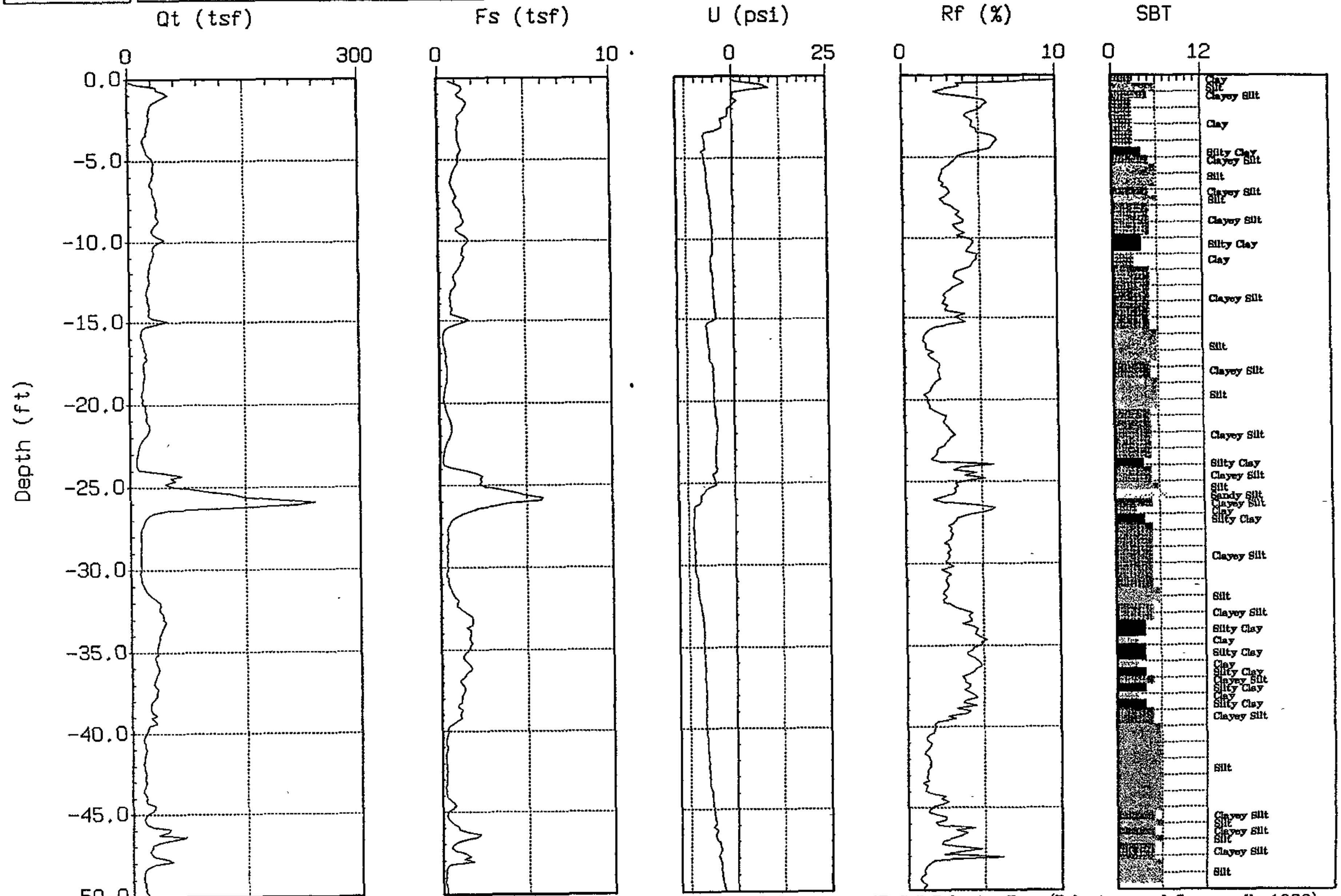
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

Subsurface

Site : Green City Lofts
Location : CPT-03

Engineer: R. Barllett
Date : 11:29:00 17:39



Max. Depth: 50.03 (ft)

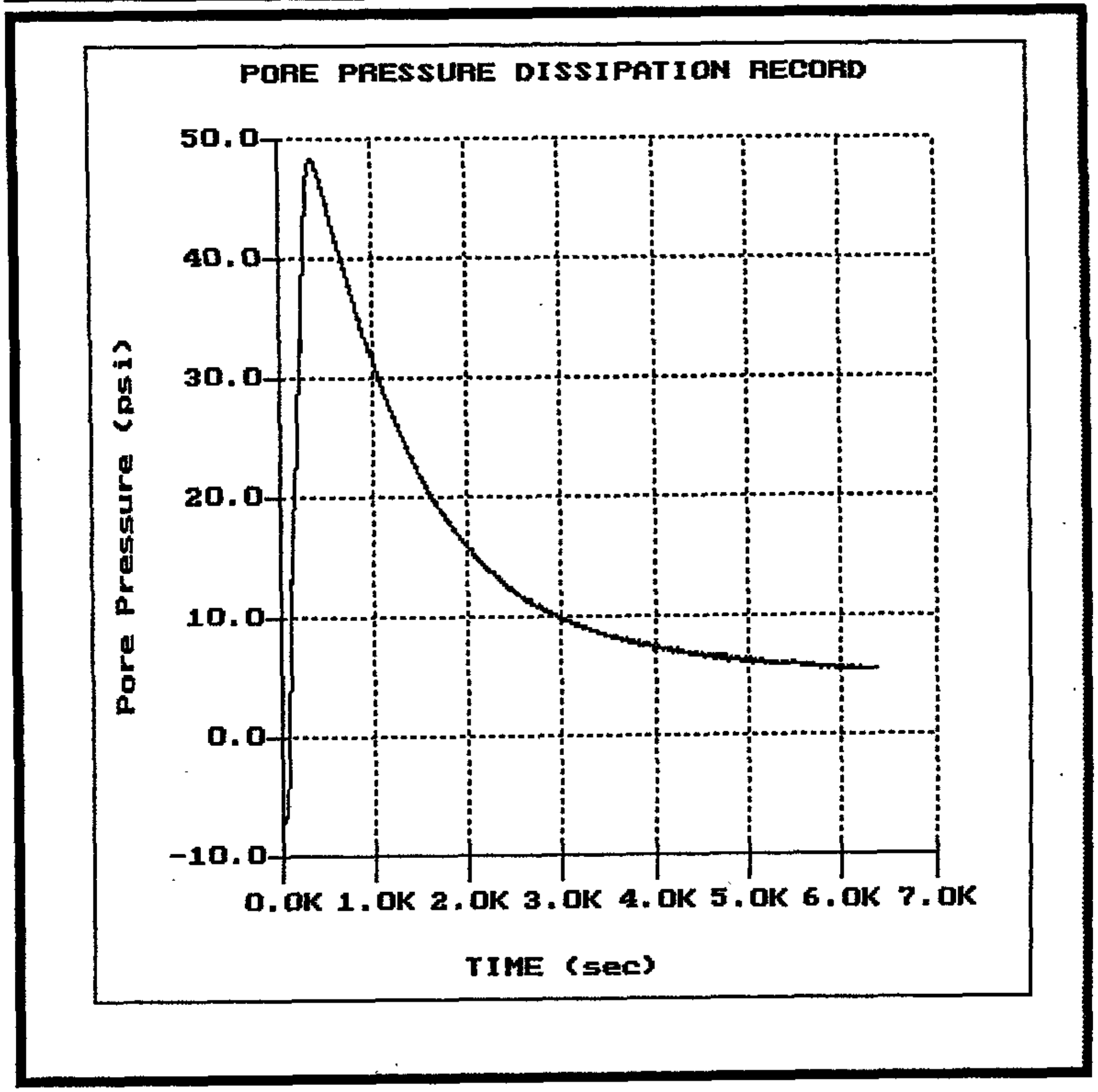
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

Subsurface

Site:CPT-01
Location:Green City

Engineer: R.Bartlett
Date:11:29:00 14:32



File: 190C01.PPR
Depth (m): 4.60
(ft): 15.09
Duration : 6385.0s
U-min: -9.28 0.0s
U-max: 48.36 360.0s

ConeTec Investigations Ltd. - CPT Interpretation
Interpretation Output - Release 1.00.19c
Run No: 00-1201-1542-3881
No: 97-100
Client: SUBSURFACE
Project: Green City Lofts, Oakland, CA
Site: Green City Lofts
Location: CPT-01
Engineer: R. Barllett
CPT Date: 00/29/11
CPT Time: 14:32
CPT File: 190C01.COR

Water Table (m): 2.44 (ft): 8.0
Averaging Increment (m): 0.30
Su Nkt used: 15.00
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
Used Unit Weights Assigned to Soil Zones

Depth (ft)	Depth (m)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	E.Stress (tsf)	Hyd. Pr. (tsf)	N60 (blows/ft)	(N1)60 (blows/ft)	Delta (N1)60	(N1)60 CS	Su (tsf)	CRR	Dr (%)	Phi (deg)	OCR (ratio)	SBT
0.49	0.15	49.393	1.078	2.2	0.028	0.000	18.9	37.8	0.0	37.8	3.291	0.00	95.0	50.0	10.0	6
1.48	0.45	14.160	0.536	3.8	0.084	0.000	13.6	27.1	0.0	27.1	0.938	0.00	0.0	0.0	10.0	3
2.46	0.75	9.557	0.291	3.0	0.139	0.000	6.1	12.2	6.2	18.4	0.628	0.09	0.0	0.0	10.0	4
3.44	1.05	5.919	0.187	3.2	0.195	0.000	5.7	11.3	11.3	22.7	0.382	0.10	0.0	0.0	6.0	3
4.43	1.35	29.510	0.217	0.7	0.251	0.000	9.4	18.8	0.9	19.7	0.000	0.10	51.5	42.0	1.0	7
5.41	1.65	56.693	0.351	0.6	0.310	0.000	13.6	24.4	0.0	24.4	0.000	0.17	67.2	44.0	1.0	8
6.40	1.95	12.128	0.119	1.0	0.368	0.000	4.6	7.7	3.3	11.0	0.784	0.09	30.0	36.0	6.0	6
7.30	2.22	5.559	0.066	1.2	0.413	0.000	2.7	4.1	4.1	8.3	0.343	0.09	0.0	0.0	3.0	1
8.20	2.50	35.814	0.319	0.9	0.452	0.006	11.4	17.0	2.3	19.3	0.000	0.10	48.6	42.0	1.0	7
^ 19	2.80	21.535	0.236	1.1	0.478	0.037	8.2	11.9	3.9	15.9	1.401	0.09	33.2	38.0	6.0	6
17	3.10	44.085	1.502	3.4	0.504	0.068	21.1	29.7	13.6	43.3	2.901	0.25	0.0	0.0	10.0	5
11.15	3.40	43.369	1.794	4.1	0.529	0.098	20.8	28.5	16.7	45.2	2.849	0.35	0.0	0.0	10.0	5
12.14	3.70	30.276	1.134	3.7	0.555	0.129	14.5	19.5	15.0	34.5	1.973	0.29	0.0	0.0	6.0	5
13.21	4.02	27.878	0.798	2.9	0.583	0.163	13.3	17.5	12.0	29.5	1.809	0.18	0.0	0.0	6.0	5
14.27	4.35	31.208	0.931	3.0	0.611	0.196	14.9	19.1	12.7	31.9	2.027	0.20	0.0	0.0	6.0	5
15.26	4.65	28.185	1.195	4.2	0.636	0.227	18.0	22.6	22.6	45.1	1.821	0.00	0.0	0.0	6.0	4
16.24	4.95	18.078	0.538	3.0	0.662	0.257	8.7	10.6	10.6	21.3	1.144	0.20	0.0	0.0	6.0	5
17.22	5.25	17.724	0.292	1.6	0.688	0.288	6.8	8.2	7.1	15.3	1.117	0.13	30.0	34.0	6.0	6
18.21	5.55	35.643	0.708	2.0	0.713	0.319	13.7	16.2	7.8	24.0	2.307	0.14	41.9	38.0	6.0	6
19.19	5.85	55.625	1.991	3.6	0.739	0.349	26.6	31.0	17.1	48.1	3.636	0.37	0.0	0.0	10.0	5
20.18	6.15	50.523	2.580	5.1	0.764	0.380	48.4	55.4	48.7	104.1	3.292	0.00	0.0	0.0	10.0	3
21.16	6.45	55.020	2.708	4.9	0.789	0.411	35.1	39.6	32.0	71.5	3.588	0.00	0.0	0.0	10.0	4
22.15	6.75	114.535	5.067	4.4	0.818	0.442	109.7	121.3	0.0	121.3	0.000	0.00	73.4	44.0	1.0	11
23.13	7.05	100.830	4.200	4.2	0.852	0.472	96.6	104.6	0.0	104.6	0.000	0.00	69.2	42.0	1.0	11
24.11	7.35	31.298	0.964	3.1	0.881	0.503	15.0	16.0	16.0	31.9	1.994	0.00	0.0	0.0	6.0	5
25.10	7.65	21.578	0.563	2.6	0.907	0.534	10.3	10.9	10.9	21.7	1.343	0.21	0.0	0.0	6.0	5
26.08	7.95	16.153	0.379	2.3	0.933	0.565	7.7	8.0	8.0	16.0	0.977	0.13	0.0	0.0	6.0	5
27.07	8.25	17.200	0.388	2.3	0.958	0.595	8.2	8.4	8.4	16.8	1.043	0.14	0.0	0.0	6.0	5
28.05	8.55	16.599	0.271	1.6	0.984	0.626	6.4	6.4	6.4	12.8	0.999	0.13	30.0	32.0	6.0	6
29.04	8.85	16.503	0.239	1.4	1.010	0.657	6.3	6.3	6.3	12.6	0.989	0.13	30.0	32.0	3.0	6
30.02	9.15	20.293	0.254	1.3	1.035	0.688	7.8	7.6	7.6	15.3	1.238	0.17	30.0	32.0	6.0	6
31.00	9.45	36.785	1.066	2.9	1.061	0.718	17.6	17.1	17.1	34.2	2.334	0.00	0.0	0.0	6.0	5
31.99	9.75	48.487	2.423	5.0	1.086	0.749	46.4	44.6	44.6	89.1	3.110	0.00	0.0	0.0	6.0	3
32.97	10.05	45.997	2.292	5.0	1.110	0.780	44.1	41.8	0.0	41.8	2.941	0.00	0.0	0.0	6.0	3
33.96	10.35	55.545	3.238	5.8	1.139	0.810	53.2	49.9	0.0	49.9	0.000	0.00	47.9	38.0	1.0	11
34.94	10.65	43.711	2.225	5.1	1.167	0.841	41.9	38.7	0.0	38.7	2.780	0.00	0.0	0.0	6.0	3
35.92	10.95	70.054	2.792	4.0	1.192	0.872	33.5	30.7	23.8	54.5	4.533	0.00	0.0	0.0	6.0	5

ConeTec Investigations Ltd. - CPT Interpretation

Run No: 00-1201-1542-3881

CPT File: 190C01.COR

Depth (ft)	Depth (m)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	E.Stress (tsf)	Hyd. Pr. (tsf)	N60 (blows/ft)	(N1)60 (blows/ft)	Delta (N1)60	(N1)60 CS	Su (tsf)	CRR	Dr (%)	Phi (deg)	OCR (ratio)	SBT
36.91	11.25	79.751	2.939	3.7	1.218	0.903	38.2	34.6	22.4	57.0	5.175	0.00	0.0	0.0	10.0	5
37.89	11.55	27.287	1.046	3.8	1.244	0.933	17.4	15.6	0.0	15.6	1.674	0.00	0.0	0.0	6.0	4
38.88	11.85	24.212	0.708	2.9	1.269	0.964	11.6	10.3	10.3	20.6	1.465	0.19	0.0	0.0	6.0	5
39.86	12.15	27.567	0.742	2.7	1.295	0.995	13.2	11.6	11.6	23.2	1.685	0.23	0.0	0.0	6.0	5
40.85	12.45	11.518	0.048	0.4	1.321	1.026	4.4	3.8	3.8	7.7	0.611	0.09	30.0	30.0	1.5	6
41.83	12.75	15.580	0.429	2.8	1.346	1.056	7.5	6.4	6.4	12.9	0.878	0.11	0.0	0.0	3.0	5
42.81	13.05	16.481	0.339	2.1	1.372	1.087	7.9	6.7	6.7	13.5	0.935	0.11	0.0	0.0	3.0	5
43.80	13.35	16.240	0.358	2.2	1.397	1.118	7.8	6.6	6.6	13.2	0.915	0.11	0.0	0.0	3.0	5
44.78	13.65	21.308	0.561	2.6	1.423	1.148	10.2	8.6	8.6	17.1	1.249	0.14	0.0	0.0	3.0	5
45.77	13.95	29.503	0.857	2.9	1.449	1.179	14.1	11.7	11.7	23.5	1.792	0.24	0.0	0.0	6.0	5
46.75	14.25	27.368	0.899	3.3	1.474	1.210	13.1	10.8	10.8	21.6	1.647	0.21	0.0	0.0	6.0	5
47.74	14.55	21.517	0.658	3.1	1.500	1.241	10.3	8.4	8.4	16.8	1.252	0.14	0.0	0.0	3.0	5
48.72	14.85	42.948	1.323	3.1	1.526	1.271	20.6	16.7	16.7	33.3	2.677	0.00	0.0	0.0	6.0	5

ConeTec Investigations Ltd. - CPT Interpretation

Interpretation Output - Release 1.00.19c

Run No: 00-1201-1542-3886

[illegible] No: 97-100

Client: SUBSURFACE

Project: Green City Lofts, Oakland, CA

Site: Green City Lofts

Location: CPT-02

Engineer: R. Barllett

CPT Date: 00/29/11

CPT Time: 17:04

CPT File: 190C02.COR

Water Table (m): 2.44 (ft): 8.0

Averaging Increment (m): 0.30

Su Nkt used: 15.00

Phi Method : Robertson and Campanella, 1983

Dr Method : Jamiolkowski - All Sands

Used Unit Weights Assigned to Soil Zones

Depth (ft)	Depth (m)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	E.Stress (tsf)	Hyd. Pr. (tsf)	N60 (blows/ft)	(N1)60 (blows/ft)	Delta (N1)60	(N1)60 CS	Su (tsf)	CRR	Dr (%)	Phi (deg)	OCR (ratio)	SBT
0.49	0.15	112.342	1.976	1.8	0.029	0.000	35.9	71.7	0.0	71.7	0.000	0.00	95.0	50.0	1.0	7
1.48	0.45	28.070	1.253	4.5	0.085	0.000	26.9	53.8	0.0	53.8	1.866	0.00	0.0	0.0	10.0	3
2.46	0.75	25.293	1.051	4.2	0.141	0.000	16.1	32.3	0.0	32.3	1.677	0.00	0.0	0.0	10.0	4
3.44	1.05	23.521	1.104	4.7	0.197	0.000	22.5	45.1	0.0	45.1	1.555	0.00	0.0	0.0	10.0	3
4.43	1.35	24.529	1.238	5.0	0.251	0.000	23.5	46.9	0.0	46.9	1.618	0.00	0.0	0.0	10.0	3
5.41	1.65	20.481	1.133	5.5	0.306	0.000	19.6	35.4	33.1	68.5	1.345	0.45	0.0	0.0	10.0	3
6.40	1.95	26.900	1.492	5.5	0.361	0.000	25.8	42.9	0.0	42.9	1.769	0.00	0.0	0.0	10.0	3
7.30	2.22	93.173	3.037	3.3	0.412	0.000	35.7	55.6	0.0	55.6	6.184	0.00	77.3	46.0	10.0	6
8.20	2.50	23.302	0.850	3.6	0.457	0.006	14.9	22.0	17.5	39.5	1.523	0.22	0.0	0.0	6.0	4
[illegible].19	2.80	19.800	0.468	2.4	0.483	0.037	9.5	13.6	9.2	22.8	1.285	0.12	0.0	0.0	6.0	5
[illegible]17	3.10	27.950	0.740	2.6	0.509	0.068	10.7	15.0	8.3	23.3	1.825	0.15	39.8	40.0	6.0	6
11.15	3.40	26.343	0.830	3.2	0.534	0.098	12.6	17.3	12.5	29.7	1.714	0.19	0.0	0.0	6.0	5
12.14	3.70	27.615	1.116	4.0	0.560	0.129	17.6	23.6	21.6	45.1	1.795	0.41	0.0	0.0	6.0	4
13.21	4.02	24.917	0.965	3.9	0.588	0.163	15.9	20.8	20.8	41.5	1.611	0.45	0.0	0.0	6.0	4
14.27	4.35	20.541	0.732	3.6	0.616	0.196	13.1	16.7	16.7	33.4	1.315	0.28	0.0	0.0	6.0	4
15.26	4.65	19.354	0.566	2.9	0.641	0.227	9.3	11.6	11.6	23.1	1.232	0.23	0.0	0.0	6.0	5
16.24	4.95	18.181	0.374	2.1	0.667	0.257	7.0	8.5	8.2	16.7	1.150	0.18	30.0	34.0	6.0	6
17.22	5.25	22.372	0.306	1.4	0.692	0.288	8.6	10.3	5.9	16.2	1.426	0.10	30.0	36.0	6.0	6
18.21	5.55	25.788	0.510	2.0	0.718	0.319	9.9	11.7	7.9	19.6	1.650	0.14	32.6	38.0	6.0	6
19.19	5.85	22.185	0.496	2.2	0.744	0.349	8.5	9.9	9.2	19.0	1.406	0.20	30.0	36.0	6.0	6
20.18	6.15	18.504	0.364	2.0	0.769	0.380	7.1	8.1	8.1	16.2	1.157	0.18	30.0	34.0	6.0	6
21.16	6.45	21.100	0.299	1.4	0.795	0.411	8.1	9.1	6.8	15.8	1.326	0.12	30.0	34.0	6.0	6
22.15	6.75	18.127	0.369	2.0	0.821	0.442	6.9	7.7	7.7	15.3	1.124	0.17	30.0	34.0	6.0	6
23.13	7.05	22.253	0.481	2.2	0.846	0.472	8.5	9.3	9.3	18.5	1.396	0.23	30.0	34.0	6.0	6
24.11	7.35	23.086	0.713	3.1	0.872	0.503	11.1	11.8	11.8	23.7	1.447	0.24	0.0	0.0	6.0	5
25.10	7.65	19.696	0.638	3.2	0.898	0.534	9.4	10.0	10.0	19.9	1.218	0.18	0.0	0.0	6.0	5
26.08	7.95	21.478	0.698	3.3	0.923	0.565	10.3	10.7	10.7	21.4	1.333	0.20	0.0	0.0	6.0	5
27.07	8.25	28.766	0.418	1.5	0.949	0.595	11.0	11.3	7.4	18.7	1.815	0.13	31.7	36.0	6.0	6
28.05	8.55	34.519	1.672	4.8	0.974	0.626	33.1	33.5	0.0	33.5	2.195	0.00	0.0	0.0	6.0	3
29.04	8.85	21.865	0.982	4.5	0.998	0.657	20.9	21.0	0.0	21.0	1.347	0.00	0.0	0.0	6.0	3
30.02	9.15	16.265	0.538	3.3	1.023	0.688	10.4	10.3	10.3	20.5	0.970	0.13	0.0	0.0	3.0	4
31.00	9.45	14.840	0.381	2.6	1.049	0.718	7.1	6.9	6.9	13.9	0.872	0.11	0.0	0.0	3.0	5
31.99	9.75	14.708	0.341	2.3	1.074	0.749	7.0	6.8	6.8	13.6	0.859	0.11	0.0	0.0	3.0	5
32.97	10.05	21.300	0.433	2.0	1.100	0.780	8.2	7.8	7.8	15.6	1.295	0.17	30.0	32.0	6.0	6
33.96	10.35	51.137	1.945	3.8	1.126	0.810	24.5	23.1	22.1	45.2	3.280	0.00	0.0	0.0	6.0	5
34.94	10.65	51.888	2.526	4.9	1.151	0.841	33.1	30.9	30.9	61.8	3.326	0.00	0.0	0.0	6.0	4
35.92	10.95	55.621	2.793	5.0	1.181	0.872	53.3	49.0	49.0	98.1	0.000	0.00	47.5	38.0	1.0	11

Run No: 00-1201-1542-3886

CPT File: 190C02.COR

Length (ft)	Depth (m)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	E.Stress (tsf)	Hyd. Pr. (tsf)	N60 (blows/ft)	(N1)60	Delta (N1)60	(N1)60 CS	Su (tsf)	CRR	Dr (%)	Phi (deg)	OCR (ratio)	SBT
36.91	11.25	44.569	2.048	4.6	1.210	0.903	28.5	25.9	25.9	51.7	2.830	0.00	0.0	0.0	6.0	4
37.89	11.55	45.570	2.439	5.4	1.235	0.933	43.6	39.3	0.0	39.3	2.893	0.00	0.0	0.0	6.0	3
38.88	11.85	42.559	2.113	5.0	1.259	0.964	40.8	36.3	0.0	36.3	2.689	0.00	0.0	0.0	6.0	3
39.86	12.15	33.572	1.733	5.2	1.283	0.995	32.2	28.4	0.0	28.4	2.086	0.00	0.0	0.0	6.0	3
40.85	12.45	26.012	1.153	4.4	1.307	1.026	24.9	21.8	0.0	21.8	1.579	0.00	0.0	0.0	6.0	3
41.83	12.75	20.170	0.642	3.2	1.332	1.056	9.7	8.4	8.4	16.7	1.185	0.14	0.0	0.0	3.0	5
42.81	13.05	15.798	0.418	2.6	1.358	1.087	7.6	6.5	6.5	13.0	0.890	0.11	0.0	0.0	3.0	5
43.80	13.35	19.676	0.583	3.0	1.384	1.118	9.4	8.0	8.0	16.0	1.145	0.13	0.0	0.0	3.0	5
44.78	13.65	22.448	0.558	2.5	1.409	1.148	10.7	9.1	9.1	18.1	1.326	0.15	0.0	0.0	3.0	5
45.77	13.95	19.000	0.550	2.9	1.435	1.179	9.1	7.6	7.6	15.2	1.092	0.12	0.0	0.0	3.0	5
46.75	14.25	26.621	0.650	2.4	1.461	1.210	10.2	8.4	8.4	16.9	1.597	0.20	30.0	32.0	6.0	6
47.74	14.55	142.805	4.001	2.8	1.487	1.241	45.6	37.4	13.2	50.5	0.000	0.00	71.2	42.0	1.0	7
48.72	14.85	69.784	2.767	4.0	1.513	1.271	33.4	27.2	26.9	54.0	4.467	0.00	0.0	0.0	6.0	5

ConeTec Investigations Ltd. - CPT Interpretation
Interpretation Output - Release 1.00.19c
Run No: 00-1201-1542-3892
No: 97-100
Client: SUBSURFACE
Project: Green City Lofts, Oakland, CA
Site: Green City Lofts
Location: CPT-03
Engineer: R. Barllett
CPT Date: 00/29/11
CPT Time: 17:39
CPT File: 190C03.COR

Water Table (m): 2.44 (ft): 8.0
Averaging Increment (m): 0.30
Su Nkt used: 15.00
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
Used Unit Weights Assigned to Soil Zones

Depth (ft)	Depth (m)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	E.Stress (tsf)	Hyd. Pr. (tsf)	N60 (blows/ft)	(N1)60 (blows/ft)	Delta (N1)60	(N1)60 CS	Su (tsf)	CRR	Dr (%)	Phi (deg)	OCR (ratio)	SBT
0.49	0.15	31.582	1.136	3.6	0.028	0.000	15.1	30.2	0.0	30.2	2.104	0.00	0.0	0.0	10.0	5
1.48	0.45	33.453	1.515	4.5	0.085	0.000	21.4	42.7	0.0	42.7	2.225	0.00	0.0	0.0	10.0	4
2.46	0.75	26.445	1.176	4.4	0.140	0.000	25.3	50.7	0.0	50.7	1.754	0.00	0.0	0.0	10.0	3
3.44	1.05	21.080	1.116	5.3	0.195	0.000	20.2	40.4	0.0	40.4	1.392	0.00	0.0	0.0	10.0	3
4.43	1.35	24.608	1.213	4.9	0.250	0.000	23.6	47.1	0.0	47.1	1.624	0.00	0.0	0.0	10.0	3
5.41	1.65	32.713	0.979	3.0	0.305	0.000	15.7	28.3	9.5	37.9	2.161	0.16	0.0	0.0	10.0	5
6.40	1.95	30.090	0.772	2.6	0.362	0.000	11.5	19.2	6.9	26.1	1.982	0.14	46.8	42.0	10.0	6
7.30	2.22	33.713	0.934	2.8	0.414	0.000	12.9	20.1	8.0	28.1	2.220	0.16	48.1	42.0	10.0	6
8.20	2.50	36.667	1.226	3.3	0.459	0.006	17.6	25.9	12.5	38.5	2.413	0.21	0.0	0.0	10.0	5
.19	2.80	33.071	1.230	3.7	0.485	0.037	15.8	22.8	14.0	36.8	2.170	0.24	0.0	0.0	10.0	5
.7	3.10	36.010	1.515	4.2	0.510	0.068	23.0	32.2	21.8	54.0	2.362	0.33	0.0	0.0	10.0	4
11.15	3.40	28.780	1.323	4.6	0.535	0.098	27.6	37.7	35.9	73.6	1.876	0.00	0.0	0.0	6.0	3
12.14	3.70	25.193	0.912	3.6	0.560	0.129	12.1	16.1	14.6	30.7	1.634	0.32	0.0	0.0	6.0	5
13.21	4.02	22.967	0.707	3.1	0.588	0.163	11.0	14.3	12.9	27.3	1.481	0.25	0.0	0.0	6.0	5
14.27	4.35	26.159	0.767	2.9	0.616	0.196	12.5	16.0	12.6	28.6	1.690	0.21	0.0	0.0	6.0	5
15.26	4.65	26.185	0.834	3.2	0.641	0.227	12.5	15.7	14.0	29.6	1.688	0.28	0.0	0.0	6.0	5
16.24	4.95	17.430	0.239	1.4	0.667	0.257	6.7	8.2	6.0	14.2	1.100	0.11	30.0	34.0	6.0	6
17.22	5.25	19.350	0.339	1.8	0.692	0.288	7.4	8.9	7.3	16.2	1.225	0.13	30.0	36.0	6.0	6
18.21	5.55	18.444	0.414	2.2	0.718	0.319	8.8	10.4	10.4	20.8	1.160	0.19	0.0	0.0	6.0	5
19.19	5.85	16.605	0.284	1.7	0.744	0.349	6.4	7.4	7.4	14.8	1.034	0.16	30.0	34.0	6.0	6
20.18	6.15	19.576	0.321	1.6	0.769	0.380	7.5	8.5	7.5	16.1	1.228	0.14	30.0	34.0	6.0	6
21.16	6.45	23.341	0.605	2.6	0.795	0.411	11.2	12.5	12.5	25.1	1.476	0.28	0.0	0.0	6.0	5
22.15	6.75	15.459	0.458	3.0	0.821	0.442	7.4	8.2	8.2	16.3	0.946	0.13	0.0	0.0	6.0	5
23.13	7.05	8.792	0.184	2.1	0.846	0.472	4.2	4.6	4.6	9.2	0.498	0.09	0.0	0.0	3.0	5
24.11	7.35	40.466	1.552	3.8	0.872	0.503	19.4	20.8	19.5	40.2	2.606	0.00	0.0	0.0	6.0	5
25.10	7.65	94.263	3.340	3.5	0.898	0.534	36.1	38.1	15.6	53.7	6.189	0.00	66.5	42.0	10.0	6
26.08	7.95	141.795	3.791	2.7	0.924	0.565	45.3	47.1	10.2	57.3	0.000	0.00	77.8	44.0	1.0	7
27.07	8.25	17.735	0.742	4.2	0.950	0.595	17.0	17.4	0.0	17.4	1.079	0.00	0.0	0.0	6.0	3
28.05	8.55	13.274	0.388	2.9	0.975	0.626	6.4	6.4	6.4	12.9	0.778	0.11	0.0	0.0	3.0	5
29.04	8.85	12.892	0.353	2.7	1.000	0.657	6.2	6.2	6.2	12.3	0.749	0.10	0.0	0.0	3.0	5
30.02	9.15	12.957	0.346	2.7	1.026	0.688	6.2	6.1	6.1	12.3	0.750	0.10	0.0	0.0	3.0	5
31.00	9.45	17.393	0.463	2.7	1.052	0.718	8.3	8.1	8.1	16.2	1.042	0.13	0.0	0.0	3.0	5
31.99	9.75	35.089	0.882	2.5	1.077	0.749	13.4	13.0	12.2	25.2	2.218	0.38	35.6	36.0	6.0	6
32.97	10.05	42.340	1.662	3.9	1.103	0.780	20.3	19.3	19.3	38.6	2.697	0.00	0.0	0.0	6.0	5
33.96	10.35	37.053	1.619	4.4	1.129	0.810	23.7	22.3	22.3	44.5	2.341	0.00	0.0	0.0	6.0	4
34.94	10.65	32.444	1.499	4.6	1.154	0.841	31.1	28.9	0.0	28.9	2.030	0.00	0.0	0.0	6.0	3
35.92	10.95	33.168	1.500	4.5	1.178	0.872	21.2	19.5	0.0	19.5	2.075	0.00	0.0	0.0	6.0	4

ConeTec Investigations Ltd. - CPT Interpretation

Run No: 00-1201-1542-3892

CPT File: 190C03.COR

Depth (ft)	Depth (m)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	E.Stress (tsf)	Hyd. Pr. (tsf)	N60 (blows/ft)	(N1)60 (blows/ft)	Delta (N1)60	(N1)60 CS	Su (tsf)	CRR	Dr (%)	Phi (deg)	OCR (ratio)	SBT
36.91	11.25	30.478	1.201	3.9	1.204	0.903	19.5	17.7	17.7	35.5	1.891	0.31	0.0	0.0	6.0	4
37.89	11.55	27.474	1.118	4.1	1.230	0.933	17.5	15.8	0.0	15.8	1.687	0.00	0.0	0.0	6.0	4
38.88	11.85	28.157	1.022	3.6	1.255	0.964	13.5	12.0	12.0	24.1	1.729	0.25	0.0	0.0	6.0	5
39.86	12.15	17.649	0.368	2.1	1.281	0.995	8.5	7.5	7.5	14.9	1.025	0.12	0.0	0.0	3.0	5
40.85	12.45	15.980	0.217	1.4	1.307	1.026	6.1	5.4	5.4	10.7	0.910	0.11	30.0	30.0	3.0	6
41.83	12.75	14.845	0.195	1.3	1.332	1.056	5.7	4.9	4.9	9.9	0.830	0.10	30.0	30.0	3.0	6
42.81	13.05	16.839	0.219	1.3	1.358	1.087	6.5	5.5	5.5	11.1	0.960	0.11	30.0	30.0	3.0	6
43.80	13.35	16.801	0.242	1.4	1.384	1.118	6.4	5.5	5.5	10.9	0.953	0.11	30.0	30.0	3.0	6
44.78	13.65	21.681	0.431	2.0	1.409	1.148	8.3	7.0	7.0	14.0	1.275	0.15	30.0	32.0	3.0	6
45.77	13.95	30.647	0.737	2.4	1.435	1.179	11.7	9.8	9.8	19.6	1.869	0.26	30.0	34.0	6.0	6
46.75	14.25	37.609	1.166	3.1	1.461	1.210	18.0	14.9	14.9	29.8	2.329	0.41	0.0	0.0	6.0	5
47.74	14.55	32.488	1.128	3.5	1.486	1.241	15.6	12.8	12.8	25.5	1.984	0.29	0.0	0.0	6.0	5
48.72	14.85	14.507	0.162	1.1	1.512	1.271	5.6	4.5	4.5	9.0	0.782	0.10	30.0	30.0	3.0	6

ConeTec CPT Interpretations as of January 7, 1999 (Release 1.00.19)

ConeTec's interpretation routine should be considered a calculator of current published CPT correlations and is subject to change to reflect the current state of practice. The interpreted values are not considered valid for all soil types. The interpretations are presented only as a guide for geotechnical use and should be carefully scrutinized for consideration in any geotechnical design. Reference to current literature is strongly recommended.

The CPT interpretations are based on values of tip, sleeve friction and pore pressure averaged over a user specified interval (typically 0.25m). Note that Qt is the recorded tip value, Qc, corrected for pore pressure effects. Since all ConeTec cones have equal end area friction sleeves, pore pressure corrections to sleeve friction, Fs, are not required.

The tip correction is: $Qt = Qc + (1-a) \bullet Ud$

where: *Qt* is the corrected tip load
Qc is the recorded tip load
Ud is the recorded dynamic pore pressure
a is the Net Area Ratio for the cone (typically 0.85 for ConeTec cones)

Effective vertical overburden stresses are calculated based on a hydrostatic distribution of equilibrium pore pressures below the water table or from a user defined equilibrium pore pressure profile (this can be obtained from CPT dissipation tests). The stress calculations use unit weights assigned to the Soil Behaviour Type zones or from a user defined unit weight profile.

Details regarding the interpretation methods for all of the interpreted parameters is given in table 1. The appropriate references referred to in table 1 are listed in table 2.

The estimated Soil Behaviour Type is based on the charts developed by Robertson and Campanella shown in figure 1.

Table 1 CPT Interpretation Methods

Interpreted Parameter	Description	Equation	Ref
Depth	mid layer depth		
AvgQt	Averaged corrected tip (Qt)	$AvgQt = \frac{1}{n}\sum_{i=1}^{n} Qt_i$	
AvgFs	Averaged sleeve friction (Fs)	$AvgFs = \frac{1}{n}\sum_{i=1}^{n} Fs_i$	
AvgRf	Averaged friction ratio (Rf)	$AvgRf = 100\% \bullet \frac{AvgFs}{AvgQt}$	
AvgUd	Averaged dynamic pore pressure (Ud)	$AvgUd = \frac{1}{n}\sum_{i=1}^{n} Ud_i$	
SBT	Soil Behavior Type as defined by Robertson and Campanella		1

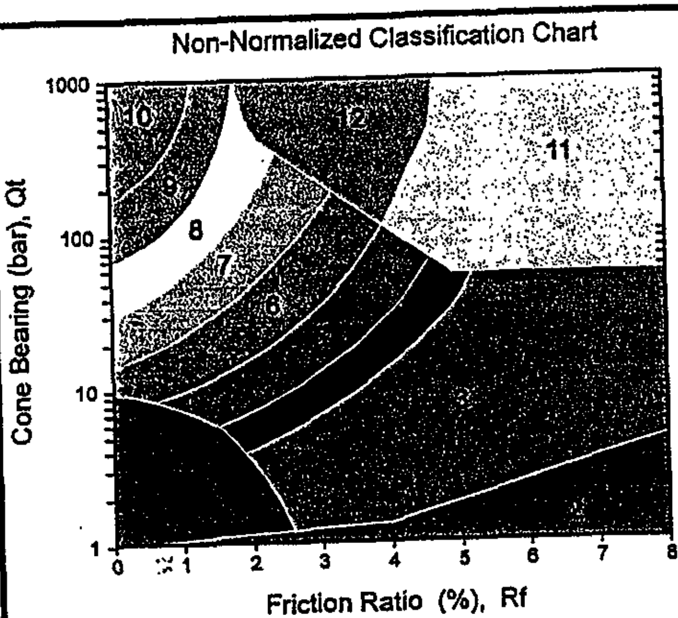
CPT Interpretations

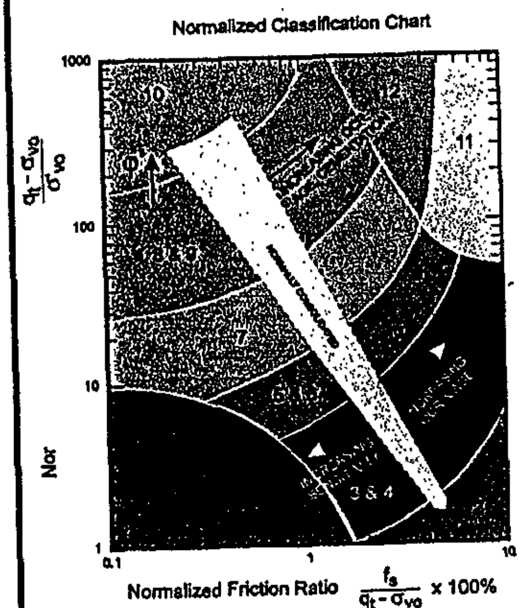
U.Wt.	Unit Weight of soil determined from: 1) uniform value or 2) value assigned to each SBT zone 3) user supplied unit weight profile		
TStress	Total vertical overburden stress at mid layer depth	$TStress = \sum_{i=1}^{n} \gamma_i h_i$ where γ_i is layer unit weight h_i is layer thickness	
EStress	Effective vertical overburden stress at mid layer depth	$EStress = TStress - Ueq$	
Ueq	Equilibrium pore pressure determined from: 1) hydrostatic from water table depth 2) user supplied profile		
Cn	SPT N_{60} overburden correction factor	$Cn = (\sigma_v')^{-0.5}$ where σ_v' is in tsf $0.5 < C_n < 2.0$	
N_{60}	SPT N value at 60% energy calculated from Qt/N ratios assigned to each SBT zone		3
$(N1)_{60}$	SPT N_{60} value corrected for overburden pressure	$N1_{60} = Cn \bullet N_{60}$	3
$\Delta(N1)_{60}$	Equivalent Clean Sand Correction to $(N1)_{60}$	$\Delta(N1)_{60} = \frac{K_{SPT}}{1-K_{SPT}} \bullet (N1)_{60}$ Where: K_{SPT} is defined as: 0.0 for FC < 5% 0.0167 • (FC - 5) for 5% < FC < 35% 0.5 for FC > 35% FC - Fines Content in %	7
$(N1)_{60cs}$	Equivalent Clean Sand $(N1)_{60}$	$(N1)_{60cs} = (N1)_{60} + \Delta(N1)_{60}$	7
Su	Undrained shear strength - Nkt is use selectable	$Su = \frac{Qt - \sigma_v}{N_{kt}}$	2
k	Coefficient of permeability (assigned to each SBT zone)		6
Bq	Pore pressure parameter	$Bq = \frac{\Delta u}{Qt - \sigma_v}$	2
Qtn	Normalized Qt for Soil Behavior Type classification as defined by Robertson, 1990	$Qtn = \frac{Qt - \sigma_v}{\sigma'_v}$	4
Rfn	Normalized Rf for Soil Behavior Type classification as defined by Robertson, 1990	$Rfn = 100\% \bullet \frac{f_s}{Qt - \sigma_v}$	4
SBTn	Normalized Soil Behavior Type (slightly modified from that published by Robertson, 1990. This version includes all the soil zones of the original non-normalized SBT chart - see figure 1)		4
Qc1	Normalized Qt for seismic analysis	$qc1 = qc \bullet (Pa/\sigma_v')^{0.5}$ where: Pa = atm. pressure	5
Qc1N	Dimensionless Normalized Qt1	qc1N = qc1 / Pa where: Pa = atm. pressure	

CPT Interpretations

ΔQc1N1	Equivalent clean sand correction	$\Delta qc1N = \frac{K_{CPT}}{1-K_{CPT}} \bullet qc1N$ Where: K_{CPT} is defined as: 0.0 for FC < 5% 0.0267 • (FC - 5) for 5% < FC < 35% 0.5 for FC > 35% FC - Fines Content in %	5
Qc1Ncs	Clean Sand equivalent Qc1N	$qc1Ncs = qc1N + \Delta qc1N$	5
Ic	Soil index for estimating grain characteristics	$Ic = [(3.47 - \log Q)^2 + (\log F + 1.22)^2]^{0.5}$	5
FC	Fines content (%)	$FC=1.75(Ic^{3.25}) - 3.7$ $FC=100$ for $Ic > 3.5$ $FC=0$ for $Ic < 1.26$ $FC = 5\%$ if $1.64 < Ic < 2.6$ AND $Rfn<0.5$	8
PHI	Friction Angle:	Campanella and Robertson Durunoglu and Mitchel Janbu	1
Dr	Relative Density	Ticino Sand Hokksund Sand Schmertmann 1976 Jamiolkowski - All Sands	1
OCR	Over Consolidation Ratio		1
State Parameter			9
CRR	Cyclic Resistance Ratio		7

ConeTec





Zone	Q_t / N	Soil Behaviour Type
1	2	sensitive fine grained
2	1	organic material
3	1	clay
4	1.5	silty clay to clay
5	2	clayey silt to silty clay
6	2.5	sandy silt to clayey silt
7	3	
8	4	sand to silty sand
9	5	sand
10	6	gravelly sand to sand
11	1	very stiff fine grained *
12	2	sand to clayey sand *

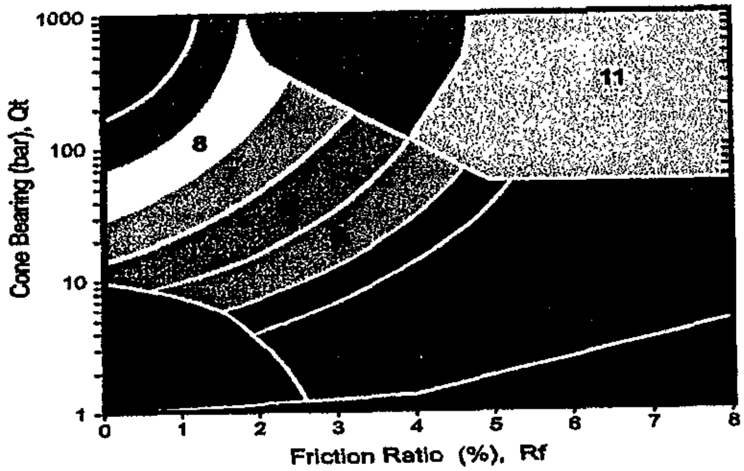
Figure 1 Non-Normalized and Normalized Soil Behaviour Type Classification Charts

Table 2 References

No.	Reference
1	Robertson, P.K. and Campanella, R.G., 1986, "Guidelines for Use, Interpretation and Application of the CPT and CPTU", UBC, Soil Mechanics Series No. 105, Civil Eng. Dept., Vancouver, B.C., Canada
2	Robertson, P.K., Campanella, R.G., Gillespie, D. and Greig, J., 1986, "Use of Piezometer Cone Data", Proceedings of InSitu 86, ASCE Specialty Conference, Blacksburg, Virginia.
3	Robertson, P.K. and Campanella, R.G., 1989, "Guidelines for Geotechnical Design Using CPT and CPTU", UBC, Soil Mechanics Series No. 120, Civil Eng. Dept., Vancouver, B.C., Canada
4	Robertson, P.K., 1990, "Soil Classification Using the Cone Penetration Test", Canadian Geotechnical Journal, Volume 27.
5	Robertson, P.K. and Fear, C.E., 1995, "Liquefaction of Sands and its Evaluation", Keynote Lecture, First International Conference on Earthquake Geotechnical Enginnering, Tokyo, Japan.
6	ConeTec Internal Report
7	Robertson, P.K. and Wride, C.E., 1997, "Cyclic Liquefaction and its Evaluation Based on SPT and CPT", NCEER Workshop Paper, January 22, 1997
8	Wride, C.E. and Robertson, P.K., 1997, "Phase II Data Review Report (Massey and Kidd Sites, Fraser River Delta)", Volume 1 - Data Report (June 1997), University of Alberta.
9	Plewes, H.D., Davies, M.P. and Jefferies, M.G., 1992, "CPT Based Screening Procedure for Evaluating Liquefaction Susceptibility", 45th Canadian Geotechnical Conference, Toronto, Ontario, October 1992.

CPT Classification Chart
(after Robertson 1990)

Non-Normalized Classification Chart



Zone	Q_t / N	Soil Behaviour Type
1	2	sensitive fine grained
2	1	organic material
3	1	clay
4	1.5	silty clay to clay
5	2	clayey silt to silty clay
6	2.5	sandy silt to clayey silt
7	3	silty sand to sandy silt
8	4	sand to silty sand
9	5	sand
10	6	gravelly sand to sand
11	1	very stiff fine grained *
12	2	sand to clayey sand *

* overconsolidated or cemented

GREGG

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APPENDIX B
LABORATORY TESTING PROGRAM

APPENDIX B
LABORATORY TESTING PROGRAM

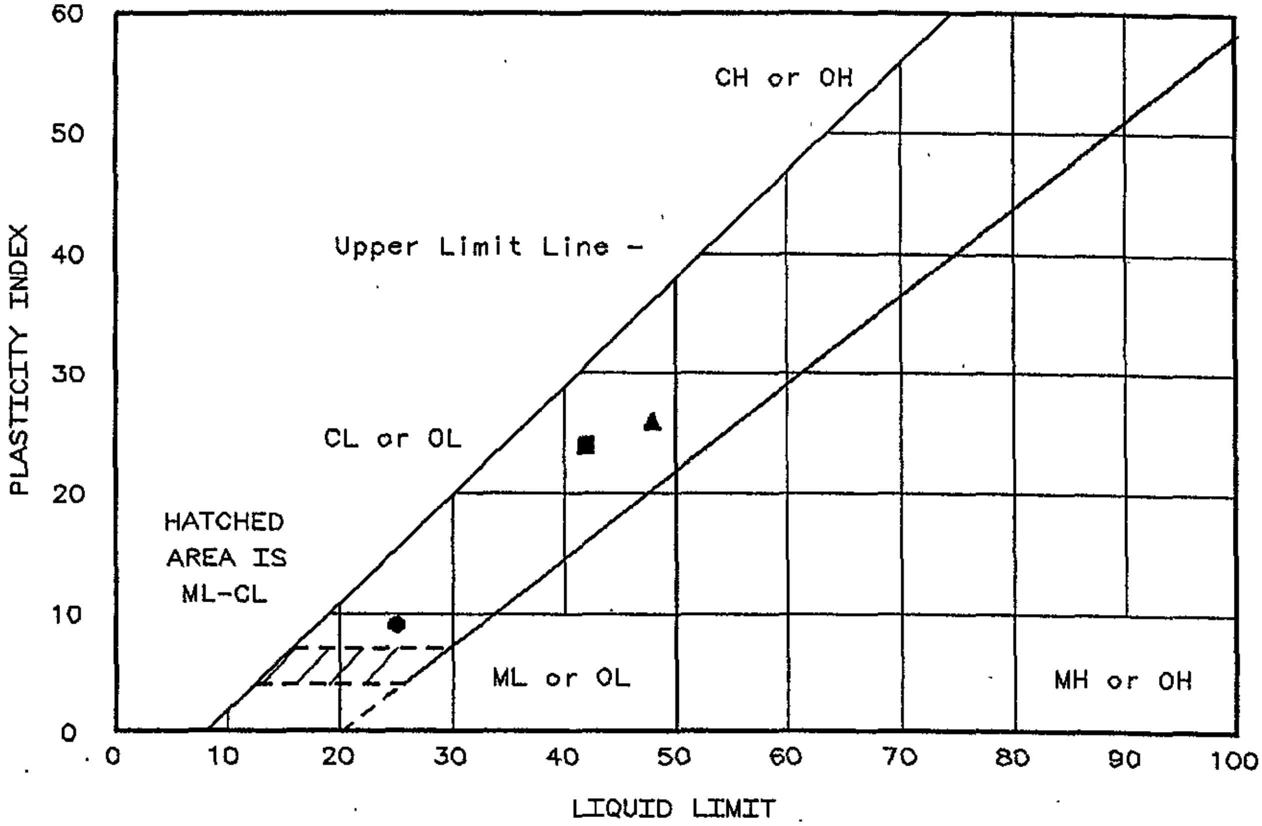
The purpose of the laboratory testing program was to provide data to assist in our evaluation of the physical and mechanical properties of the soils underlying the site.

The natural water content and dry density were determined on 8 samples of the materials recovered from the borings in accordance with ASTM Test Designation D2216. These water contents and dry densities are recorded on the boring logs at the sample depths.

Atterberg Limits determination were performed on 3 samples. The Atterberg Limits were determined in accordance with ASTM Test Designations D428 and D424. These values are used to classify the soil in accordance with the Unified Soil Classification System and to indicate the soil's compressibility and expansion potentials. The results of these tests are presented on the boring logs at the appropriate sample depths and in this appendix.

Unconsolidated undrained triaxial tests were performed on 6 relatively "undisturbed" samples to evaluate the undrained shear strength of the materials. The unconfined tests were performed in accordance with ASTM Test Designations D2850 on a sample having a diameter of 2.4 inches and a height-to-diameter ratio of at least two. Failure was taken as the peak normal stress. The results of the tests are presented on the boring logs at the appropriate sample depths. Plots of the strength test results are also presented in this appendix.

LIQUID AND PLASTIC LIMITS TEST REPORT



	Location + Description	LL	PL	PI	-200	ASTM D 2487-90
●	B-1 @ 5.5':Grey sandy CLAY(CL) Wn=18%	25	16	9		
▲	B-2 @ 6':Black organic silty CLAY(CL)	48	22	26		
■	B-2 @ 31':Mottled brown silty CLAY(CL)	42	18	24		

Project No.: 1316.001
Project: Green City Lofts.

Client: Subsurface Consultants
Location:

Date: 12-13-00

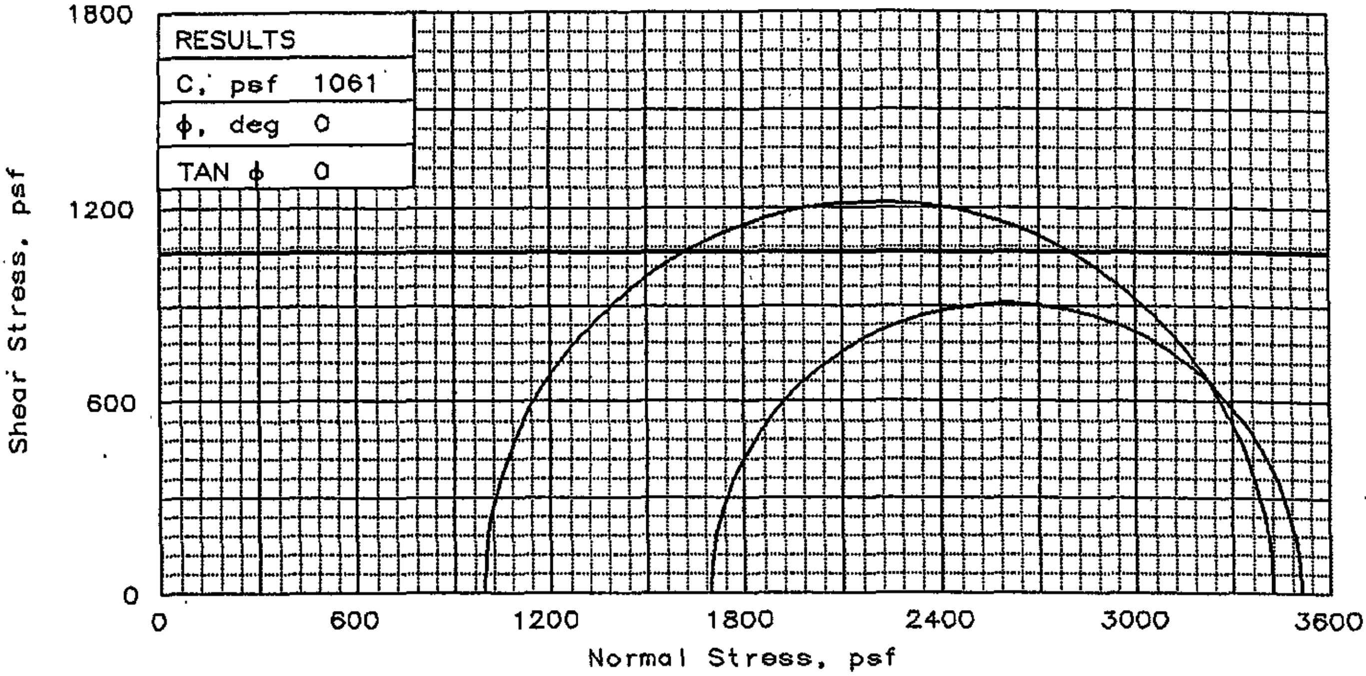
LIQUID AND PLASTIC LIMITS TEST REPORT

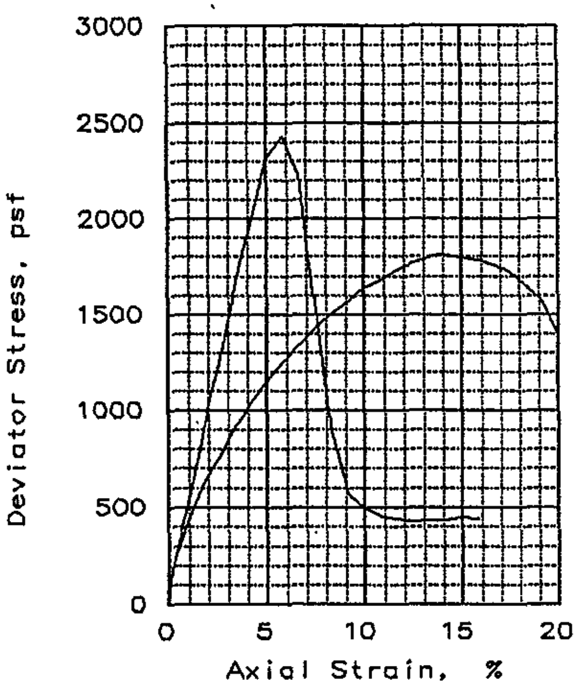
Soil Mechanics Lab

Remarks:

ASTM D 4318

Fig. No. ______





SAMPLE NO.:		1	2
INITIAL	WATER CONTENT, %	24.5	22.0
	DRY DENSITY, pcf	102.3	104.8
	SATURATION, %	102.2	97.6
	VOID RATIO	0.648	0.608
	DIAMETER, in	2.42	2.42
	HEIGHT, in	4.80	4.80
AT TEST	WATER CONTENT, %	24.5	22.0
	DRY DENSITY, pcf	102.3	104.8
	SATURATION, %	102.2	97.6
	VOID RATIO	0.648	0.608
	DIAMETER, in	2.42	2.42
	HEIGHT, in	4.80	4.80
Strain rate, in/min		0.0750	0.0750
BACK PRESSURE, psf		0	0
CELL PRESSURE, psf		994	1699
FAIL. STRESS, psf		2431	1812
STRAIN, %		5.8	13.8
ULT. STRESS, psf			
STRAIN, %			
σ_1 FAILURE, psf		3425	3512
σ_3 FAILURE, psf		994	1699

TYPE OF TEST:
Unconsolidated Undrained
SAMPLE TYPE: 2.5"MC
DESCRIPTION: See Remarks

SPECIFIC GRAVITY= 2.7
REMARKS: Sa.1/17':Soft,lt.olive brn.f-sandy SILT(ML)
Sa.2/35.5':Soft,lt.olive brn. clayeySAND(SC-SM)

1

Fig. No.: ______

CLIENT: Subsurface Consultants

PROJECT: Green City Lofts

SAMPLE LOCATION: B-1 @ 17 & 35.5'

PROJ. NO.: 1316.001 DATE: 12-8-00

TRIAXIAL SHEAR TEST REPORT

Soil Mechanics Lab

TRIAXIAL COMPRESSION TEST
Unconsolidated Undrained

12-09-1900
11:46 am

Project and Sample Data

Date: 12-8-00
Client: Subsurface Consultants
Project: Green City Lofts
Sample location: B-1 @ 17 & 35.5'
Sample description: See Remarks
Remarks: Sa.1/17':Soft,lt.olive brn.f-sandy SILT(ML)
Sa.2/35.5':Soft,lt.olive brn. clayeySAND(SC-SM)
Fig no.: 2nd page Fig no. (if applicable):
Type of sample: 2.5"MC
Specific gravity= 2.70 LL= PL= PI=
Test method: ASTM - Method A

Specimen Parameters for Specimen No. 1

Specimen Parameter	Initial	Saturated	Final
Wt. moist soil and tare:	170.000		170.000
Wt. dry soil and tare:	142.800		142.800
Wt. of tare:	32.000		32.000
Weight, gms:	735.7		
Diameter, in:	2.416	2.416	
Area, in²:	4.584	4.584	
Height, in:	4.800	4.800	
Net decrease in height, in:		0.000	
% Moisture:	24.5	24.5	24.5
Wet density, pcf:	127.4	127.4	
Dry density, pcf:	102.3	102.3	
Void ratio:	0.6483	0.6483	
% Saturation:	102.2	102.2	

Test Readings Data for Specimen No. 1

Deformation dial constant= 0.001 in per input unit
Primary load ring constant= 1 lbs per input unit
Secondary load ring constant= 0 lbs per input unit
Crossover reading for secondary load ring= 0 input units
Membrane modulus = .124105 kN/cm²
Membrane thickness = 0.02 cm
Cell pressure = 6.90 psi = 994 psf
Back pressure = 0.00 psi = 0 psf
Effective confining stress = 994 psf
Strain rate, in/min = 0.0750
FAIL. STRESS = 2431 psf at reading no. 13
ULT. STRESS = not selected

Test Readings Data for Specimen No. 1

No.	Def. Dial Units	Def. in	Load Dial Units	Load lbs	Strain %	Deviator Stress psf	Principal Stresses Minor psf	Major psf	1:3 Ratio	P psf	Q psf
0	0.0	0.000	0.00	0.0	0.0	0	994	994	1.00	994	0
1	10.0	0.010	5.40	5.4	0.2	169	994	1163	1.17	1078	85
2	20.0	0.020	8.40	8.4	0.4	263	994	1256	1.26	1125	131
3	40.0	0.040	14.50	14.5	0.8	452	994	1445	1.45	1219	226
4	60.0	0.060	20.70	20.7	1.3	642	994	1636	1.65	1315	321
5	80.0	0.080	27.10	27.1	1.7	837	994	1831	1.84	1412	419
6	100.0	0.100	33.50	33.5	2.1	1030	994	2024	2.04	1509	515
7	120.0	0.120	39.60	39.6	2.5	1213	994	2206	2.22	1600	606
8	140.0	0.140	46.00	46.0	2.9	1403	994	2396	2.41	1695	701
9	160.0	0.160	52.90	52.9	3.3	1606	994	2600	2.62	1797	803
10	180.0	0.180	59.60	59.6	3.8	1802	994	2795	2.81	1895	901
11	200.0	0.200	65.60	65.6	4.2	1975	994	2968	2.99	1981	987
12	240.0	0.240	77.30	77.3	5.0	2307	994	3300	3.32	2147	1153
13	280.0	0.280	82.20	82.2	5.8	2431	994	3425	3.45	2209	1216
14	320.0	0.320	76.30	76.3	6.7	2237	994	3230	3.25	2112	1118
15	340.0	0.340	63.30	63.3	7.1	1847	994	2841	2.86	1917	924
16	360.0	0.360	52.20	52.2	7.5	1517	994	2510	2.53	1752	758
17	400.0	0.400	30.80	30.8	8.3	887	994	1880	1.89	1437	443
18	440.0	0.440	20.90	20.9	9.2	565	994	1559	1.57	1276	283
19	480.0	0.480	18.70	18.7	10.0	495	994	1488	1.50	1241	247
20	520.0	0.520	17.50	17.5	10.8	454	994	1447	1.46	1220	227
21	560.0	0.560	17.20	17.2	11.7	438	994	1431	1.44	1213	219
22	600.0	0.600	17.00	17.0	12.5	425	994	1419	1.43	1206	212
23	640.0	0.640	17.40	17.4	13.3	429	994	1422	1.43	1208	214
24	680.0	0.680	17.80	17.8	14.2	432	994	1426	1.43	1210	216
25	720.0	0.720	18.50	18.5	15.0	443	994	1437	1.45	1215	222
26	760.0	0.760	18.70	18.7	15.8	441	994	1434	1.44	1214	220

Specimen Parameters for Specimen No. 2

Specimen Parameter	Initial	Saturated	Final
Wt. moist soil and tare:	176.100		176.100
Wt. dry soil and tare:	150.300		150.300
Wt. of tare:	33.000		33.000
Weight, gms:	738.5		
Diameter, in:	2.416	2.416	
Area, in²:	4.584	4.584	
Height, in:	4.800	4.800	
Net decrease in height, in:		0.000	
% Moisture:	22.0	22.0	22.0
Wet density, pcf:	127.9	127.9	
Dry density, pcf:	104.8	104.8	
Void ratio:	0.6084	0.6084	
% Saturation:	97.6	97.6	

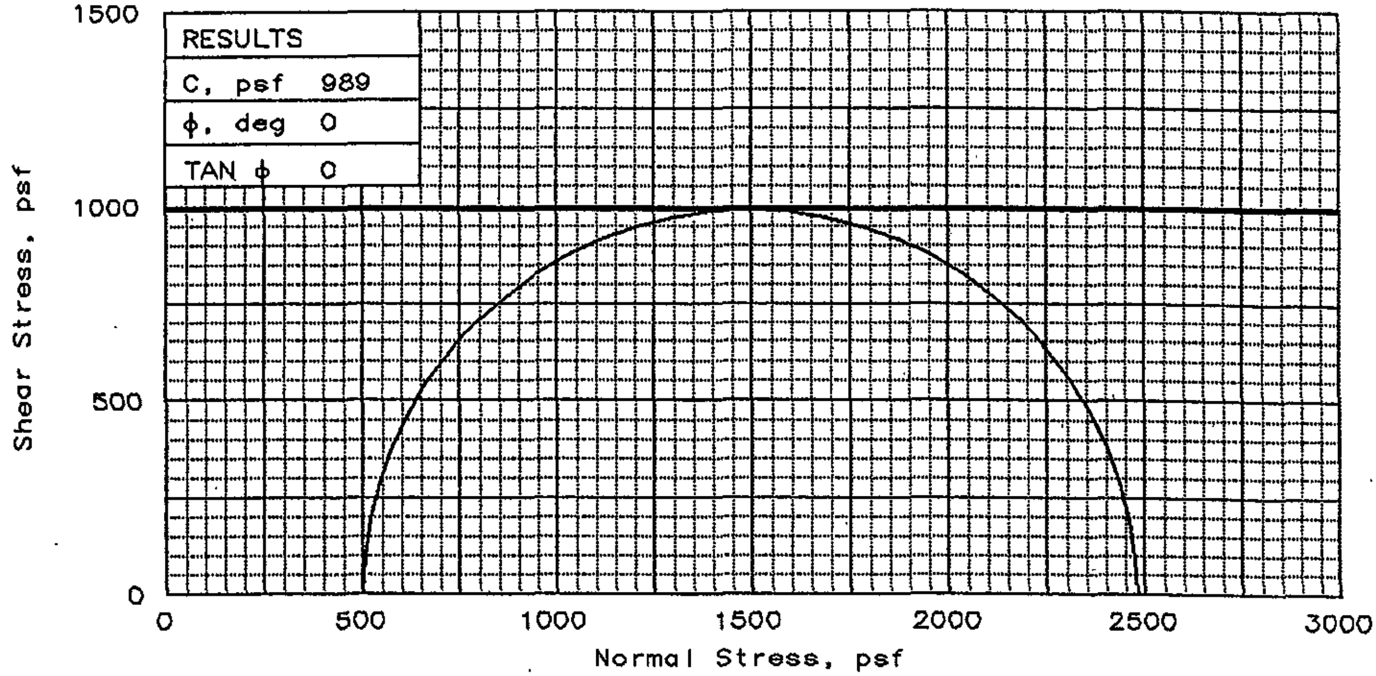
Test Readings Data for Specimen No. 2

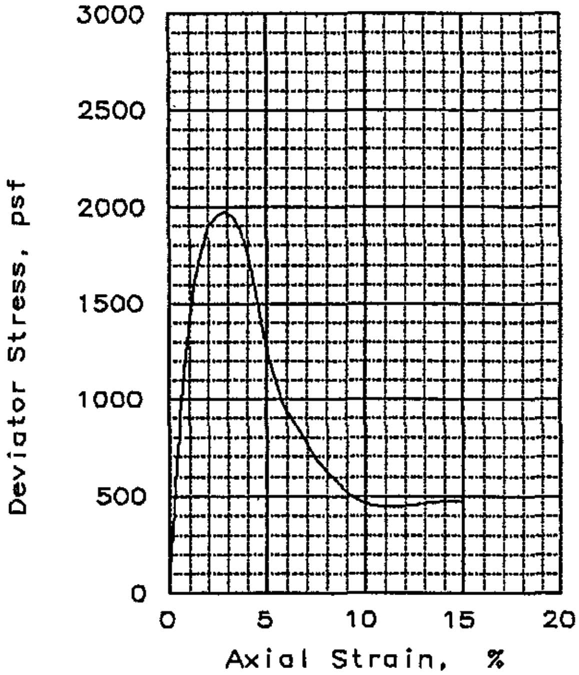
Deformation dial constant= 0.001 in per input unit
Primary load ring constant= 1 lbs per input unit
Secondary load ring constant= 0 lbs per input unit
Crossover reading for secondary load ring= 0 input units
Membrane modulus = .124105 kN/cm²
Membrane thickness = 0.02 cm
Cell pressure = 11.80 psi = 1699 psf
Back pressure = 0.00 psi = 0 psf
Effective confining stress = 1699 psf
Strain rate, in/min = 0.0750
FAIL. STRESS = 1812 psf at reading no. 24
ULT. STRESS = not selected

No.	Def. Dial Units	Def. in	Load Dial Units	Load lbs	Strain %	Deviator Stress psf	Principal Stresses Minor psf	Major psf	1:3 Ratio	P psf	Q psf
0	0.0	0.000	0.00	0.0	0.0	0	1699	1699	1.00	1699	0
1	10.0	0.010	6.00	6.0	0.2	188	1699	1887	1.11	1793	94
2	20.0	0.020	8.30	8.3	0.4	260	1699	1959	1.15	1829	130
3	40.0	0.040	12.10	12.1	0.8	377	1699	2076	1.22	1888	188
4	60.0	0.060	15.90	15.9	1.3	493	1699	2192	1.29	1946	247
5	80.0	0.080	19.00	19.0	1.7	587	1699	2286	1.35	1993	293
6	100.0	0.100	21.80	21.8	2.1	670	1699	2370	1.39	2034	335
7	120.0	0.120	24.50	24.5	2.5	750	1699	2450	1.44	2074	375
8	140.0	0.140	27.00	27.0	2.9	823	1699	2523	1.48	2111	412
9	160.0	0.160	29.90	29.9	3.3	908	1699	2607	1.53	2153	454
10	190.0	0.190	33.20	33.2	4.0	1002	1699	2701	1.59	2200	501
11	200.0	0.200	34.30	34.3	4.2	1033	1699	2732	1.61	2215	516
12	240.0	0.240	38.40	38.4	5.0	1146	1699	2845	1.67	2272	573
13	280.0	0.280	42.30	42.3	5.8	1251	1699	2950	1.74	2325	626
14	320.0	0.320	45.70	45.7	6.7	1340	1699	3039	1.79	2369	670
15	360.0	0.360	49.20	49.2	7.5	1430	1699	3129	1.84	2414	715
16	400.0	0.400	52.20	52.2	8.3	1503	1699	3202	1.88	2451	752
17	440.0	0.440	55.00	55.0	9.2	1569	1699	3268	1.92	2484	785
18	480.0	0.480	57.80	57.8	10.0	1634	1699	3333	1.96	2516	817
19	520.0	0.520	59.80	59.8	10.8	1675	1699	3374	1.99	2537	837
20	560.0	0.560	62.40	62.4	11.7	1731	1699	3431	2.02	2565	866
21	600.0	0.600	64.30	64.3	12.5	1767	1699	3466	2.04	2583	884

Test Readings Data for Specimen No. 2

No.	Def. Dial Units	Def. in	Load Dial Units	Load lbs	Strain %	Deviator Stress psf	Principal Stresses Minor psf	Principal Stresses Major psf	1:3 Ratio	P psf	Q psf
22	620.0	0.620	65.30	65.3	12.9	1786	1699	3485	2.05	2592	893
23	640.0	0.640	66.00	66.0	13.3	1797	1699	3496	2.06	2598	898
24	660.0	0.660	66.90	66.9	13.8	1812	1699	3512	2.07	2605	906
25	680.0	0.680	67.10	67.1	14.2	1809	1699	3508	2.06	2604	905
26	700.0	0.700	67.10	67.1	14.6	1800	1699	3500	2.06	2599	900
27	720.0	0.720	67.40	67.4	15.0	1800	1699	3499	2.06	2599	900
28	740.0	0.740	67.40	67.4	15.4	1791	1699	3490	2.05	2595	895
29	760.0	0.760	67.40	67.4	15.8	1782	1699	3481	2.05	2590	891
30	780.0	0.780	67.30	67.3	16.3	1770	1699	3470	2.04	2584	885
31	800.0	0.800	67.20	67.2	16.7	1759	1699	3458	2.04	2579	880
32	840.0	0.840	66.60	66.6	17.5	1726	1699	3425	2.02	2562	863
33	880.0	0.880	64.50	64.5	18.3	1655	1699	3354	1.97	2526	827
34	920.0	0.920	61.80	61.8	19.2	1569	1699	3268	1.92	2484	785
35	960.0	0.960	55.60	55.6	20.0	1397	1699	3096	1.82	2398	699





SAMPLE NO.:		1
INITIAL	WATER CONTENT, %	26.0
	DRY DENSITY, pcf	92.2
	SATURATION, %	84.7
	VOID RATIO	0.828
	DIAMETER, in	2.40
	HEIGHT, in	4.80
AT TEST	WATER CONTENT, %	26.0
	DRY DENSITY, pcf	92.2
	SATURATION, %	84.7
	VOID RATIO	0.828
	DIAMETER, in	2.40
	HEIGHT, in	4.80
Strain rate, in/min		0.0750
BACK PRESSURE, psf		0
CELL PRESSURE, psf		504
FAIL. STRESS, psf		1978
STRAIN, %		2.9
ULT. STRESS, psf		
STRAIN, %		
σ_1 FAILURE, psf		2482
σ_3 FAILURE, psf		504

TYPE OF TEST:
Unconsolidated Undrained

SAMPLE TYPE: 2.5"MC

DESCRIPTION: Black organic silty CLAY(CL)

SPECIFIC GRAVITY= 2.7

REMARKS:

Fig. No.: ______

CLIENT: Subsurface Consultants

PROJECT: Green City Lofts

SAMPLE LOCATION: B-2 6'

PROJ. NO.: 1316.001 DATE: 12-8-00

TRIAXIAL SHEAR TEST REPORT

Soil Mechanics Lab

TRIAXIAL COMPRESSION TEST
Unconsolidated Undrained

12-09-1900
11:49 am

Project and Sample Data

Date: 12-8-00
Client: Subsurface Consultants
Project: Green City Lofts
Sample location: B-2 6'
Sample description: Black organic ~~SILT (OH)~~ silty clay (CL)
Remarks:

Fig no.: 2nd page Fig no. (if applicable):
Type of sample: 2.5"MC
Specific gravity= 2.70 LL= PL= PI=
Test method: ASTM - Method A

Specimen Parameters for Specimen No. 1

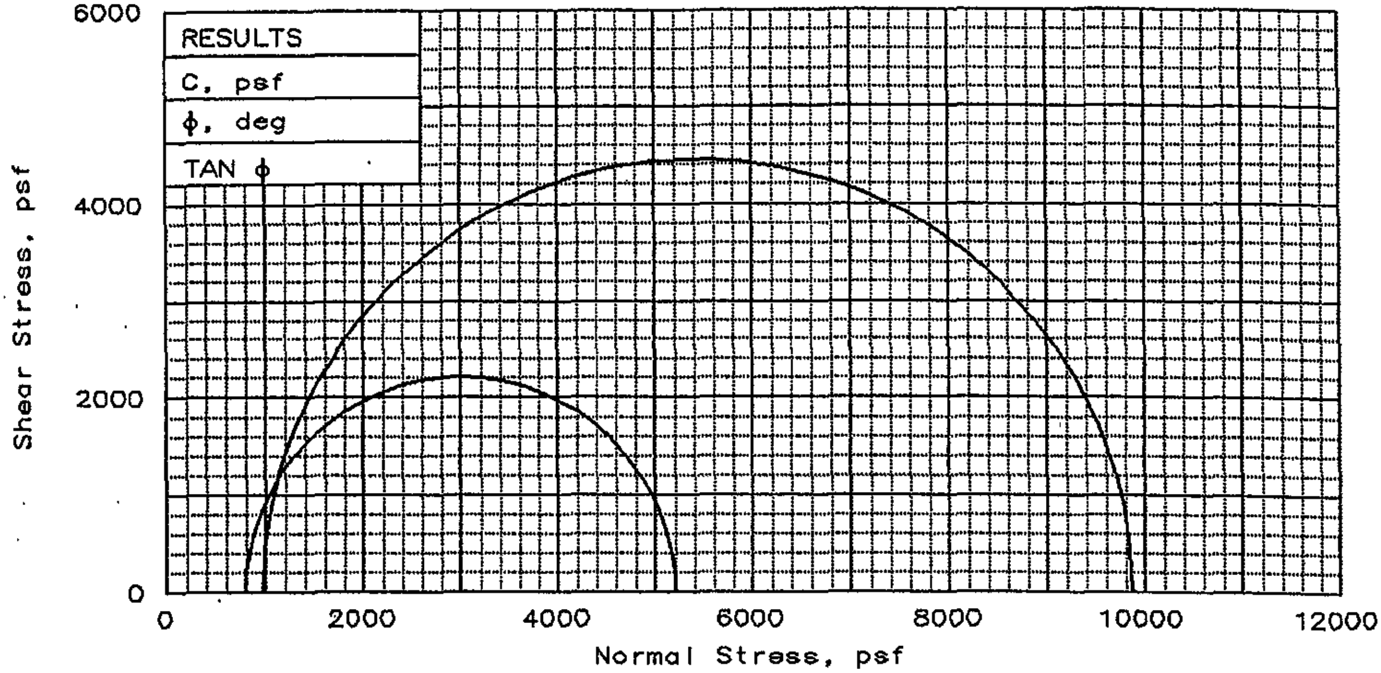
Specimen Parameter	Initial	Saturated	Final
Wt. moist soil and tare:	149.100		149.100
Wt. dry soil and tare:	124.900		124.900
Wt. of tare:	31.700		31.700
Weight, gms:	662.0		
Diameter, in:	2.400	2.400	
Area, in²:	4.524	4.524	
Height, in:	4.800	4.800	
Net decrease in height, in:		0.000	
% Moisture:	26.0	26.0	26.0
Wet density, pcf:	116.1	116.1	
Dry density, pcf:	92.2	92.2	
Void ratio:	0.8282	0.8282	
% Saturation:	84.7	84.7	

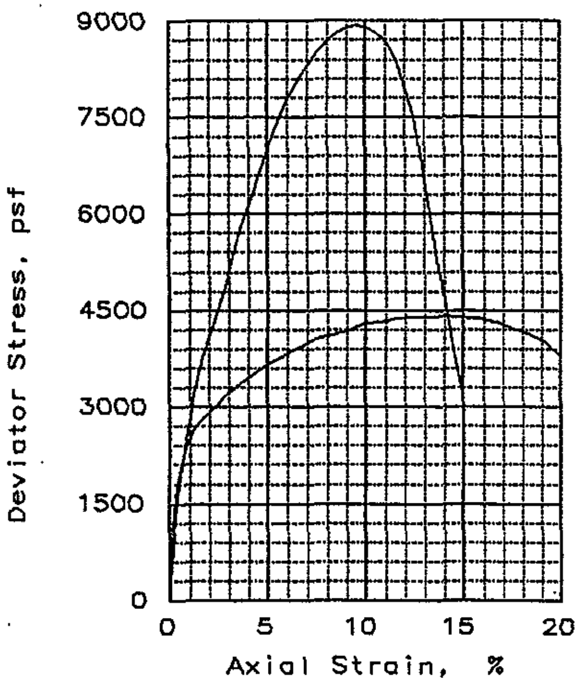
Test Readings Data for Specimen No. 1

Deformation dial constant= 0.001 in per input unit
Primary load ring constant= 1 lbs per input unit
Secondary load ring constant= 0 lbs per input unit
Crossover reading for secondary load ring= 0 input units
Membrane modulus = .124105 kN/cm²
Membrane thickness = 0.02 cm
Cell pressure = 3.50 psi = 504 psf
Back pressure = 0.00 psi = 0 psf
Effective confining stress = 504 psf
Strain rate, in/min = 0.0750
FAIL. STRESS = 1978 psf at reading no. 8
ULT. STRESS = not selected

Test Readings Data for Specimen No. 1

No.	Def. Dial Units	Def. in	Load Dial Units	Load lbs	Strain %	Deviator Stress psf	Principal Stresses Minor psf	Principal Stresses Major psf	1:3 Ratio	P psf	Q psf
0	0.0	0.000	0.00	0.0	0.0	0	504	504	1.00	504	0
1	10.0	0.010	10.00	10.0	0.2	318	504	822	1.63	663	159
2	20.0	0.020	20.50	20.5	0.4	650	504	1154	2.29	829	325
3	40.0	0.040	39.00	39.0	0.8	1231	504	1735	3.44	1120	616
4	60.0	0.060	50.70	50.7	1.3	1594	504	2098	4.16	1301	797
5	80.0	0.080	56.70	56.7	1.7	1775	504	2279	4.52	1391	887
6	100.0	0.100	60.80	60.8	2.1	1895	504	2399	4.76	1452	948
7	120.0	0.120	63.00	63.0	2.5	1955	504	2459	4.88	1482	978
8	140.0	0.140	64.00	64.0	2.9	1978	504	2482	4.92	1493	989
9	160.0	0.160	63.30	63.3	3.3	1948	504	2452	4.86	1478	974
10	180.0	0.180	61.10	61.1	3.8	1872	504	2376	4.71	1440	936
11	200.0	0.200	55.40	55.4	4.2	1690	504	2194	4.35	1349	845
12	240.0	0.240	41.70	41.7	5.0	1261	504	1765	3.50	1134	630
13	280.0	0.280	32.60	32.6	5.8	977	504	1481	2.94	993	489
14	320.0	0.320	28.20	28.2	6.7	838	504	1342	2.66	923	419
15	360.0	0.360	23.20	23.2	7.5	683	504	1187	2.36	846	342
16	400.0	0.400	20.50	20.5	8.3	598	504	1102	2.19	803	299
17	440.0	0.440	18.50	18.5	9.2	504	504	1008	2.00	756	252
18	480.0	0.480	17.10	17.1	10.0	456	504	960	1.90	732	228
19	520.0	0.520	16.90	16.9	10.8	443	504	947	1.88	725	221
20	560.0	0.560	17.20	17.2	11.7	444	504	948	1.88	726	222
21	600.0	0.600	17.80	17.8	12.5	453	504	957	1.90	731	227
22	640.0	0.640	18.40	18.4	13.3	462	504	966	1.92	735	231
23	680.0	0.680	19.10	19.1	14.2	474	504	978	1.94	741	237
24	720.0	0.720	19.30	19.3	15.0	471	504	975	1.93	740	236





SAMPLE NO.:		1	2
INITIAL	WATER CONTENT, %	21.3	17.4
	DRY DENSITY, pcf	104.9	111.9
	SATURATION, %	94.7	93.0
	VOID RATIO	0.606	0.506
	DIAMETER, in	2.40	2.40
	HEIGHT, in	4.80	4.80
AT TEST	WATER CONTENT, %	21.3	17.4
	DRY DENSITY, pcf	104.9	111.9
	SATURATION, %	94.7	93.0
	VOID RATIO	0.606	0.506
	DIAMETER, in	2.40	2.40
	HEIGHT, in	4.80	4.80
Strain rate, in/min		0.0750	0.0750
BACK PRESSURE, psf		0	0
CELL PRESSURE, psf		806	979
FAIL. STRESS, psf		4410	8899
STRAIN, %		14.2	9.2
ULT. STRESS, psf			
STRAIN, %			
σ_1 FAILURE, psf		5216	9879
σ_3 FAILURE, psf		806	979

TYPE OF TEST:
Unconsolidated Undrained

SAMPLE TYPE: 2.5"MC

DESCRIPTION: See remarks

SPECIFIC GRAVITY= 2.7

REMARKS: Sa.1/11':Stiff,greyish black FAT CLAY(CH)
Sa.2/15.5':V.stiff,orange brn f-sandy CLAY(CL)

Fig. No.: ______

CLIENT: Subsurface Consultants

PROJECT: Green City Lofts

SAMPLE LOCATION: B-2 @ 11 & 15.5'

PROJ. NO.: 1316.001 DATE: 12-8-00

TRIAXIAL SHEAR TEST REPORT

Soil Mechanics Lab

TRIAXIAL COMPRESSION TEST
Unconsolidated Undrained

12-09-1900
11:51 am

Project and Sample Data

Date: 12-8-00
Client: Subsurface Consultants
Project: Green City Lofts
Sample location: B-2 @ 11 & 15.5'
Sample description: See remarks
Remarks: Sa.1/11':Stiff,greyish black FAT CLAY(CH)
Sa.2/15.5':V.stiff,orange brn f-sandy CLAY(CL)
Fig no.: 2nd page Fig no. (if applicable):
Type of sample: 2.5"MC
Specific gravity= 2.70 LL= PL= PI=
Test method: ASTM - Method A

Specimen Parameters for Specimen No. 1

Specimen Parameter	Initial	Saturated	Final
Wt. moist soil and tare:	179.100		179.100
Wt. dry soil and tare:	153.300		153.300
Wt. of tare:	31.900		31.900
Weight, gms:	725.3		
Diameter, in:	2.400	2.400	
Area, in²:	4.524	4.524	
Height, in:	4.800	4.800	
Net decrease in height, in:		0.000	
% Moisture:	21.3	21.3	21.3
Wet density, pcf:	127.2	127.2	
Dry density, pcf:	104.9	104.9	
Void ratio:	0.6062	0.6062	
% Saturation:	94.7	94.7	

Test Readings Data for Specimen No. 1

Deformation dial constant= 0.001 in per input unit
Primary load ring constant= 1 lbs per input unit
Secondary load ring constant= 0 lbs per input unit
Crossover reading for secondary load ring= 0 input units
Membrane modulus = .124105 kN/cm²
Membrane thickness = 0.02 cm
Cell pressure = 5.60 psi = 806 psf
Back pressure = 0.00 psi = 0 psf
Effective confining stress = 806 psf
Strain rate, in/min = 0.0750
FAIL. STRESS = 4410 psf at reading no. 23
ULT. STRESS = not selected

Test Readings Data for Specimen No. 1

No.	Def. Dial Units	Def. in	Load Dial Units	Load lbs	Strain %	Deviator Stress psf	Principal Stresses Minor psf	Major psf	1:3 Ratio	P psf	Q psf
0	0.0	0.000	0.00	0.0	0.0	0	806	806	1.00	806	0
1	10.0	0.010	36.00	36.0	0.2	1144	806	1950	2.42	1378	572
2	20.0	0.020	55.70	55.7	0.4	1766	806	2572	3.19	1689	883
3	40.0	0.040	75.50	75.5	0.8	2383	806	3190	3.96	1998	1192
4	60.0	0.060	84.50	84.5	1.3	2656	806	3463	4.29	2134	1328
5	80.0	0.080	89.50	89.5	1.7	2801	806	3608	4.47	2207	1401
6	100.0	0.100	94.00	94.0	2.1	2930	806	3736	4.63	2271	1465
7	120.0	0.120	98.00	98.0	2.5	3041	806	3848	4.77	2327	1521
8	140.0	0.140	102.80	102.8	2.9	3177	806	3983	4.94	2395	1588
9	160.0	0.160	106.70	106.7	3.3	3283	806	4090	5.07	2448	1642
10	180.0	0.180	110.40	110.4	3.8	3382	806	4189	5.19	2498	1691
11	200.0	0.200	114.30	114.3	4.2	3487	806	4293	5.32	2550	1743
12	240.0	0.240	121.00	121.0	5.0	3659	806	4465	5.54	2636	1829
13	280.0	0.280	126.40	126.4	5.8	3789	806	4595	5.70	2701	1894
14	320.0	0.320	132.30	132.3	6.7	3931	806	4737	5.87	2772	1965
15	360.0	0.360	137.50	137.5	7.5	4049	806	4855	6.02	2831	2024
16	400.0	0.400	141.30	141.3	8.3	4123	806	4929	6.11	2868	2061
17	440.0	0.440	145.40	145.4	9.2	4204	806	5010	6.21	2908	2102
18	480.0	0.480	149.80	149.8	10.0	4291	806	5098	6.32	2952	2146
19	520.0	0.520	152.20	152.2	10.8	4320	806	5126	6.36	2966	2160
20	560.0	0.560	155.50	155.5	11.7	4372	806	5179	6.42	2993	2186
21	600.0	0.600	157.50	157.5	12.5	4387	806	5193	6.44	3000	2193
22	640.0	0.640	159.40	159.4	13.3	4397	806	5204	6.45	3005	2199
23	680.0	0.680	161.40	161.4	14.2	4410	806	5216	6.47	3011	2205
24	700.0	0.700	161.90	161.9	14.6	4402	806	5208	6.46	3007	2201
25	720.0	0.720	162.10	162.1	15.0	4386	806	5192	6.44	2999	2193
26	740.0	0.740	162.60	162.6	15.4	4378	806	5184	6.43	2995	2189
27	760.0	0.760	163.00	163.0	15.8	4367	806	5173	6.42	2990	2183
28	780.0	0.780	162.40	162.4	16.3	4329	806	5136	6.37	2971	2165
29	800.0	0.800	162.60	162.6	16.7	4313	806	5120	6.35	2963	2157
30	840.0	0.840	160.90	160.9	17.5	4225	806	5032	6.24	2919	2113
31	880.0	0.880	159.40	159.4	18.3	4144	806	4950	6.14	2878	2072
32	920.0	0.920	155.80	155.8	19.2	4009	806	4815	5.97	2811	2004
33	960.0	0.960	149.00	149.0	20.0	3794	806	4601	5.71	2704	1897

Specimen Parameters for Specimen No. 2

Specimen Parameter	Initial	Saturated	Final
Wt. moist soil and tare:	88.600		88.600
Wt. dry soil and tare:	80.800		80.800
Wt. of tare:	36.100		36.100
Weight, gms:	749.1		
Diameter, in:	2.400	2.400	
Area, in^2:	4.524	4.524	
Height, in:	4.800	4.800	
Net decrease in height, in:		0.000	
% Moisture:	17.4	17.4	17.4
Wet density, pcf:	131.4	131.4	
Dry density, pcf:	111.9	111.9	
Void ratio:	0.5064	0.5064	
% Saturation:	93.0	93.0	

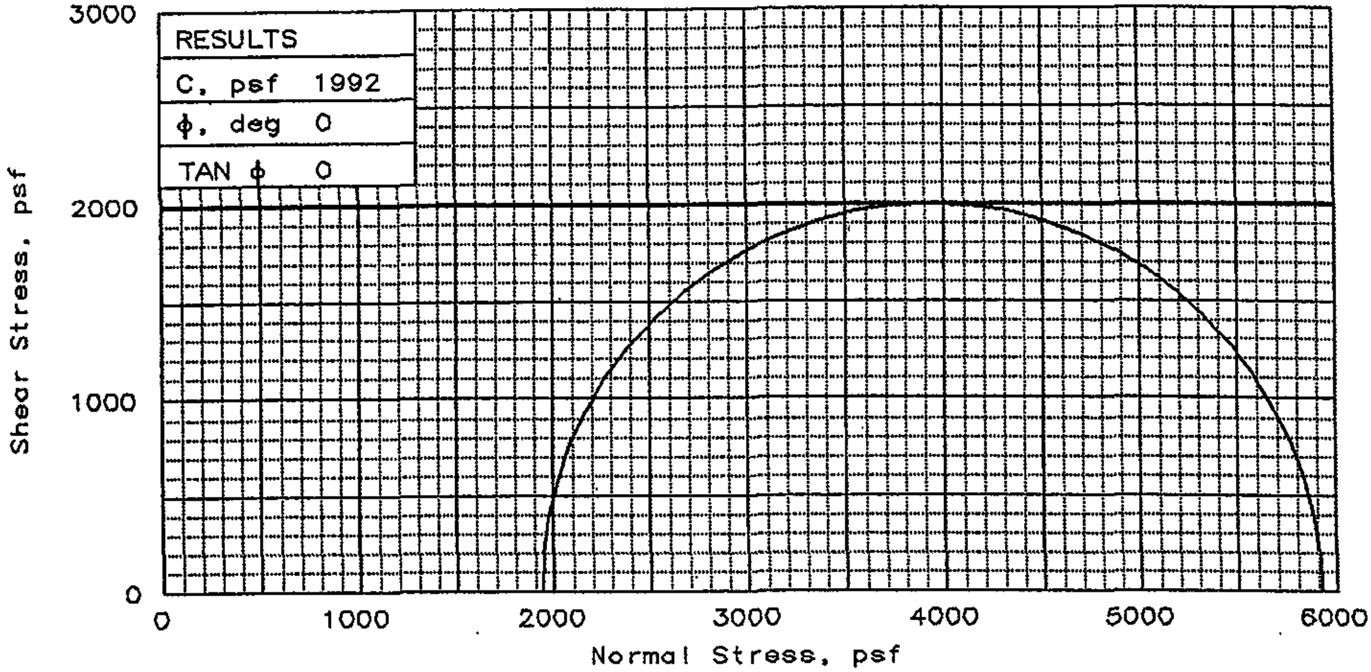
Test Readings Data for Specimen No. 2

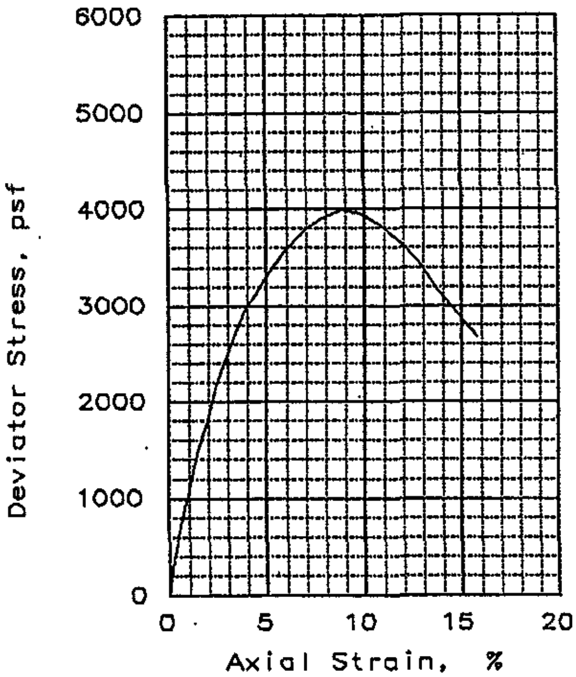
Deformation dial constant= 0.001 in per input unit
Primary load ring constant= 1 lbs per input unit
Secondary load ring constant= 0 lbs per input unit
Crossover reading for secondary load ring= 0 input units
Membrane modulus = .124105 kN/cm^2
Membrane thickness = 0.02 cm
Cell pressure = 6.80 psi = 979 psf
Back pressure = 0.00 psi = 0 psf
Effective confining stress = 979 psf
Strain rate, in/min = 0.0750
FAIL. STRESS = 8899 psf at reading no. 18
ULT. STRESS = not selected

No.	Def. Dial Units	Def. in	Load Dial Units	Load lbs	Strain %	Deviator Stress psf	Principal Stresses Minor psf	Major psf	1:3 Ratio	P psf	Q psf
0	0.0	0.000	0.00	0.0	0.0	0	979	979	1.00	979	0
1	10.0	0.010	25.00	25.0	0.2	794	979	1773	1.81	1376	397
2	20.0	0.020	46.50	46.5	0.4	1474	979	2453	2.51	1716	737
3	40.0	0.040	79.50	79.5	0.8	2509	979	3489	3.56	2234	1255
4	60.0	0.060	102.00	102.0	1.3	3206	979	4185	4.27	2582	1603
5	80.0	0.080	118.00	118.0	1.7	3693	979	4673	4.77	2826	1847
6	100.0	0.100	131.40	131.4	2.1	4095	979	5075	5.18	3027	2048
7	120.0	0.120	145.30	145.3	2.5	4509	979	5489	5.61	3234	2255
8	140.0	0.140	159.80	159.8	2.9	4938	979	5917	6.04	3448	2469
9	160.0	0.160	176.00	176.0	3.3	5416	979	6395	6.53	3687	2708
10	180.0	0.180	190.00	190.0	3.8	5821	979	6800	6.94	3890	2911
11	200.0	0.200	204.60	204.6	4.2	6241	979	7220	7.37	4100	3121
12	240.0	0.240	231.30	231.3	5.0	6994	979	7974	8.14	4476	3497
13	280.0	0.280	255.00	255.0	5.8	7643	979	8623	8.81	4801	3822
14	320.0	0.320	274.00	274.0	6.7	8140	979	9119	9.31	5049	4070
15	360.0	0.360	289.30	289.3	7.5	8518	979	9497	9.70	5238	4259
16	400.0	0.400	300.70	300.7	8.3	8774	979	9753	9.96	5366	4387
17	420.0	0.420	304.40	304.4	8.8	8842	979	9821	10.03	5400	4421
18	440.0	0.440	307.80	307.8	9.2	8899	979	9879	10.09	5429	4450
19	460.0	0.460	310.10	310.1	9.6	8925	979	9904	10.11	5442	4462
20	480.0	0.480	310.70	310.7	10.0	8901	979	9880	10.09	5430	4450
21	500.0	0.500	310.60	310.6	10.4	8857	979	9836	10.05	5408	4428

Test Readings Data for Specimen No. 2

No.	Def. Dial Units	Def. in	Load Dial Units	Load lbs	Strain %	Deviator Stress psf	Principal Stresses Minor psf	Principal Stresses Major psf	1:3 Ratio	P psf	Q psf
22	520.0	0.520	308.50	308.5	10.8	8756	979	9735	9.94	5357	4378
23	540.0	0.540	303.80	303.8	11.3	8582	979	9562	9.76	5270	4291
24	560.0	0.560	297.20	297.2	11.7	8357	979	9336	9.53	5157	4178
25	600.0	0.600	269.00	269.0	12.5	7492	979	8471	8.65	4725	3746
26	640.0	0.640	218.50	218.5	13.3	6028	979	7007	7.16	3993	3014
27	680.0	0.680	161.50	161.5	14.2	4412	979	5392	5.51	3185	2206
28	720.0	0.720	119.20	119.2	15.0	3225	979	4204	4.29	2592	1613





SAMPLE NO.:		1
INITIAL	WATER CONTENT, %	22.0
	DRY DENSITY, pcf	106.7
	SATURATION, %	102.4
	VOID RATIO	0.580
	DIAMETER, in	2.42
	HEIGHT, in	4.06
AT TEST	WATER CONTENT, %	22.0
	DRY DENSITY, pcf	106.7
	SATURATION, %	102.4
	VOID RATIO	0.580
	DIAMETER, in	2.42
	HEIGHT, in	4.06
Strain rate, in/min		0.0750
BACK PRESSURE, psf		0
CELL PRESSURE, psf		1944
FAIL. STRESS, psf		3985
STRAIN, %		8.9
ULT. STRESS, psf		
STRAIN, %		
σ_1 FAILURE, psf		5929
σ_3 FAILURE, psf		1944

TYPE OF TEST:
Unconsolidated Undrained

SAMPLE TYPE: 2.5"MC

DESCRIPTION: Stiff,redish brn. silty CLAY(CL)

SPECIFIC GRAVITY= 2.7

REMARKS:

Fig. No.: ______

CLIENT: Subsurface Consultants

PROJECT: Green City Lofts

SAMPLE LOCATION: B-2 40.5'

PROJ. NO.: 1316.001 DATE: 12-8-00

TRIAXIAL SHEAR TEST REPORT

Soil Mechanics Lab

TRIAXIAL COMPRESSION TEST
Unconsolidated Undrained

12-09-1900
11:53 am

Project and Sample Data

Date: 12-8-00
Client: Subsurface Consultants
Project: Green City Lofts
Sample location: B-2 31'
Sample description: V.stiff,mottled, brn. silty CLAY(CL)
Remarks:

Fig no.: 2nd page Fig no. (if applicable):
Type of sample: 2.5"MC
Specific gravity= 2.70 LL= PL= PI=
Test method: ASTM - Method A

Specimen Parameters for Specimen No. 1

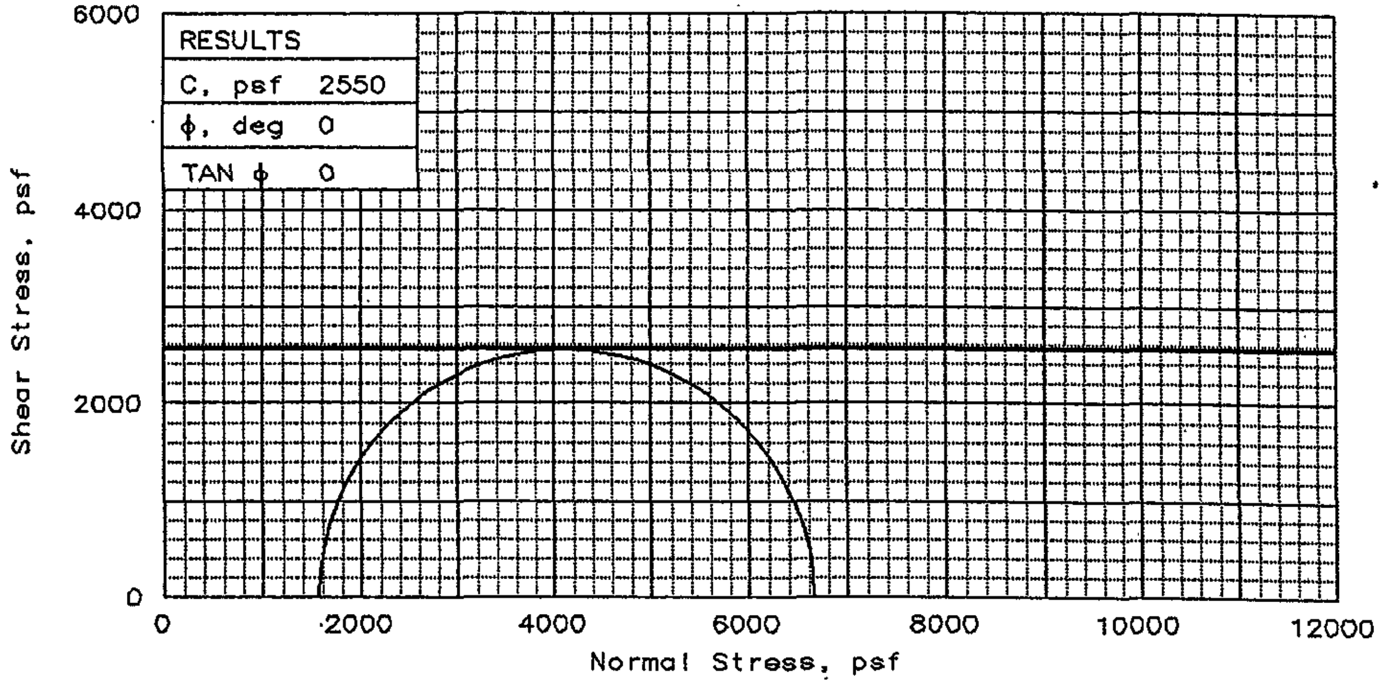
Specimen Parameter	Initial	Saturated	Final
Wt. moist soil and tare:	99.100		99.100
Wt. dry soil and tare:	85.600		85.600
Wt. of tare:	28.100		28.100
Weight, gms:	745.3		
Diameter, in:	2.416	2.416	
Area, in²:	4.584	4.584	
Height, in:	4.800	4.800	
Net decrease in height, in:		0.000	
% Moisture:	23.5	23.5	23.5
Wet density, pcf:	129.0	129.0	
Dry density, pcf:	104.5	104.5	
Void ratio:	0.6131	0.6131	
% Saturation:	103.4	103.4	

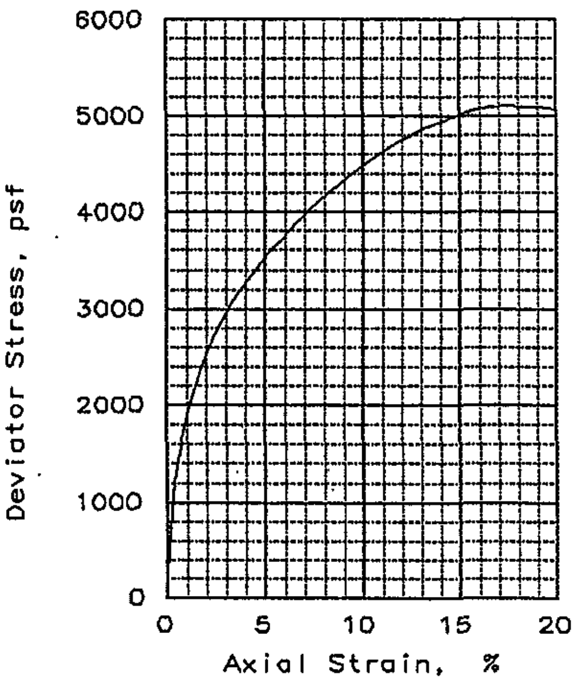
Test Readings Data for Specimen No. 1

Deformation dial constant= 0.001 in per input unit
Primary load ring constant= 1 lbs per input unit
Secondary load ring constant= 0 lbs per input unit
Crossover reading for secondary load ring= 0 input units
Membrane modulus = .124105 kN/cm²
Membrane thickness = 0.02 cm
Cell pressure = 10.90 psi = 1570 psf
Back pressure = 0.00 psi = 0 psf
Effective confining stress = 1570 psf
Strain rate, in/min = 0.0750
FAIL. STRESS = 5100 psf at reading no. 27
ULT. STRESS = not selected

Test Readings Data for Specimen No. 1

No.	Def. Dial Units	Def. in	Load Dial Units	Load lbs	Strain %	Deviator Stress psf	Principal Stresses Minor psf	Major psf	1:3 Ratio	P psf	Q psf
0	0.0	0.000	0.00	0.0	0.0	0	1570	1570	1.00	1570	0
1	10.0	0.010	23.00	23.0	0.2	721	1570	2291	1.46	1930	360
2	20.0	0.020	39.00	39.0	0.4	1220	1570	2790	1.78	2180	610
3	40.0	0.040	55.20	55.2	0.8	1719	1570	3289	2.10	2429	860
4	60.0	0.060	66.50	66.5	1.3	2063	1570	3632	2.31	2601	1031
5	80.0	0.080	74.90	74.9	1.7	2313	1570	3883	2.47	2726	1157
6	100.0	0.100	82.50	82.5	2.1	2537	1570	4107	2.62	2838	1269
7	120.0	0.120	90.00	90.0	2.5	2756	1570	4326	2.76	2948	1378
8	140.0	0.140	95.40	95.4	2.9	2909	1570	4479	2.85	3024	1455
9	160.0	0.160	100.80	100.8	3.3	3061	1570	4630	2.95	3100	1530
10	180.0	0.180	105.30	105.3	3.8	3184	1570	4753	3.03	3161	1592
11	200.0	0.200	109.60	109.6	4.2	3299	1570	4869	3.10	3219	1650
12	240.0	0.240	118.00	118.0	5.0	3521	1570	5091	3.24	3330	1761
13	280.0	0.280	125.50	125.5	5.8	3712	1570	5282	3.37	3426	1856
14	320.0	0.320	132.90	132.9	6.7	3896	1570	5466	3.48	3518	1948
15	360.0	0.360	140.00	140.0	7.5	4068	1570	5637	3.59	3603	2034
16	400.0	0.400	146.30	146.3	8.3	4212	1570	5782	3.68	3676	2106
17	440.0	0.440	152.90	152.9	9.2	4362	1570	5932	3.78	3751	2181
18	480.0	0.480	158.70	158.7	10.0	4486	1570	6056	3.86	3813	2243
19	520.0	0.520	164.30	164.3	10.8	4602	1570	6171	3.93	3870	2301
20	560.0	0.560	169.70	169.7	11.7	4709	1570	6278	4.00	3924	2354
21	600.0	0.600	174.60	174.6	12.5	4799	1570	6368	4.06	3969	2399
22	640.0	0.640	179.30	179.3	13.3	4881	1570	6451	4.11	4010	2441
23	680.0	0.680	183.50	183.5	14.2	4947	1570	6517	4.15	4043	2474
24	720.0	0.720	187.90	187.9	15.0	5017	1570	6586	4.20	4078	2508
25	760.0	0.760	191.30	191.3	15.8	5057	1570	6627	4.22	4098	2529
26	800.0	0.800	194.30	194.3	16.7	5086	1570	6656	4.24	4113	2543
27	840.0	0.840	196.80	196.8	17.5	5100	1570	6669	4.25	4120	2550
28	880.0	0.880	198.60	198.6	18.3	5095	1570	6664	4.25	4117	2547
29	920.0	0.920	200.40	200.4	19.2	5088	1570	6658	4.24	4114	2544
30	960.0	0.960	201.50	201.5	20.0	5063	1570	6633	4.23	4101	2532





SAMPLE NO.:		1
INITIAL	WATER CONTENT, %	23.5
	DRY DENSITY, pcf	104.5
	SATURATION, %	103.4
	VOID RATIO	0.613
	DIAMETER, in	2.42
	HEIGHT, in	4.80
AT TEST	WATER CONTENT, %	23.5
	DRY DENSITY, pcf	104.5
	SATURATION, %	103.4
	VOID RATIO	0.613
	DIAMETER, in	2.42
	HEIGHT, in	4.80
Strain rate, in/min		0.0750
BACK PRESSURE, psf		0
CELL PRESSURE, psf		1570
FAIL. STRESS, psf		5100
STRAIN, %		17.5
ULT. STRESS, psf		
STRAIN, %		
σ_1 FAILURE, psf		6669
σ_3 FAILURE, psf		1570

TYPE OF TEST:
Unconsolidated Undrained

SAMPLE TYPE: 2.5"MC

DESCRIPTION: V.stiff, mottled, brn. silty CLAY(CL)

SPECIFIC GRAVITY= 2.7

REMARKS:

Fig. No.: ______

CLIENT: Subsurface Consultants

PROJECT: Green City Lofts

SAMPLE LOCATION: B-2 31'

PROJ. NO.: 1316.001 DATE: 12-8-00

TRIAXIAL SHEAR TEST REPORT

Soil Mechanics Lab

TRIAXIAL COMPRESSION TEST
Unconsolidated Undrained

12-09-1900
11:54 am

Project and Sample Data

Date: 12-8-00
Client: Subsurface Consultants
Project: Green City Lofts
Sample location: B-2 40.5'
Sample description: Stiff,redish brn. silty CLAY(CL)
Remarks:

Fig no.: 2nd page Fig no. (if applicable):
Type of sample: 2.5"MC
Specific gravity= 2.70 LL= PL= PI=
Test method: ASTM - Method A

Specimen Parameters for Specimen No. 1

Specimen Parameter	Initial	Saturated	Final
Wt. moist soil and tare:	94.900		94.900
Wt. dry soil and tare:	84.300		84.300
Wt. of tare:	36.100		36.100
Weight, gms:	636.0		
Diameter, in:	2.416	2.416	
Area, in²:	4.584	4.584	
Height, in:	4.060	4.060	
Net decrease in height, in:		0.000	
% Moisture:	22.0	22.0	22.0
Wet density, pcf:	130.2	130.2	
Dry density, pcf:	106.7	106.7	
Void ratio:	0.5796	0.5796	
% Saturation:	102.4	102.4	

Test Readings Data for Specimen No. 1

Deformation dial constant= 0.001 in per input unit
Primary load ring constant= 1 lbs per input unit
Secondary load ring constant= 0 lbs per input unit
Crossover reading for secondary load ring= 0 input units
Membrane modulus = .124105 kN/cm²
Membrane thickness = 0.02 cm
Cell pressure = 13.50 psi = 1944 psf
Back pressure = 0.00 psi = 0 psf
Effective confining stress = 1944 psf
Strain rate, in/min = 0.0750
FAIL. STRESS = 3985 psf at reading no. 15
ULT. STRESS = not selected

Test Readings Data for Specimen No. 1

No.	Def. Dial Units	Def. in	Load Dial Units	Load lbs	Strain %	Deviator Stress psf	Principal Stresses Minor psf	Major psf	1:3 Ratio	P psf	Q psf
0	0.0	0.000	0.00	0.0	0.0	0	1944	1944	1.00	1944	0
1	10.0	0.010	11.30	11.3	0.2	354	1944	2298	1.18	2121	177
2	20.0	0.020	18.90	18.9	0.5	591	1944	2535	1.30	2239	295
3	40.0	0.040	33.00	33.0	1.0	1026	1944	2970	1.53	2457	513
4	60.0	0.060	47.00	47.0	1.5	1454	1944	3398	1.75	2671	727
5	80.0	0.080	58.00	58.0	2.0	1786	1944	3730	1.92	2837	893
6	100.0	0.100	70.40	70.4	2.5	2157	1944	4101	2.11	3022	1078
7	120.0	0.120	80.00	80.0	3.0	2439	1944	4383	2.25	3163	1219
8	140.0	0.140	89.40	89.4	3.4	2711	1944	4655	2.39	3300	1356
9	160.0	0.160	97.80	97.8	3.9	2951	1944	4895	2.52	3419	1475
10	180.0	0.180	104.00	104.0	4.4	3122	1944	5066	2.61	3505	1561
11	200.0	0.200	109.70	109.7	4.9	3276	1944	5220	2.69	3582	1638
12	240.0	0.240	120.50	120.5	5.9	3561	1944	5505	2.83	3725	1781
13	280.0	0.280	129.00	129.0	6.9	3773	1944	5717	2.94	3830	1886
14	320.0	0.320	135.20	135.2	7.9	3912	1944	5856	3.01	3900	1956
15	360.0	0.360	139.20	139.2	8.9	3985	1944	5929	3.05	3936	1992
16	400.0	0.400	139.60	139.6	9.9	3953	1944	5897	3.03	3920	1976
17	440.0	0.440	136.90	136.9	10.8	3834	1944	5778	2.97	3861	1917
18	480.0	0.480	132.70	132.7	11.8	3675	1944	5619	2.89	3782	1838
19	520.0	0.520	126.20	126.2	12.8	3456	1944	5400	2.78	3672	1728
20	560.0	0.560	116.40	116.4	13.8	3152	1944	5096	2.62	3520	1576
21	600.0	0.600	108.80	108.8	14.8	2912	1944	4856	2.50	3400	1456
22	640.0	0.640	101.00	101.0	15.8	2672	1944	4616	2.37	3280	1336