AGEC

Applied GeoTech

GEOTECHNICAL INVESTIGATION

PROPOSED OFFICE BUILDINGS

APPROXIMATELY 3200 NORTH GARDEN DRIVE

LEHI, UTAH

PREPARED FOR:

SPAN CONSTRUCTION AND ENGINEERING, INC.
1841 HOWARD ROAD
MADERA, CA 93637

ATTENTION: TIM MITCHELL

PROJECT NO. 1150405 **JUNE 3, 2015**

600 West Sandy Parkway • Sandy, Utah 84070 • (801) 566-6399 • FAX (801) 566-6493

TABLE OF CONTENTS

EXECUTIVE SUMMARY

1. Three borings were drilled to investigate subsurface conditions at the property. The subsurface conditions encountered in the borings consist of approximately 4 feet of fill in Borings B-1 and B-2 and 1 foot of topsoil in Boring B-3 overlying natural lean clay and extends the maximum depth investigated, approximately 45½ feet.

2. Subsurface water was encountered at depths of approximately 9½, 10 and 8 feet in Borings B-1 through B-3, respectively, when measured 4 days after drilling.

3. Approximately 4 feet of fill was encountered in Borings B-1 and B-2. We anticipate that there may be variable fill thicknesses at the site and additional subsurface investigation could be performed to better understand this variability. The fill in the borings consisted predominantly of lean clay and is not considered suitable to support the proposed office buildings.

   The fill was likely not compacted sufficient to support areas of proposed pavement and concrete flatwork. Additional field study could be performed to get a better understanding of the fill condition. The fill should be removed and replaced with properly compacted fill in these areas. Should the owner decide to not remove the fill from below proposed pavement and slab areas, there would be a risk of settlement, cracking and distress.

4. We understand that two office buildings are planned to be constructed at the property. The office buildings are planned to consist of four-story structures with slab-on-grade floors.

   We understand that column loads for the office buildings are planned to be less than 600 kips. We have assumed wall loads for the buildings will be less than 8 kips per lineal foot.

5. Footings for the proposed buildings may be supported on spread footings bearing on the undisturbed natural soil or on compacted structural fill extending down to the undisturbed natural soil. The amount of structural fill needed below footings depends on the structural load and the amount of settlement considered tolerable. Foundation recommendations relating to anticipated building loads, bearing pressure, thickness of structural fill and estimated settlement are provided in the report.

Executive Summary (continued)

6. Consideration could be given to supporting the buildings on an alternative foundation such as drilled piers, auger-cast piles or other deep foundation systems. Consideration may also be given to improving the soil in the building area using a surcharge fill, stone columns or other methods.

7. The upper natural soil at the site consists of lean clay. Access difficulties may be encountered at the site if the upper soil becomes very moist to wet such as during periods of rainfall or during the wet times of the year. Placement of 1½ to 2 feet of gravel in areas where the subgrade consists of very moist to wet clay and silt will generally improve site conditions for rubber-tired construction equipment access.

8. Geotechnical information related to foundations, subgrade preparation, pavement design and materials is included in the report.

SCOPE

This report presents the results of a geotechnical investigation for two office buildings planned to be constructed at approximately 3200 North Garden Drive in Lehi, Utah. The report presents the subsurface conditions encountered, laboratory test results and recommendations for foundation support and pavement. The scope of work described in our proposal dated May 6, 2015 was reduced so that some subsurface information could be gathered to provide our recommendations. Additional subsurface investigation should be performed to verify the recommendations included in the report.

Field exploration was conducted to obtain information on the subsurface conditions. Samples obtained from the field investigation were tested in the laboratory to determine physical and engineering characteristics of the on-site soil. Information obtained from the field and laboratory was used to define conditions at the site for our engineering analysis and to develop recommendations for the proposed building foundations and pavement.

This report has been prepared to summarize the data obtained during the study and to present our conclusions and recommendations based on the proposed construction and the subsurface conditions encountered. Design parameters and a discussion of geotechnical engineering considerations related to construction are included in the report.

SITE CONDITIONS

The site consists of a parcel of undeveloped land approximately 12 acres in size. The property is currently being used as the driving range for the Thanksgiving Point Golf Course. The area consists of a grass-landscaped area with a tee box at the north end. There is a chain link fence along the east side of the property and a paved golf cart path along the west side. The ground surface is rolling with a very gentle slope down to the west. There are some trees along the east side of the property.

The clubhouse for the golf course and a paved parking area are north of the property. Desert Forest Lane, a two-lane, asphalt-paved road extends along the south side of the property. Farther south is a residential subdivision. Garden Drive, a two-lane, asphalt-paved road extends along the east side of the property. Farther east are railroad tracks and then multi-story office buildings. A portion of the golf course if west of the property. Farther west if the Jordan River.

FIELD STUDY

Three borings were drilled at the property on May 11, 2015. The borings were drilled with 8-inch diameter hollow-stem auger powered by a truck-mounted drill rig. The approximate locations of the borings are shown on Figure 1. The borings were logged and soil samples obtained by an engineer from AGEC. Logs of the subsurface conditions encountered in the borings are graphically shown on Figure 2 with legend and notes on Figure 3.

SUBSURFACE CONDITIONS

Three borings were drilled to investigate subsurface conditions at the property. The subsurface conditions encountered in the borings consist of approximately 4 feet of fill in Borings B-1 and B-2 and 1 foot of topsoil in Boring B-3 overlying natural lean clay and extends the maximum depth investigated, approximately 45½ feet.

A description of the various materials encountered in the borings follows:

> Fill - The fill consists of lean clay and is moist and brown. The upper several inches of fill contains significant roots and organic material.
>
> Lean Clay - The clay contains small to moderate amounts of sand and contains some clayey sand and gravelly clay layers. The clay is very soft to stiff, moist to wet and brown to gray.

Laboratory tests performed on samples of the clay indicate it has natural moisture contents ranging from 22 to 36 percent and natural dry densities ranging from 85 to 101 pounds per cubic foot.

Consolidation tests conducted on samples of the clay indicate it will compress a moderate to large amount with the addition of moderate to heavy loads. Results of the consolidation tests are presented on Figures 4 to 6.

Unconfined compressive strengths of 2,775 and 1,545 pounds per square foot (psf) were measured for samples of the clay tested in the laboratory.

Results of the laboratory tests are summarized on Table I and are included on the logs of exploratory borings, Figure 2 with legend and notes on Figure 3.

SUBSURFACE WATER

Subsurface water was encountered at depths of approximately 9½, 10 and 8 feet in Borings B-1 through B-3, respectively, when measured 4 days after drilling.

Slotted PVC pipe was installed in the borings to facilitate future measurement of the water level. Fluctuations in the water level will occur over time. Generally, water levels are highest in the spring and summer and lowest in the fall and winter months. An evaluation of fluctuations in the subsurface water level is beyond the scope of this report.

PROPOSED CONSTRUCTION

No construction plans were provided at the time of our study. We understand that two office buildings are planned to be constructed on the property. Each office building is planned to consist of a four-story structure with a slab-on-grade floor and a building footprint of approximately 30,500 square feet.

The project architect indicates column loads for the buildings will be less than 600 kips. We have assumed that wall loads for the buildings will be less than 8 kips per lineal foot.

Paved parking areas are planned to be constructed around the buildings. We have assumed three traffic conditions for pavement areas as shown in the following table:

Traffic Condition	Cars (per day)	Delivery Trucks (per day)	Garbage Trucks (per week)
A	500	2	2
B	1,000	4	4
C	2,000	8	4

If the proposed construction, building loads or traffic is significantly different from what is described above, we should be notified so that we can reevaluate the recommendations given.

RECOMMENDATIONS

Based on the subsurface conditions encountered, laboratory test results and the proposed construction, the following recommendations are given:

A. Site Grading

No site grading plan was provided at the time of our study. We anticipate cuts and fills of up to 4 feet will be needed to accommodate construction of the office buildings and parking areas.

1. Settlement Monitoring

Site grading fill to raise the existing grade should be placed as soon as possible prior to building construction to allow most of the settlement due to consolidation of the underlying compressible soil to occur prior to construction. We estimate most of the settlement will occur within approximately 1 to 3 months after fill placement. The settlement due to the site grading fill should be monitored to determine when building construction may begin.

2. Existing Fill

Approximately 4 feet of fill was encountered in Borings B-1 and B-2. We anticipate that there may be variable fill thicknesses at the site and additional subsurface investigation could be performed to better understand this variability. The fill in the borings consisted predominantly of lean clay and is not considered suitable to support the proposed office buildings.

The fill was likely not compacted sufficient to support areas of proposed pavement and concrete flatwork. Additional field study could be performed to get a better understanding of the fill condition. The fill should be removed and replaced with properly compacted fill in these areas. Should the owner decide to not remove the fill from below proposed pavement and slab areas, there would be a risk of settlement, cracking and distress.

3. Subgrade Preparation

The upper natural soil at the site consists predominantly of clay and clay fill. Access difficulties may be encountered when the clay is very moist to wet. Increased difficulties can be expected during the winter or spring months or after periods of rainfall or irrigation. Generally, 1½ to 2 feet of gravel will provide limited support for moderately loaded rubber-tired construction equipment above very moist to wet clay.

4. Excavation

We anticipate that excavation at the site can be accomplished with typical excavation equipment. Excavation equipment for foundations should have a flat cutting edge to minimize disturbance of the natural soil. Excavation equipment that has low ground pressure or that is supported outside and above the excavation will likely be needed, especially for deeper excavations. Care should be taken not to disturb the natural soil to remain in the proposed building and pavement areas.

5. Dewatering

We anticipate some excavations may extend below the subsurface water level. The excavations should be dewatered prior to excavation, fill placement and construction of below-grade footing and foundation walls. Additional recommendations for construction dewatering can be provided after additional information regarding the proposed building construction is provided.

6. Cut and Fill Slopes

Temporary unretained excavation slopes may be needed in some areas, such as utility trenches. Temporary unretained excavation slopes above the subsurface water level (up to approximately 15 feet in height) may be constructed at a slope of 1½ horizontal to 1 vertical or flatter. Additional engineering analysis should be performed for taller excavation slopes and excavation slopes that extend below the subsurface water level. It is the responsibility of the contractor to provide appropriate slopes to assure safe working conditions and stability of adjacent areas. Additional evaluation of excavation slopes by a qualified engineer should be provided during the construction process.

Site grading should be planned to direct surface run off away from cut and fill slopes. Permanent cut and fill slopes should be protected from erosion by revegetation or by other methods.

7. Materials

Materials used as fill for the project are anticipated to consist of imported fill and the on-site soil. Recommendations for these materials are shown below.

a. Imported Fill

Listed below are materials recommended for imported structural fill.

Fill Location	Recommendation
Below Footings	Non-expansive granular soil Passing No. 200 Sieve <35% Liquid Limit < 30% Maximum size 3 inches
Below Floor Slabs (Upper 4 inches)	Sand and/or Gravel Passing No. 200 Sieve <5% Maximum size 2 inches
Below Floor Slabs (Deeper than 4 inches)	Non-expansive granular soil Passing No. 200 Sieve <50% Liquid Limit <30% Maximum size 3 inches

b. On-Site Soil

The clay fill and natural lean clay are not recommended for use as structural fill below the proposed buildings, but may be considered for use as utility trench backfill outside building areas or as grading fill in pavement areas below the base course. The clay fill and clay may also be used in landscape areas.

Prior to using the on-site materials as fill, topsoil, organic material, oversize material, debris and other deleterious material should be removed.

c. Moisture Conditioning

Depending on the moisture content at the time of construction, the materials may require wetting or drying prior to use as fill. Drying of the soil may not be practical during cold or wet times of the year. Much of the soil at the site has a moisture content that is likely higher than the optimum moisture content and will likely be difficult to use as fill.

6. Compaction

Compaction of materials placed at the site should equal or exceed the minimum densities as indicated below when compared to the maximum dry density as determined by ASTM D 1557.

Fill Location	Compaction
Below Building Foundations	≥ 95%
Below Concrete Flatwork	≥ 90%
Pavement - Subgrade Fill	≥ 90%
Pavement - Base Course	≥ 95%

To facilitate the compaction process, the fill should be compacted at a moisture content within 2 percent of the optimum moisture content.

Fill placed for the project should be frequently tested for compaction.

7. Drainage

The ground surface surrounding the proposed buildings should be sloped away from the buildings in all directions. Roof downspouts and drains should discharge beyond the limits of backfill.

The collection and diversion of drainage away from the pavement surface is important to the satisfactory performance of the pavement section. Proper drainage should be provided.

B. Foundations

1. Bearing Material

With the proposed construction and the subsurface conditions encountered, the proposed buildings may be supported on spread footings bearing on the undisturbed natural soil or on compacted structural fill extending down to the undisturbed natural soil. Structural fill placed below footings should extend out away from the edge of footings at least a distance equal to the depth of fill beneath footings.

The topsoil, organics, unsuitable fill, debris and other deleterious materials should be removed from below proposed foundation areas.

2. Bearing Pressure, Structural Fill and Estimated Settlement

Settlement at the site will be a result of the weight of site grading fill and structural loads for the proposed building.

As indicated above, site grading fill should be placed well in advance of building construction so that most of the settlement from the weight of the site grading fill occurs prior to building construction. We recommend that the rate and amount of settlement be monitored. The information will be used to determine when building construction may proceed.

The amount of settlement due to structural loads depends on the amount of load, the bearing pressure and the amount of structural fill below the footing. The following table provides estimated settlement for several assumed building loads, bearing pressures and structural fill thicknesses.

Building Loads	Allowable Bearing Pressure (psf)*	Thickness of Structural Fill (feet)	Estimated Total Settlement (inches)
Column ≤ 200 kips	1,500	0	¾
	2,500	3	¾
Column ≤ 400 kips	1,500	4	1
Column ≤ 600 kips	1,500	8	1
Wall ≤ 4 kips/ft	1,500	0	< ½
	2,500	2	< ½
Wall ≤ 6 kips/ft	1,500	0	⅔
	2,500	2	½
Wall ≤ 8 kips/ft	1,500	0	¾
	2,500	2	¾

** The structural loads used in the settlement analysis are assumed to consist of 70 percent dead load and 30 percent live load.*

Disturbance of the soil below foundations can result in greater settlement. Care should be taken to minimize the disturbance of the natural soil to remain below footings so that settlement can be maintained within tolerable limits. Loose soil in the base of footing excavations should be removed or be properly compacted.

Additional engineering analysis should be conducted to evaluate settlement after more information is available regarding the structural loads for the buildings.

3. Alternative Foundations/Soil Improvement

Consideration could be given to supporting the buildings on an alternative foundation such as drilled piers, auger-cast piles or other deep foundation systems. Consideration may also be given to improving the soil in the building areas using a surcharge fill, stone columns or other methods.

4. Temporary Loading Conditions

The allowable bearing pressure may be increased by one-half for temporary loading conditions such as wind or seismic loads.

5. Minimum Footing Width and Embedment

Spread footings should have a minimum width of 2 feet and a minimum depth of embedment of 1 foot.

6. Frost Depth

Exterior footings and footings beneath unheated areas should be placed at least 30 inches below grade for frost protection.

7. Foundation Base

The base of foundation excavations should be cleared of loose or deleterious material prior to structural fill or concrete placement.

8. Construction Observation

A representative of the geotechnical engineer should observe footing excavations prior to structural fill or concrete placement.

C. Concrete Slab-on-Grade

1. Slab Support

Concrete floor slabs may be supported on the undisturbed natural soil or on compacted structural fill extending down to the natural soil.

Topsoil, unsuitable fill, debris and other deleterious materials should be removed from below proposed floor slabs.

2. Underslab Sand and/or Gravel

A 4-inch layer of free-draining sand and/or gravel (less than 5 percent passing the No. 200 sieve) should be placed below the concrete floor slabs for ease of construction and to promote even curing of the slab concrete.

3. Vapor Barrier

A vapor barrier should be placed under the concrete floor if the floor will receive an impermeable floor covering. The barrier will reduce the amount of water vapor passing from below the slab to the floor covering.

D. Subsurface Drains

We understand that the office buildings will be constructed with slab-on-grade floors and will not extend below the ground surface. Some portions of the buildings, such as elevator shafts and mechanical areas may extend below grade. These areas should be protected with a subsurface drain. The following items should be considered for design and construction of subsurface drainage systems.

a. The subsurface drain should consist of a perforated pipe installed in a gravel filled trench around the perimeter of the subgrade floor portion of the building. The gravel should extend approximately 1 foot above the top of the footing and higher than any penetrations through the foundation wall (water lines, etc.)

b. The flow line of the pipe should be placed at least 18 inches below the finished floor level and should slope to a sump or outlet where water can be removed by pumping or by gravity flow.

c. If placing the gravel and drain pipe requires excavation below the bearing level of the footing, the excavation for the drain pipe and gravel should have a slope no steeper than 1 horizontal to 1 vertical so as not to disturb the soil below the building.

d. A filter fabric should be placed between the natural soil and the drain gravel. This will help reduce the potential for fine-grained material filling in the void spaces of the gravel.

e. The subgrade floor slab should have at least 6 inches of free-draining gravel placed below it and the underslab gravel should connect to the perimeter drain.

f. Consideration should be given to installing cleanouts to allow access into the perimeter drain should cleaning of the pipe be required in the future.

E. Lateral Earth Pressures

1. <u>Lateral Resistance for Footings</u>

Lateral resistance for spread footings placed on compacted structural fill or the natural soil is controlled by sliding resistance developed between the footing and the structural fill or natural soil. A friction value of 0.35 may be used in design for ultimate lateral resistance for footings bearing on the natural soil or on compacted structural fill.

2. <u>Subgrade Walls and Retaining Structures</u>

The following equivalent fluid weights are given for design of subgrade walls and retaining structures. The active condition is where the wall moves away from the soil. The passive condition is where the wall moves into the soil and the at-rest condition is where the wall does not move. The values listed below assume a horizontal surface adjacent the top and bottom of the wall.

Soil Type	Active	At-Rest	Passive
Clay & Silt	50 pcf	65 pcf	250 pcf
Sand & Gravel	40 pcf	55 pcf	300 pcf

3. Seismic Conditions

Under seismic conditions, the equivalent fluid weight should be increased by 29 pcf and 14 pcf for active and at-rest conditions, respectively and decreased by 29 pcf for the passive condition. This assumes a horizontal ground acceleration of 0.49g which represents an approximate 2 percent probability of exceedance in a 50-year period (IBC, 2012).

4. Safety Factors

The values recommended above for active and passive conditions assume mobilization of the soil to achieve the soil strength. Conventional safety factors used for structural analysis for such items as overturning and sliding resistance should be used in design.

F. Seismicity, Faulting and Liquefaction

1. Seismicity

Listed below is a summary of the site parameters for the International Building Code 2012.

a.	Site Class	D
b.	Short Period Spectral Response Acceleration, S_S	1.15g
c.	One Second Period Spectral Response Acceleration, S_1	0.39g

2. Faulting

There are no active faults mapped as extending through the area of the proposed development. The nearest mapped active fault is the Wasatch fault located approximately 7.7 miles east of the site (Black and others, 2003).

3. Liquefaction

The site is located in an area mapped as having a "low" liquefaction potential. The soil most susceptible to liquefaction is loose clean sand. The liquefaction potential for soil tends to decrease with an increase with an increase in fines content and density. Clay and soil above the free water level are not susceptible to liquefaction.

A site specific liquefaction analysis was conducted in conjunction with this study. Based on the subsurface conditions encountered to the depth investigated, our understanding of geologic conditions in the area and our site specific liquefaction analysis, liquefaction induced settlement is estimated to be less than 1 inch for an IBC 2012 seismic event. No significant lateral spread is expected since the upper soil consists predominantly of clay.

G. Water Soluble Sulfates

One sample of the on-site soil was tested for water soluble sulfate content. Results of laboratory testing indicate the water soluble sulfate content is less than 0.1 percent for the sample tested. Based on our previous experience in the area and published literature, the natural soil possesses negligible sulfate attack potential on concrete. The concentration of water soluble sulfates present in the soil at the site indicates that sulfate resistant cement is not needed for concrete placed in contact with the natural soil. Other conditions may dictate the type of cement to be used in concrete for the project.

H. Pavement

Based on the subsoil conditions encountered, laboratory test results and the assumed traffic as indicated in the Proposed Construction section of the report, the following pavement support recommendations are given:

1. Subgrade Support

The near surface soil consists of clay and interlayered soils. A CBR of 3 percent was used in the analysis which assumes a clay subgrade.

2. Pavement Thickness

Based on the subsoil conditions encountered, assumed traffic conditions presented in the Proposed Construction section of this report, a design life of 20 years for flexible pavement and 30 years for rigid pavement and methods presented by the Utah Department of Transportation and Portland Cement Association, the following pavement sections are calculated:

	Rigid Pavement	Flexible Pavement		
Traffic Condition	Portland Cement Concrete Thickness	Asphaltic Concrete Thickness	Base Course Thickness	Granular Borrow Thickness
A	5"	—	—	—
		3"	6"	—
B	5"	—	—	—
		3"	8"	—
		3"	6"	6"
C	5"	—	—	—
		3"	10"	—
		3"	6"	6"

A rigid pavement section consisting of 6½ inches of Portland cement concrete on 4 inches of base course is recommended for dumpster approach slabs.

If the subgrade soil consists of clay that is very moist to wet, it may be necessary to place 1½ to 2 feet of gravel to provide access for rubber-tired construction equipment as discussed in the Subgrade Preparation section of this report.

3. Pavement Materials and Construction

a. Flexible Pavement (Asphaltic Concrete)

The pavement materials should meet the specifications for the applicable jurisdiction. Other materials may be considered for use in

the pavement section. The use of other materials may result in the need for different pavement material thicknesses.

b. Rigid Pavement (Portland Cement Concrete)

The pavement thickness indicated assumes that the pavement will have aggregate interlock joints and that a concrete shoulder or curb will be provided.

The pavement materials should meet the specifications for the applicable jurisdiction. The pavement thickness indicated above assumes that the concrete will have a 28-day compressive strength of 4,000 pounds per square inch.

Concrete should be air-entrained with approximately 6 percent air. Maximum allowable slump will depend on the method of placement but should not exceed 4 inches.

4. Jointing

Joints for concrete pavement should be laid out in a square or rectangular pattern. Joint spacings should not exceed 30 times the thickness of the slab. The joint spacings indicated should accommodate the contraction of the concrete and under these conditions steel reinforcing will not be required. The depth of joints should be approximately one-fourth of the slab thickness.

I. Additional Services

It is important that AGEC be involved during design and construction of the building and parking areas. There are several items where we can provide value, help the design of the geotechnical aspects of the project be more efficient and help reduce the risk to the design team and the owner.

We recommend that at least the following additional services be provided:

1. Perform additional analysis when additional information regarding the buildings becomes available.
2. Attend design meetings to discuss design and construction of the proposed buildings and parking areas.
3. Review construction plans for the project to determine whether recommendations in this report have been incorporated into the design.
4. Observe the foundation excavation for the proposed buildings.
5. Provide construction observation and materials testing during construction.
6. Monitor settlement due to the site grading fill.

LIMITATIONS

This report has been prepared in accordance with generally accepted soil and foundation engineering practices in the area for the use of the client for design purposes. The conclusions and recommendations included within the report are based on the information obtained from the borings drilled at the approximate locations indicated on the site plan, the data obtained from laboratory testing and our experience in the area. Variations in the subsurface conditions may not become evident until additional exploration or excavation is conducted. If the proposed construction, subsurface conditions or groundwater level is found to be significantly different from what is described above, we should be notified to reevaluate our recommendations.

APPLIED GEOTECHNICAL ENGINEERING CONSULTANTS, INC.

LICENSED PROFESSIONAL ENGINEER # 276089 Scott D. Anderson 6/3/15 STATE OF UTAH

Scott D. Anderson, P.E.

Reviewed by Douglas R. Hawkes, P.E., P.G.

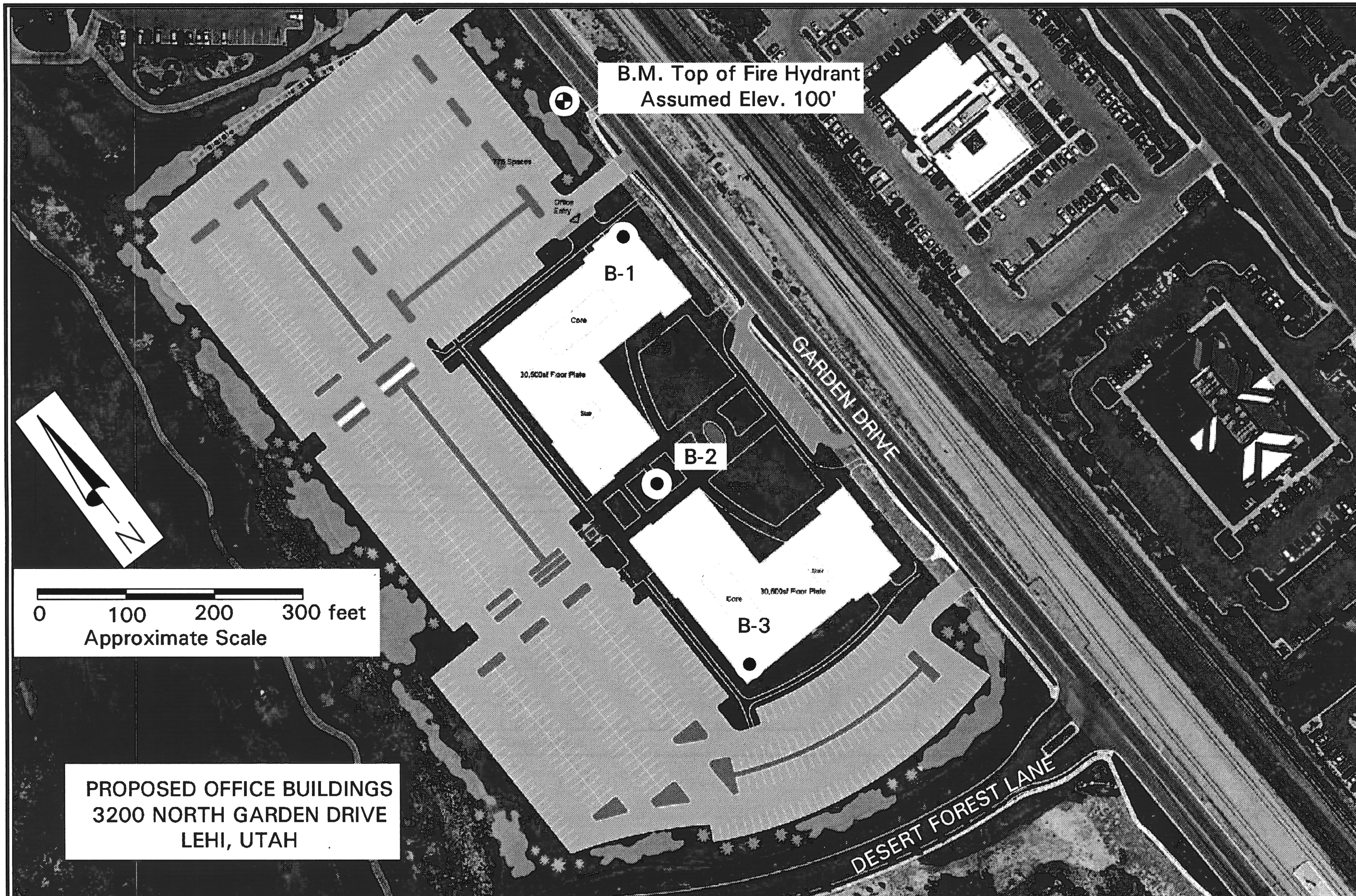
SDA/rs

REFERENCES

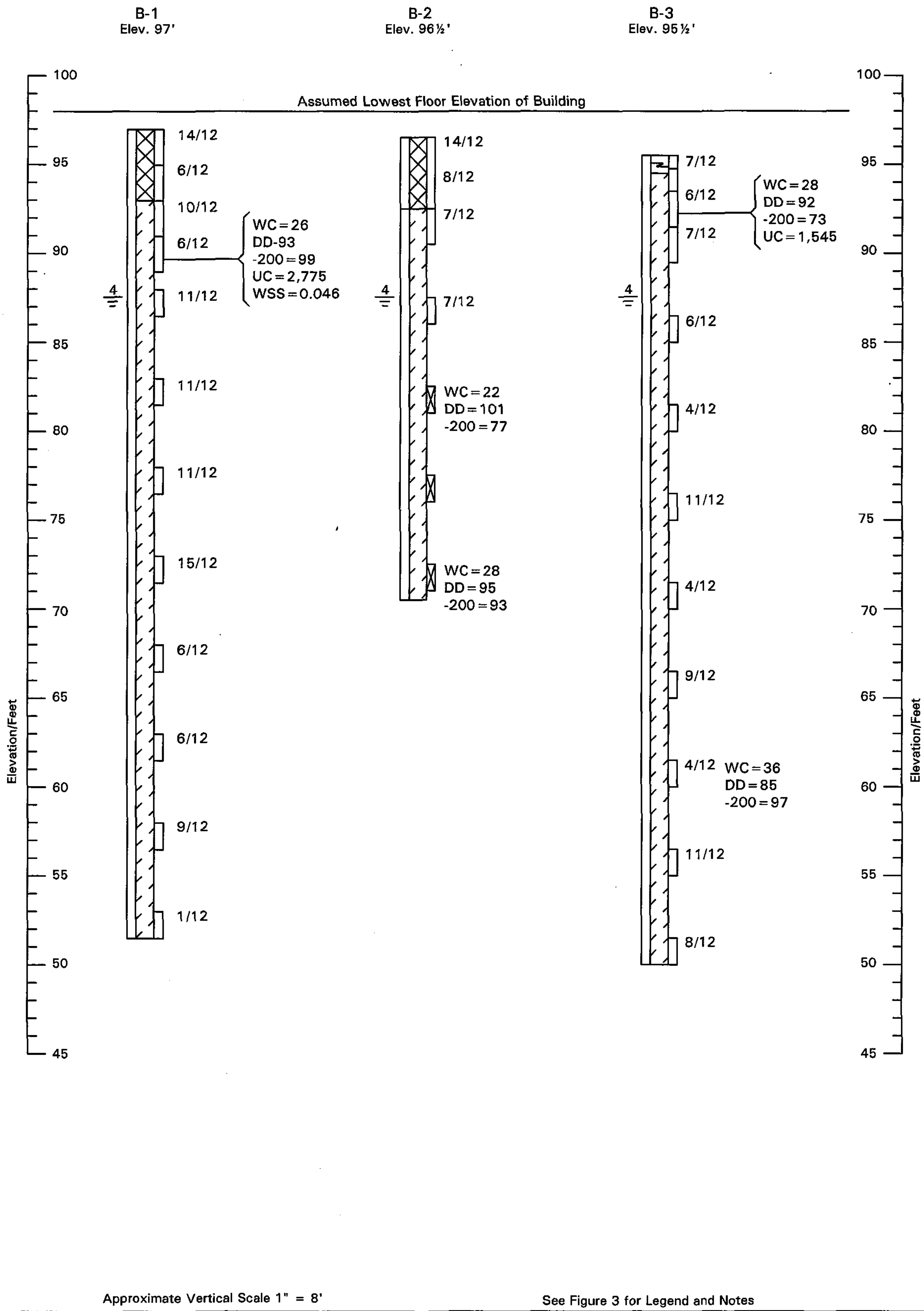
Anderson, L. R., Keaton, J. R. and Bischoff, J. E., 1994; Liquefaction Potential Map for Utah County, Utah Geological Survey Contract Report 94-8.

Black, B.D., Hecker, S., Hylland, M.D., Christenson, G.E., and McDonald, G.N., 2003; Quaternary fault and fold database and map of Utah; Utah Geological Survey Map 193DM.

International Building Code, 2012; International Code Council, Inc. Falls Church, Virginia.



1150405	AGEC	Locations of Exploratory Borings	Figure 1



1150405	AGEC	Logs of Exploratory Borings	Figure 2

LEGEND:

Fill; Lean clay, moist, brown, upper several inches contains roots and organic material.

Topsoil; lean clay, moist, brown, roots.

Lean Clay (CL); contains small to moderate amounts of sand, some clayey sand and gravelly clay layers, very soft to stiff, moist to wet, brown to gray.

10/12 California Drive sample taken. The symbol 10/12 indicates that 10 blows from a 140 pound automatic hammer falling 30 inches were required to drive the sampler 12 inches.

Indicates relatively undisturbed thin-wall sample taken.

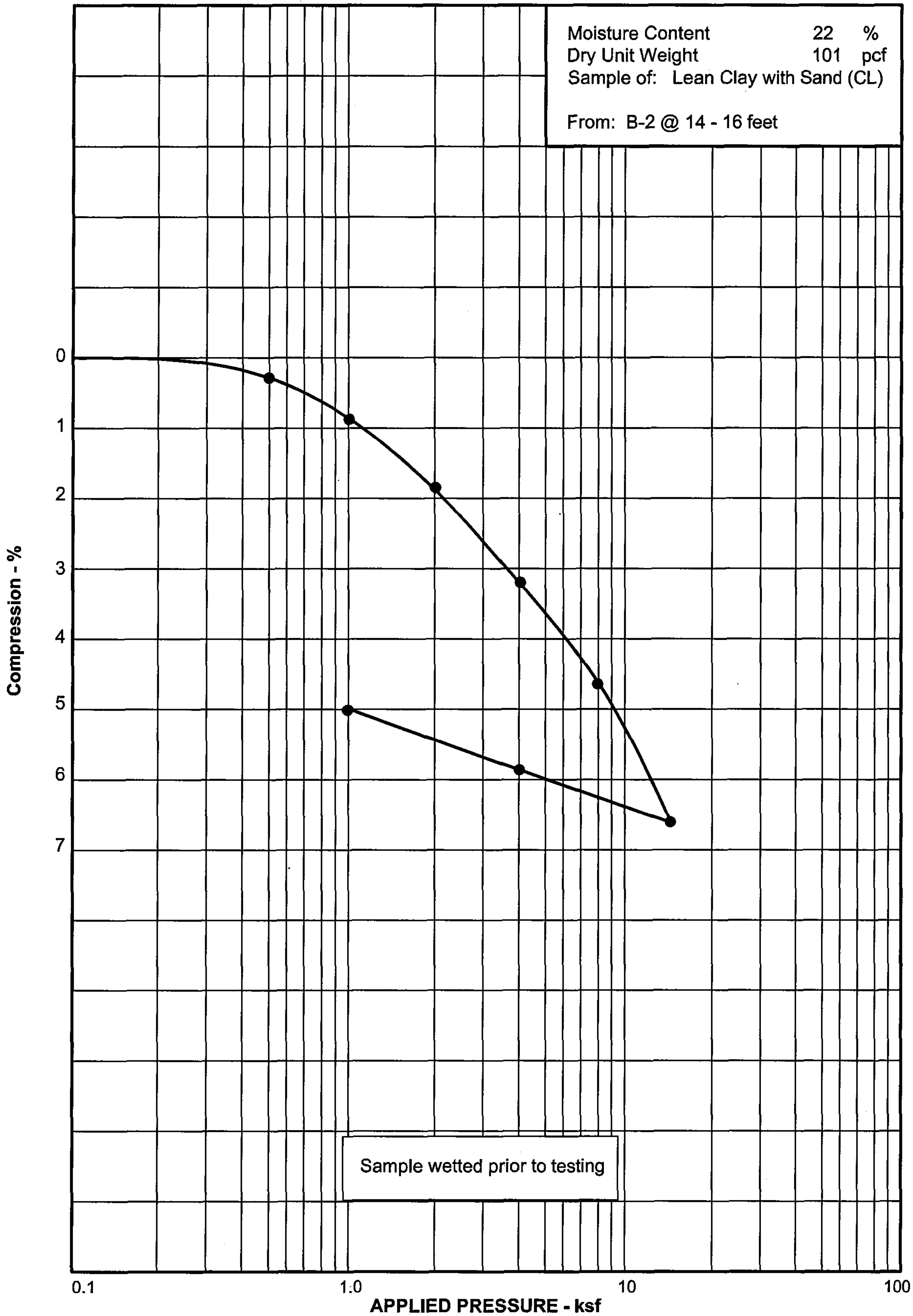
Indicates slotted 1½ inch PVC pipe installed in the boring to the depth shown.

4 Indicates the depth to free water and the number of days after drilling the measurement was taken.

NOTES:

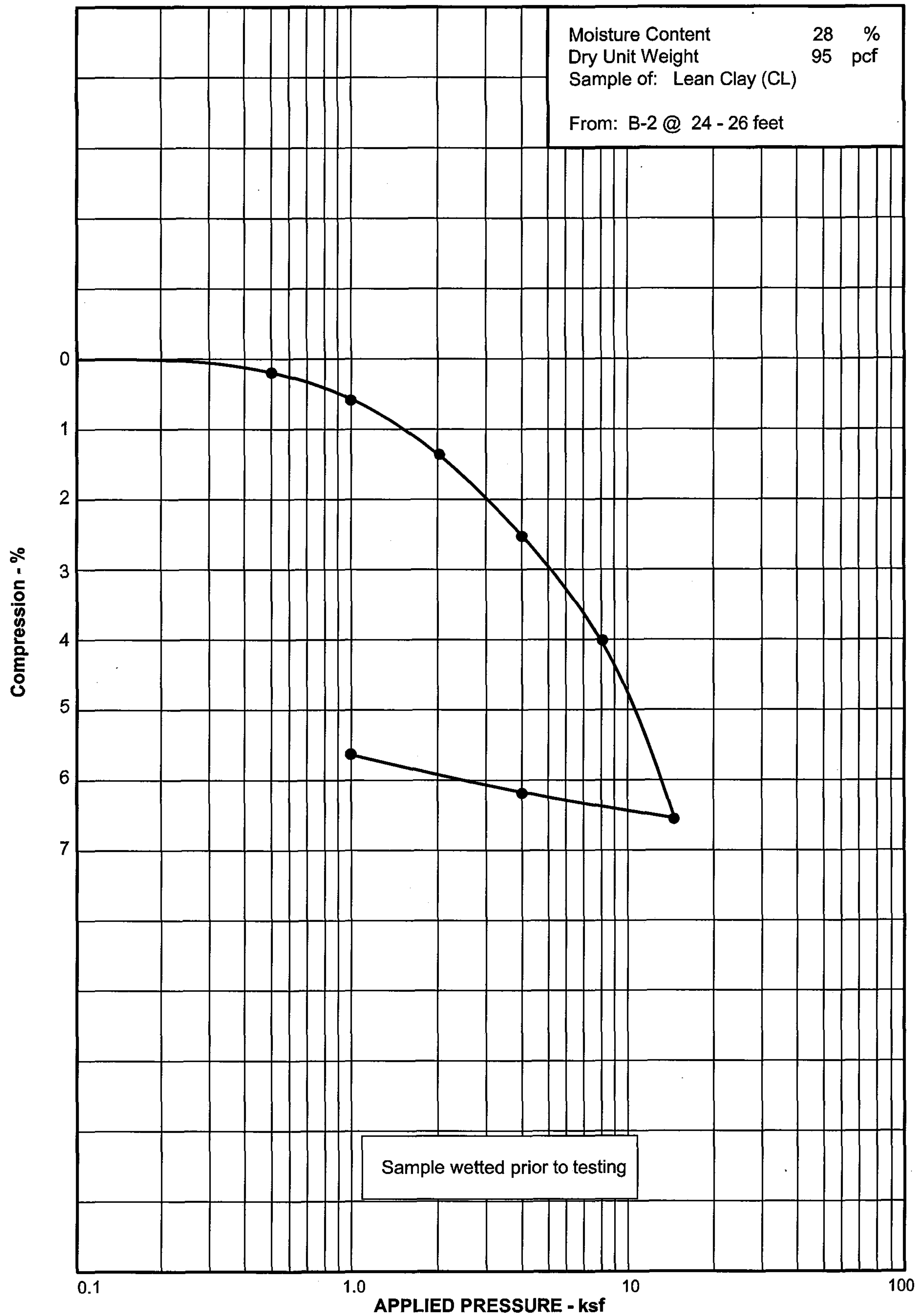
1. Borings were drilled on May 11, 2015 with 8-inch diameter hollow-stem auger.
2. Locations of borings were measured approximately by pacing from features shown on the site plan provided.
3. Elevations of borings were measured by automatic level and refer to the bench mark shown on Figure 1.
4. The boring locations and elevations should be considered accurate only to the degree implied by the method used.
5. The lines between the materials shown on the boring logs represent the approximate boundaries between material types and the transitions may be gradual.
6. Water level readings shown on the logs were made at the time and under the conditions indicated. Fluctuations in the water level may occur with time.
7. WC = Water Content (%);
   DD = Dry Density (pcf);
   -200 = Percent Passing No. 200 Sieve;
   UC = Unconfined Compressive Strength (psf);
   WSS = Water Soluble Sulfates (%).

Applied Geotechnical Engineering Consultants, Inc.



Project No. 1150405 **CONSOLIDATION TEST RESULTS** **Figure 4**

Applied Geotechnical Engineering Consultants, Inc.



Project No. 1150405 **CONSOLIDATION TEST RESULTS** **Figure 5**

APPLIED GEOTECHNICAL ENGINEERING CONSULTANTS, INC.

TABLE I

SUMMARY OF LABORATORY TEST RESULTS

PROJECT NUMBER 1150405

SAMPLE LOCATION		NATURAL MOISTURE CONTENT (%)	NATURAL DRY DENSITY (PCF)	GRADATION			ATTERBERG LIMITS		UNCONFINED COMPRESSIVE STRENGTH (PSF)	WATER SOLUBLE SULFATE (%)	SAMPLE CLASSIFICATION
TEST PIT	DEPTH (FEET)			GRAVEL (%)	SAND (%)	SILT/ CLAY (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)			
B-1	4	26	93			99			2,775	0.046	Lean Clay (CL)
B-2	14	22	101			77					Lean Clay with Sand (CL)
	24	28	95			93					Lean Clay (CL)
B-3	2	28	92			73			1,545		Lean Clay with Sand (CL)
	34	36	85			97					Lean Clay (CL)