ALPHA-OMEGA GEOTECH

1701 State Avenue
Kansas City, KS 66102

t 913-371-0000
f 913-371-6710

AOGeotech.com

GEOTECHNICAL ENGINEERING REPORT

ASSOCIATED PLASTIC SURGEONS BUILDING

LOT 6 & 7 LAKEWOOD BUSINESS PARK
LEE'S SUMMIT, MO
(AOG 240117 E)

Date: June 7, 2024

Submitted to: Dev, Inc.
Kevin Campbell
8807 Monrovia St.
Lenexa, KS 66215

Submitted by: ALPHA-OMEGA GEOTECH, INC.

TABLE OF CONTENTS

ALPHA-OMEGA
GEOTECH

1701 State Avenue
Kansas City, KS 66102

t 913-371-0000
f 913-371-6710

AOGeotech.com

June 7, 2024

Dev, Inc.
Kevin Campbell
8807 Monrovia St.
Lenexa, KS 66215

ASSOCIATED PLASTIC SURGEONS BUILDING

LOT 6 & 7 LAKEWOOD BUSINESS PARK
LEE'S SUMMIT, MO
(AOG 240117 E)

Kevin,

Alpha Omega Geotech, Inc. (AOG) has completed its geotechnical engineering investigation for the above-referenced project.

Attached are the following items that were utilized in the analysis and evaluation of the subsurface conditions at this site: a sketch giving the approximate location of the eleven (11) auger borings completed during this investigation with reference to the existing site features; detailed laboratory results of four (4) moisture contents (ASTM D2216), four (4) dry densities (ASTM D7263), two (2) sets of Atterberg limits (ASTM D4318), and four (4) unconfined compression (ASTM D2166) tests, fourteen (14) calibrated pocket penetrometer readings, and eleven (11) auger boring (ASTM D1452) logs that describe the materials encountered, their approximate thicknesses, and the sampling depths where Standard Penetration (ASTM D1586) tests were performed.

Representatives of AOG located each of the selected borings by measuring from the existing site features, and these measurements should be considered accurate only to the extent implied by the method of measurement. Elevations were not determined in the field at the time of drilling. Each of the borings was completed by AOG using a CME 55 high-torque drill rig.

1.0 PROJECT DESCRIPTION

Alpha Omega Geotech (AOG) understands the proposed project will consist of constructing a new Associated Plastic Surgeons Building with associated parking.

The current construction site covers an area of approximately 1.25 acres. The site has been graded and is relatively flat with an overall elevation change of approximately eleven (11) feet across the site.

Based on the information provided, AOG understands that the proposed new single-story building will have an approximate footprint of approximately 12,900 square feet. The structure is assumed to be slab-on-grade with light steel frame construction. The finished floor elevations and foundation loads were not provided. AOG assumes the structure to be relatively lightly loaded and the finished floor elevations will be close to the existing grade.

It is understood that the building pad has been graded and is relatively level at this time. A grading plan for the site has not been provided. AOG assumes cuts and fills will be in the range of approximately three (3) to five (5) feet to achieve the desired construction grade.

2.0 SUBSURFACE INVESTIGATION

Based on the information provided, AOG drilled eleven (11) auger borings at the proposed site. The borings were advanced to their planned depths or auger refusal, whichever occurred first. Refusal depths are shown on the following table:

Table 1: Boring Depths

ROCK REFUSAL TABLE (FT)			
Boring #	Boring Location	Top of Weathered Rock (*)	Depth of Refusal
B1	SEE SITE SKETCH	~ 8.5	~ 10.8*
B2	SEE SITE SKETCH	~ 8.5	~ 11.6*
B3	SEE SITE SKETCH	~ 9.0	~ 11.8*
B4	SEE SITE SKETCH	~ 5.9	~ 11.0*
B5	SEE SITE SKETCH	~ 4.8	~ 11.5*
B6	SEE SITE SKETCH	~ 5.7	~ 11.0*
B7	SEE SITE SKETCH	~ 8.5	~ 11.5*
B8	SEE SITE SKETCH	~ 11.5	~ 11.8*
B9	SEE SITE SKETCH	~ 4.0	~ 4.7*
B10	SEE SITE SKETCH	~ 6.5	NONE (10.0)*
B11	SEE SITE SKETCH	~ 9.0	NONE (9.1)*
(*) Very hard, weathered limestone, sandstone and shale that was penetrable using our high-torque drilling equipment was encountered above the auger refusal depths shown above (see the boring logs enclosed in Appendix).			

It should be understood that the depth of boring, split-spoon refusal or auger refusal reported herein applies to the type of drilling equipment that was used. As such, it might be possible to extend some of these borings deeper using different drilling equipment and/or techniques. Conversely, residual sandstone, shale and limestone materials through which AOG's drill rig penetrated, without achieving refusal, may be difficult to excavate depending upon the equipment being used. As such, Alpha-Omega Geotech, Inc. shall not be responsible for the determination of Others, regarding the rippability, or ease of excavation, of the in-situ subgrade, bedrock and/or geo-intermediate materials.

Above the depth, at which boring termination occurred, predominantly clay soils were encountered in the borings. Standard Penetration tests (SPT) (ASTM D1586) were also used to sample and evaluate the consistency of the in-situ subgrade materials encountered in these test borings. Standard Penetration Tests are conducted by advancing a hollow, split spoon sampler into the base of the auger hole by means of dropping a 140-pound hammer a distance of 30 inches onto the drill rods. Each drop of the hammer is one blow, and these blow counts are recorded for each of three, 6-inch advances of the sampler. The first 6-inch advance is the seating drive, and the summation of the blow counts of the final two, 6-inch advances is taken as the standard penetration resistance. The standard penetration resistance, or N-value, as it is known, along with the soil classification, can be used to estimate the density, shear strength and other engineering properties of the materials encountered.

The N-values obtained from each of the SPT's completed in these borings using a CME automatic hammer are included on the boring logs and summarized in the Summary of Laboratory Testing sheet found in Appendix B. Samples retrieved during drilling efforts were returned to AOG's laboratory for testing and evaluation.

3.0 LABORATORY TESTING PROGRAM

Laboratory testing on materials collected during drilling was performed on samples selected by AOG. Results from these tests can be found in Appendix B and on the boring logs in Appendix C. The following laboratory tests were performed by qualified AOG personnel in accordance with ASTM specifications to determine pertinent engineering properties of the soils:

- Visual classification (ASTM D2488)
- Moisture content tests (ASTM D2216)
- Atterberg limits tests (ASTM D4318)
- Dry Unit Weight (ASTM D7263)
- Unconfined compression tests on soil (ASTM D2166)

The dry unit weights of specimens cut from the Shelby tube samples were found to be moderate, ranging from 100.8 pounds per cubic foot (pcf) to 102.6 pcf. Depending upon the material composition and depth below existing grade, the moisture content of the specimens extracted from these tube samples ranged from 20.2 to 23.6 percent. The unconfined compressive strength of the specimen cut from the Shelby tube sample ranged from 1460 pounds per square foot (psf) to 3872 psf. It should be noted that some of the maximum unconfined compressive strength values were obtained at high strain rates nearing or exceeding 10 percent. As a result, given the onsite soil types, these high strain rates typically indicate that larger settlements could occur unless a lower allowable bearing capacity value is used than otherwise indicated by the unconfined compressive strength test results. Calibrated pocket penetrometer readings ranging from 0.25 tons per square foot (tsf) (500 psf) to 3.50 tsf (7000 psf) were obtained on

the recovered Shelby tube samples. However, it should be noted that the pocket penetrometer values tend to over-estimate the strength of in-situ subgrade materials relative to the actual unconfined compressive strength test.

The Atterberg consistency limits were determined for two (2), generally, representative sample taken at relatively shallow depth from within the proposed structures' footprints. Based on the Atterberg limits, the samples were classified in accordance with the Unified Soil Classification System (USCS) as Fat Clay (CH) classification materials. The results of these laboratory analyses are presented in the following table:

Table #2: Atterberg Limits Results

ATTERBERG LIMITS TESTS					
Sample	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	USCS Classification
B1, ST-2	3.0-5.0	56	22	34	Fat Clay (CH)
B4, ST-2	3.0-5.0	55	22	33	Fat Clay (CH)

Based on the Atterberg limits, it is anticipated most of the onsite soil materials generally possess a high swelling potential. The swelling potential of a clay soil is an indication of the volume changes that may take place with variations in the soil moisture content.

Except for the samples for which the Atterberg limits were determined, all of the other soil classifications given throughout the laboratory test data, as well as the boring logs, were made using the visual and tactile techniques described in ASTM D2488. As a result, additional analyses could reveal other soil types of different classification and potentially higher plasticity and swelling potential both onsite and within the nearby vicinity.

4.0 GROUNDWATER

Free water was encountered in six (6) borings during the time of drilling. The depth of water ranged from 2.5 feet beneath existing grade to 7.5 feet beneath existing grade. Please note, a twenty-four-hour water level was not established in these borings due to time restrictions, as well as potential safety hazards associated with open bore holes. The following table summarizes the free water measurements recorded at the time of drilling

Table #3: Groundwater Measurements

APPROXIMATE GROUNDWATER MEASUREMENTS		
Boring ID	Depth of Boring (ft)	Depth of Water (ft)
B2	11.6	7.5'
B3	11.8'	3.0'
B6	11.0'	6.0'
B7	11.5'	7.5'
B8	11.8'	4.8'
B10	10.0'	2.5'

Although the ground water levels given on the boring logs reflect the conditions observed at the time the borings were made, they should not be construed to represent an accurate or permanent condition. There is uncertainty involved with short-term water level observations in bore holes especially in clay soils of relatively low permeability. The groundwater level should be expected to fluctuate with variations in precipitation, site grading and drainage conditions. In addition, it is also possible that seasonal perched ground water may be encountered within these soil deposits and bedrock formations at different depths during other times of the year based on drainage conditions, seasonal snowmelt, and rainwater infiltration.

5.0 GEOTECHNICAL CONSIDERATIONS

The following considerations are given based on observations made by AOG at the time of drilling, during reconnaissance trips, and based on the project requirements and description as stated above:

1) *Expansive Materials:* Moderately expansive clays were encountered during this exploration. Expansive clays are known to experience significant volume changes with changes in moisture. Expansive clays located beneath any slabs on grade should be removed in accordance with Section 8.0, SLABS ON GRADE of this report.
2) *Shallow Bedrock:* Shallow bedrock may impact the foundations and deeper utilities depending on the final finished floor elevations.

6.0 SITE DEVELOPMENT

6.1 Site Preparation

Based on the information provided, AOG anticipates cut and fill amounts of about three (3) to five (5) feet (+/-) from the existing ground surface elevation, within the proposed project limits, will be required to achieve design grades. It is possible that additional cuts and fills may be required to obtain improved surface drainage.

Appropriate erosion control measures, such as proper site contouring during grading activities, as well as, silt fences, should be maintained to help keep any eroded materials onsite.

Within the footprint of the proposed new structure, it is recommended that any topsoil, vegetation, utility backfill, and other deleterious material (i.e. concrete slabs, relic foundations, utilities, etc.) or pavements should be stripped and removed prior to the placement of any fill required to achieve the finished floor elevation. In accordance with the local building code, this should be verified by a representative of Alpha-Omega Geotech, Inc. prior to the placement of fill.

Transitions between cuts and fills should be on slopes of 5:1 (H:V), or flatter, which may require benching. In general, the benches should be at least 8 feet wide and the maximum vertical height between benches should be limited to less than about 3 feet.

Once initial site stripping operations have been completed and prior to the placement of any engineered fill in this area, it is recommended that the exposed subgrade be moisture conditioned and recompacted, as needed, and be thoroughly evaluated by means of a proof-roll with a fully loaded, tandem-axle dump truck to locate any soft, compressible areas within the proposed project site. Any soft, compressible areas identified on the proposed

project site must be corrected by over-excavation to a suitable subgrade and replaced with an acceptable material. Although it is not anticipated that any extensive removal and replacement would be necessary, it is possible that some effort may be required to develop a stable platform on which to place the necessary fill material and address any other existing site conditions that become known during construction. It is generally anticipated that the extent of these efforts would strongly depend upon the ground moisture conditions at the time the site work begins. In the event that the ground is generally dry, it is possible that only a minimal amount of stabilization would be required, which may be possible to accomplish by simple moisture conditioning and re-compaction efforts. *Nevertheless, it is recommended that a representative of Alpha-Omega Geotech, Inc. should be onsite to witness this proof-rolling and offer recommendations, as needed, to correct any problem areas identified.*

6.2 Undocumented Fill

Undocumented fill is a foreign material, of which no records of testing or evaluation by a qualified professional during the time of placement exist. Undocumented fill is, generally, unsuitable beneath structures, and **if encountered**, should be fully removed and replaced with engineered fill in accordance with this report. Undocumented fill beneath pavements should be undercut to a minimum depth of two (2) feet, and the exposed subgrade should be thoroughly evaluated by a registered professional engineer.

6.3 Engineered Fill Placement

It is assumed that any fill material needed will come from cut areas and, if necessary, on-site or nearby borrow sources of similar material. It is recommended that un-weathered shales should NOT be used to construct any of the necessary fill within either the new building or paved portions of the site. Assuming they are properly moisture conditioned and compacted, it generally appears that the clean clay soils encountered in the borings that are free of rubble, trash, concrete, asphalt, and other debris would be acceptable for use as controlled fill. However, due to their very high swelling potential, detailed recommendations for the placement of a non-expansive subbase are provided in Section 8.0, SLABS ON GRADE of this report.

Any imported fill materials for use as structural fill should be tested by Alpha-Omega Geotech, Inc. to determine if they are acceptable for the intended use. Any ground water seeps that are encountered must be diverted prior to placing fill.

In addition, no compaction of soil fill material should be performed during freezing weather. Nevertheless, as weather conditions dictate, it may be possible to substitute crusher-run limestone in lieu of soil fill to allow placement of engineered controlled fill material to continue during the cold fall and winter months. However, any frozen fill material must be stripped prior to placing subsequent lifts.

All general fill within the area of the new building (except for the upper 24-inches, as discussed in Section 8.0, SLABS ON GRADE of this report, should be placed in lifts not exceeding 6 inches in thickness, and compacted to a minimum density of 95 percent of the Standard Proctor (ASTM D698) maximum dry density at a moisture content within ± 3 percent of the optimum moisture content.

As required by the local building code, the compaction of any structural fill beneath the new buildings, pavements, and any other areas where settlement control is necessary, as well as any slopes that are steeper than 4:1 (H:V) should be tested lift-by-lift by a representative of Alpha-Omega Geotech, Inc.

6.4 Drainage Considerations

Fluctuations of the ground water level can occur due to seasonal variations in the amount of rainfall and other climatic factors that were not evident at the time the borings were made. The possibility of ground water level fluctuations should be considered when developing the design and construction plans for the project. In spring and late fall, soil moisture contents may be abnormally high and drying of the soils that are exposed and/or undercutting may be required to develop a suitable base for the placement and compaction of engineered fill. Disking and aeration of the exposed soils may be sufficient to develop a stable base. However, if site grading begins during the summer or early fall, moisture contents may be abnormally low and the plastic clay soils encountered during this exploration may undergo significant volume changes with subsequent increases in their moisture content. Therefore, when these conditions exist, disking and moisture conditioning of the exposed subgrade soils may be required.

It is important to consider drainage and construction elements that will help to inhibit future slab on grade problems, foundation cracks, as well as intolerable settlements due to volume changes of the onsite soils. The surface drainage must be designed to prevent ponding and effectively move water away from both the new and existing buildings, pavements and other structures. It is also very important to place all materials under carefully controlled conditions of moisture and density to inhibit significant soil volume changes. Shrubs and trees with deep root systems and requiring large quantities of water should not be planted within 20 feet of the building lines. Any planters located near the building should have impermeable bases with weep holes to discharge water away from the wall lines. Down spouts should be connected to subsurface drains to carry the water to safe exits beyond the building lines, retaining walls, pavements, slopes and other site features or structures that could be adversely affected by water seepage.

6.5 General

Permanent slopes should not be steeper than 3:1 (H:V) to help ensure their future stability and accommodate normal mowing equipment. The responsibility for excavation safety and stability of temporary construction slopes should lie solely with the contractor and should follow the OSHA regulations given in 29 CFR Part 1926.650 - .652, Subpart P. The stability of open excavations is dependent upon a number of factors including but not limited to the presence of gravel, sand and/or silt seams, ground water seepage, strength characteristics of the soil layers, slickensides and other unique geological features, the slope and height of the cut, surcharge loading and vibrations during construction, weather conditions, as well as the length of time the excavation is left open. Alpha-Omega Geotech, Inc. does not assume any responsibility for construction site safety or the contractor's or other parties' compliance with all local, state and federal safety or other regulations including imprudent excavating practices that results in any damage to nearby structures, roadways, utilities, as well as onsite or offsite improvements.

7.0 FOUNDATIONS

7.1 Spread Footings Foundations

Based on the laboratory test data, the available subsurface information that has been obtained and our understanding of the project requirements, it is our opinion that a shallow foundation system consisting of either earth-formed trench or spread footings may be used for this structure as economical foundation elements.

Perimeter footings, and any footings in unheated areas, should be placed at least 3 feet below final exterior grade to provide adequate frost protection and place them in a more stable moisture environment. Under heated areas, the interior footings can be founded at shallower depths of at least 18 inches below the finished floor elevation. The footing excavations should be carried to undisturbed engineered fill.

7.2 Allowable Bearing Pressure

Provided all design and inspection recommendations as given in this report are closely followed and good construction practices are exercised, it is recommended an allowable bearing value of 2,500 psf may be used for design purposes to proportion the spread/wall footings. A twenty-percent increase, i.e. 3,000 psf, may be used for individual column footings. These allowable bearing capacity values, which are based on shear strength alone and not on settlement, incorporate a factor of safety of 3.0. *The actual bearing capacity of all subgrade supporting the foundation elements must be confirmed by a representative of Alpha-Omega Geotech, Inc. as the excavations for the load-bearing wall and column footings are completed and prior to placement of reinforcing steel and concrete.* For transient loading conditions, such as un-sustained wind and earthquake, a 33 percent increase may be applied to the above-referenced allowable bearing capacity values.

Based on the subsurface conditions that have been identified, Site Class C conditions (IBC 2018) may be assumed for seismic considerations.

7.3 Anticipated Settlement

Uniform bearing conditions should be provided beneath the footings to minimize differential settlements. If any soft or otherwise unsuitable material is encountered in the footing excavations, it will have to be removed and replaced with engineered controlled fill. Recommendations for the over-excavation and replacement with engineered controlled fill can be made when the footing excavations are inspected during construction, if needed. *A representative of Alpha-Omega Geotech, Inc. should inspect all of the footing excavations to verify that uniform and competent bearing material is present beneath all of the foundation elements prior to the placement of any reinforcing steel and concrete.*

For spread footings designed and constructed in accordance with this report, it is anticipated that settlements will be limited to 0.75 inches of differential and 1.0 inches in total.

7.4 General

Except for the moisture conditioning discussed in the "Slab On Grade" section of this report, it is recommended that all fill within the new building and paved areas of the site should be constructed as engineered controlled fill placed in lifts not exceeding 6 inches in thickness and compacted to a minimum density of 95 percent of the Standard Proctor (ASTM D698) maximum dry density at a moisture content within ± 3 percent of the optimum moisture content. In accordance with the local building code, a representative of Alpha-Omega Geotech, Inc. should be onsite during placement of all engineered controlled fill within the new building and paved areas to confirm lift thickness and test the compaction of the engineered controlled fill lift-by-lift as it is being placed.

If possible, the over-excavated footings should not be left open for more than 24 hours. The base of the footing excavations should be free of water and loose soil prior to placing reinforcing steel and concrete. No ground water is expected in the footing excavations since ground water was not encountered in any of the borings that were made at the time of drilling. However, if ground water is encountered within the expected depth of excavation for the footings, it is generally anticipated that it can be removed by the use of sumps and pumps. Based on the subsurface conditions that have been identified, it is anticipated that earth-formed trench footing excavations may be used effectively on this project. However, due to the possible presence of existing rocky fill material, it may become necessary to utilize formed footings. A minimum width of 12 inches should be used for trenched wall footings to allow for steel placement and inspection. Minimum widths of 16 and 24 inches should be used for formed wall and column footings, respectively.

8.0 SLABS ON GRADE

8.1 Slab Thicknesses

Slabs on grade that will be subjected to repeated wheel loads, such as passenger vehicles, should be at least 6 inches in thickness. Slabs that are **not** exposed to repeated wheel loads, should be at least 4 inches in thickness. Slabs in storage areas may need to be thicker due to shelving post and other concentrated floor loads. Actual slab thicknesses should be determined by the project structural engineer.

8.2 Low Volume Change (LVC)

The following recommendations provided to help protect the slabs from damage caused by volume changes within the underlying subgrade, and should be implemented in conjunction with Section 7.0, FOUNDATIONS of this report:

1) Cut the subgrade a minimum of 28-inches beneath the base of slab elevation to allow placement of a 24-inch subbase and a 4-inch base course beneath the slab-on-grade.

2) Scarify and recompact the upper 9 inches of exposed subgrade to within 95 to 100 percent of the Standard Proctor (ASTM D698) maximum dry density at a moisture content wet of the optimum moisture content 0 to 3 percent.

3) For the 24-inch granular subbase, place crusher-run limestone or rock dust in three (3) approximately equal lifts and compact to a minimum density of 95 percent of the Standard Proctor (ASTM D698)

maximum dry density. The moisture content of this material at the time of placement must be sufficient to achieve the specified level of compaction.

4) Place a 4-inch base course of clean, open-graded crushed limestone. This granular base course should be compacted with a suitable vibratory steel wheel roller.

8.3 General

It is recommended that under-slab utility trenches should be backfilled with impermeable clay soil (*), flowable fill or lean concrete to help reduce the potential of these trenches acting as aqueducts transmitting groundwater beneath the new building, pavements, retaining walls and other structures.

(*) If impermeable clay soil is used as backfill, it should be placed in lifts not exceeding 6 inches in thickness and compacted to a minimum density of 95 percent of the Standard Proctor (ASTM D698) maximum dry density at a moisture content within ± 3 percent of the optimum moisture content, which should be verified lift-by-lift during placement by a representative of Alpha-Omega Geotech, Inc. Although clay soil may be less costly than flowable fill or lean concrete, the OSHA excavation safety regulations given in 29 CFR Part 1926.650 - .652, Subpart P must be followed in the event that clay soil is used to backfill any utility trenches.

Finally, it should be noted that the recommendations given, herein, regarding placement of low-volume change fill to help protect the slabs on grade from volume changes associated with fluctuations within the moisture content of the underlying subgrade materials, would still apply.

Plumbing lines and other water leaks occurring beneath the structure's slab-on-grade floor can induce volume changes within the underlying subgrade materials. Therefore, it is recommended that all water supply and waste water lines should be tested for leaks prior to backfilling the utility trenches. In addition, it is also recommended that every effort should be made to maintain the plumbing in good working order and prevent or minimize water leaks and discharges.

It is assumed the concrete will be reinforced with properly placed steel reinforcement, such as #4 bars, and control joints will be cut during or shortly after finishing (to be designed by the project structural engineer). Properly placed wire mesh may be used as secondary reinforcement. Fiber reinforcement may also be considered to help control shrinkage cracking and the use of other admixtures may be considered to enhance the workability and performance of the concrete. Suitable construction and sawed joints should be used to control cracking of the slab. In addition, it is recommended that the slump and temperature of the concrete at the time of placement should be limited to standard American Concrete Institute (ACI) guidelines. Furthermore, it is also recommended that proper concrete curing techniques should be utilized and the addition of jobsite water to the concrete be avoided or very closely controlled to within acceptable parameters. Nevertheless, it should be noted that cracking of concrete used for slabs on grade is a normal occurrence and should be expected.

If a 24-inch-thick subbase layer of crusher-run limestone (AB-3) or rock dust is used, as recommended, a modulus of subgrade reaction of 150 pounds per cubic inch (pci) may be assumed for reinforcement and thickness design to support surface loads. If a higher modulus of subgrade reaction were desired, we would be pleased to work with the project's structural engineer to develop recommendations for alternate bases and/or subbases to achieve a higher modulus of subgrade reaction.

9.0 EARTH PRESSURE COEFICIENTS

A coefficient of sliding friction over the in-situ clay soils at this site may be taken as 0.32. A minimum factor of safety of 1.5 should be used when considering sliding resistance.

Active, passive and at-rest earth pressure coefficients of 0.25, 4.2 and 0.4 may be assumed for backfills of clean, open-graded crushed limestone.

Active, passive and at-rest earth pressure coefficients of 0.5, 1.9 and 1.0 may be assumed for the in-situ clay soils at this site.

However, the in-situ soils encountered during this exploration are classified as a Fat Clay and possess a high swelling potential, and, as such, should not be used as backfill since considerable lateral loads may develop with the addition of water.

If deflection of extended foundation walls is not tolerable, at-rest earth pressures should be assumed.

These earth pressure coefficients do not include the effect of surcharge loads, hydrostatic loading or a sloping backfill nor do they incorporate a factor of safety. Also, these earth pressure coefficients do not account for high lateral pressures that may result from volume changes when expansive clay soils are used as backfill behind walls with unbalanced fill depths. In addition, any disturbed soils that are relied upon to provide some level of passive resistance should be placed in lifts not exceeding 6 inches in thickness and compacted to a minimum density of 95 percent of the Standard Proctor (ASTM D698) maximum dry density at a moisture content within ± 3 percent of the optimum moisture content. It is recommended that a representative of Alpha-Omega Geotech, Inc. should verify the compaction of any such materials relied upon to provide passive pressure lift-by-lift during placement.

10.0 PAVEMENTS

10.1 Subgrade Preparation

Please note, a formal pavement design is beyond AOG's scope of service. Standard asphaltic concrete and Portland concrete pavement designs for a given service life requires evaluation of the soil by means of a California Bearing Ratio (CBR) test and/or other methods, estimates of traffic volumes and axle weights, drainage requirements and the desired level of maintenance. As such, some standard pavement design options based on assumptions made for materials of this nature are included in this section.

The subgrade soils at this site are considered to be poor subgrade materials for the support of pavements. California Bearing Ratio (CBR) values we have obtained rarely exceed 5, soaked, for these materials. Pavements, either total strength flexible or rigid, do not usually perform well when they are placed directly on highly expansive, poor soil subgrades. Soft areas can develop during wet periods and differential shrinkage can occur during dry periods. As a result, no pavement can avoid damage from wheel loads under these circumstances.

Unless the subgrade is stabilized, the subgrade for all pavements should consist of at least 12 inches of properly moisture conditioned and compacted soil, which will require tilling and recompacting in cut sections. The subgrade should be compacted to a minimum density of 95 percent of the Standard Proctor (ASTM D698) maximum dry density at a moisture content within ± 3 percent of the optimum moisture content. Any additional fill that is required to develop the paved areas should also be placed in loose lifts not exceeding 8 inches in thickness and compacted in accordance with these recommendations. It is recommended that any and all subgrade operations including recompacted subgrades, compacted aggregate bases or chemically stabilized subgrade layers should extend at least 2 feet beyond the pavement and curb lines.

Prior to the placement of any pavement section, the exposed subgrade should be proof-rolled with a fully loaded, tandem-axle dump truck after the final subgrade elevation has been established throughout the paved area. A representative of Alpha-Omega Geotech, Inc. should witness this proof-rolling.

Please note, if asphaltic pavements are used, annual maintenance including but not limited to crack sealing, fog sealing, and possible patch with overlay should be anticipated. In addition, the quality of the aggregates and overall composition of the asphalt or concrete mix, as well as drainage conditions, can have a profound effect upon the durability of the pavement section.

10.2 Pavement Sections

Table 4: Recompacted Subgrade Section

RECOMPACTED SUBGRADE SECTIONS (INCHES)			
PAVEMENT MATERIALS	**PASSENGER VEHICLE PARKING**	**PASSENGER VEHICLE DRIVE LANES**	**HEAVY DUTY AREAS (i.e. Dumpster pads, approach lanes, etc.)**
Asphaltic Surface Course	2	2	NA
Asphaltic Base Course	3	5.5	NA
Moisture Conditions/Recompacted Subgrade	12	12	NA
Portland Cement Concrete	5	7	8
Crushed Stone Base (3/4-inch minus)	4	4	4
Moisture Conditions/Recompacted Subgrade	12	12	12

*Reference Section 10.3, "Recompacted Subgrade Sections"

Table 5: Recommended Thicknesses with Chemically Stabilized Subgrade

CHEMICALLY STABILIZED SUBGRADE SECTIONS (INCHES)			
PAVEMENT MATERIALS	**PASSENGER VEHICLE PARKING**	**PASSENGER VEHICLE DRIVE LANES**	**HEAVY DUTY AREAS (i.e. Dumpster pads, approach lanes, etc.)**
Asphaltic Surface Course	2	2	NA
Asphaltic Base Course	2	4	NA
Chemical Stabilization	12	12	NA
Portland Cement Concrete	4	6	7
Crushed Stone Base (3/4-inch minus)	4	4	4
Chemical Stabilization	12	12	12

*Reference Section 10.4, "Subgrade Stabilization Sections"

Table 6: Recommended Thicknesses with Geogrid Reinforcement & Baserock

GEOGRID REINFORCEMENT AND BASEROCK SUBGRADE STABILIZATION SECTIONS (INCHES)			
PAVEMENT MATERIALS	**PASSENGER VEHICLE PARKING**	**PASSENGER VEHICLE DRIVE LANES**	**HEAVY DUTY AREAS (i.e. Dumpster pads, approach lanes, etc.)**
Asphaltic Surface Course	2	2	NA
Asphaltic Base Course	2	4	NA
Geogrid & Crushed Stone (3/4-inch minus)	5	5	NA
Portland Cement Concrete	4	6	7
Geogrid & Crushed Stone (3/4-inch minus)	5	5	5

*Reference Section 10.4, "Subgrade Stabilization Sections"

10.3 Moisture conditioned & Recompacted Subgrade Sections

10.3.1 Flexible Pavements Sections

From an initial cost perspective, flexible asphaltic concrete pavement is the most economical pavement section. However, treating the subgrade with Class C flyash, Portland cement or using a geogrid reinforced base course can provide a higher quality pavement section, having a much longer service life. Nevertheless, if the subgrade is untreated and asphaltic pavement is used, areas used exclusively for automobile parking should consist of at least 5.0 inches of asphaltic concrete (2.0 inches of surface mix and 3.0 inches of base mix). *Drives should be constructed of at least 7.5 inches of asphaltic concrete (2.0 inches of surface and 5.5 inches of base mix).*

The above-referenced pavement section represents minimum design thicknesses and, as such, periodic maintenance should be anticipated. If an increased pavement performance is desired, as described in Section 10.4, "Subgrade Stabilization," flyash stabilization, Portland cement or the use of a layer of base rock and geogrid reinforcement should be considered. Asphaltic cement concrete should NOT be used in areas where heavy truck loads/concentrations are expected.

It is also recommended that an asphalt binder grade of PG 64-28 should be considered to help reduce the potential of thermal cracking based on the climatic conditions of this region. However, for base mix asphalt placed at least 4 inches below the surface, an asphalt binder grade of PG 64-22 should be sufficient.

10.3.2 Rigid Pavement Sections

As an alternative, rigid Portland Cement concrete with a 4-inch-thick base course of crushed limestone may also be used with minimum thicknesses of 5.0 and 7.0 inches for automobile parking areas and drive lanes, respectively. The above-referenced pavement section represents minimum design thicknesses, and as such periodic maintenance should be anticipated. If a better pavement is desired, recommendations as described in Section 10.4, "Subgrade Stabilization Sections," should be considered.

The crusher-run limestone base course should be compacted to a minimum density of 95 percent of the Standard Proctor (ASTM D698) maximum dry density at a moisture content sufficient to achieve the specified level of compaction.

For areas where heavy truck loads/concentrations are anticipated, Portland Cement concrete is recommended. Portland cement concrete slabs having a thickness of 8 inches over a 4-inch, minimum, compacted, crusher-run limestone base should be used for dumpster stations, parking lot entrances, areas where a high concentration of heavily loaded trucks are anticipated, as well as any areas where trucks accelerate/decelerate and execute sharp turning maneuvers.

10.4 Subgrade Stabilization Sections

Alternate pavement sections utilizing flyash or Portland cement stabilization, geogrids and granular base and/or subbase courses should be considered. Treating the subgrade with Class C flyash, Portland cement or using a geogrid reinforced base course can provide a pavement section having a much longer service life.

If specific pavement performance standards are to be met, AOG would be pleased to be of further assistance once the actual design loading conditions, service-life and maintenance expectations have been defined.

10.4.1 Chemically Stabilized Subgrade – Flyash or Portland Cement

The use of flyash is usually not effective during cold winter months. Notwithstanding this weather limitation, assuming the flyash is thoroughly and uniformly mixed with the subgrade, flyash stabilization can greatly reduce the swelling potential and improve the strength of the subgrade soil.

Additionally, Portland cement stabilization, assuming it is thoroughly and uniformly mixed with the subgrade, can greatly reduce the swelling potential and improve the strength of the subgrade soil.

Chemically treated subbases, Class C flyash or Portland cement stabilization, should be extended to a depth of 12 inches.

For a chemically treated subbase, full depth asphalt pavements with thicknesses of 4.0 and 6.0 inches for parking and drive lanes, respectively, can be used. Likewise, if the subgrade is chemically stabilized, the Portland cement concrete pavement sections over a 4-inch-thick base course of crushed limestone may also be reduced to 4.0 and 6.0 inches, respectively.

The crusher-run limestone base course should be compacted to a minimum density of 95 percent of the Standard Proctor (ASTM D698) maximum dry density at a moisture content sufficient to achieve the specified level of compaction.

Based on experience with similar projects, adding more flyash or Portland cement does not always increase the stiffness of the subgrade. In fact, too much flyash or cement in the subgrade may cause excessive brittleness, which may result in reflective cracking problems to develop. It is usually cost effective to determine the optimum amount of flyash or Portland cement necessary by laboratory testing; however, it usually ranges from about 12 to 15 percent by weight for flyash and about 4 to 6 percent by weight for Portland cement. The Class C flyash or Portland cement should be thoroughly mixed with the subgrade soil by means of a Bomag tiller or other similar equipment specifically designed for such procedures and compacted to a minimum density of 95 percent of the Standard Proctor (ASTM D698) maximum dry density at a moisture content within ± 3 percent of the optimum moisture content.

10.4.2 Geogrid Reinforcement & Base Rock

Soft areas can develop even when the subgrade is chemically stabilized. An even better pavement section can be developed by the use of a tri-axial geogrid over a properly compacted subgrade, as discussed in this report, and a layer of untreated crushed limestone base rock under either flexible or rigid pavements. The purpose of the geogrid is to help span soft spots that will inevitably develop in the subgrade. The geogrid helps to confine the base rock and acts as a "snowshoe," distributing the loads more evenly over the subgrade. The layer of base rock, which is placed over the geogrid, must be thick enough to support construction traffic and paving equipment so the geogrid does not become exposed. In general, the crushed limestone base rock should not be less than approximately 5 inches in thickness. If this option is chosen, it is recommended that Tensar InterAx NX650, which is a multi-axial polypropylene geogrid, be used. The geogrid reinforcement should be placed and overlapped as

needed in accordance with the manufacturer's recommendations, which should be verified by a representative of Alpha-Omega Geotech, Inc.

Asphaltic concrete thicknesses of 4.0 and 6.0 inches for parking areas and drive lanes, respectively, can be used if geogrid and base rock stabilization are used. Similarly, the Portland cement concrete sections can be reduced to 4.0 and 6.0 inches for the respective areas. Although these thicknesses are the same as given if the subgrade is treated with Class C flyash, the use of a tri-axial geogrid and base rock usually represents the most effective, reasonable pavement section.

10.5 General

If asphaltic pavements are used, periodic maintenance including, but not limited to, crack sealing, fog sealing, and possible patch with overlay should be anticipated. In addition, the quality of the aggregates and overall composition of the asphalt or concrete mix, as well as drainage conditions, can have a profound effect upon the durability of the pavement section.

Where engineered controlled fill is placed beneath paved areas, it is recommended the compacted fill should extend a minimum distance of two (2) feet beyond the pavement edge or curb line, or a distance equal to the depth of the fill, whichever is greater.

Asphalt mixes meeting KCAPWA specifications may be used for surface and base mixes, respectively. Compaction testing of each pavement layer is recommended to help ensure compliance with the mix design specifications.

For areas where heavy truck loads/concentrations are anticipated, Portland Cement concrete is should be used. It is recommended that load-transfer devices should be installed where construction joints are required. For dumpster stations, the concrete slabs should be large enough to accommodate the dumpster and at least the rear wheels of the disposal vehicle. Rigid pavements should have No. 4 bars on at least 2-foot centers and positioned in the upper third of the slab. Joints should be tooled or cut within 4 hours of hardening to a depth of at least one fourth of the thickness.

The subgrade should be moistened prior to placement of concrete. Fresh concrete should be properly cured as recommended by the American Concrete Institute (ACI). To help provide resistance to damage caused by alternating cycles of freezing and thawing, it is recommended that any exposed concrete should be properly air entrained; typically, at 5 to 7 percent. In addition, it is also recommended the outer edges of pavement slabs should be thickened to help resist cracking associated with heavy wheel loads near these unrestrained areas.

If full-depth pavement is used, it is important the moisture content of the subgrade should be kept as constant as possible from the time of recompacting until the pavement is laid. However, if the subgrade becomes dry, it should be moistened for at least 72 hours prior to paving, but it should not be saturated. In all cases, pavements should be sloped to inhibit ponding and provide rapid surface drainage. If water is allowed to pond on or adjacent to the pavement, the subgrade could become saturated and lose its bearing capacity which would contribute to premature pavement deterioration under a single cycle of heavy wheel loads or a number of cycles of lighter wheel loads.

11.0 TESTING AND INSPECTION RECOMMENDATIONS

Unless Alpha-Omega Geotech, Inc. is retained to provide the construction observation, monitoring and testing services for this project, we cannot accept any responsibility for any conditions that deviate from those identified in this subsurface investigation nor for the performance of the foundations, pavements and other structures including any retaining walls that are a part of this project. Alpha-Omega Geotech, Inc. is highly experienced in construction quality control and have a fully equipped soil, concrete, aggregate, rock and asphalt testing laboratory, as well as qualified field technicians to provide these field services.

It is not economically practical to perform enough exploratory borings on any site to identify all subsurface conditions. Some conditions affecting the design and/or construction may not become known until the project is underway. The boring logs, field SPT and laboratory test results depict subsurface conditions only at the specified locations and depths at the site. The boundaries between soil and rock layers indicated on the boring logs are based on observations made during drilling and an interpretation of the laboratory testing results. The exact depths of these boundaries are approximate and the transitions between soil and rock types may be gradual rather than being clearly defined. Also, due to the prior development at this site, as well as, the natural conditions of the formation of soils and rock, it is possible that unanticipated subsurface conditions may be encountered during construction. Monitoring of the subsurface conditions that are revealed during construction is needed to verify that subsurface conditions are consistent with those conditions identified in this preliminary geotechnical investigation. If variations in subsurface conditions are encountered, it will be necessary for Alpha-Omega Geotech, Inc. to re-evaluate the recommendations that have been made in this report.

Special Inspections should be performed in accordance with the local building code under which the project is designed, as adopted by Lee's Summit, MO.

Prior to filling, it is recommended that a representative of Alpha-Omega Geotech, Inc. should verify that the site has been properly stripped of all topsoil and other deleterious material, benched as needed and prepared for the placement of fill. The compaction of any structural fill beneath the new building, pavements, and any other areas where settlement control is necessary should be tested lift-by-lift by a representative of Alpha-Omega Geotech, Inc. as it is being placed. This should include the prepared subgrade layers beneath the building's slab-on-grade, as well as any other fill material relied upon to provide passive resistance. Also, in accordance with the local building code, any fill that is used to construct slopes steeper than 4:1 (H:V) must be placed as engineered controlled fill and the compaction tested lift-by-lift during placement.

Assuming that uniform fill material is used, nuclear density gauges (ASTM D2922/D3017) should be used to test compaction wherever necessary. However, if fill material of non-uniform consistency is used, other evaluation methods may be required. Such methods may include, but not be limited to, the use of a GeoGauge Stiffness meter, Dynamic Cone Penetrometer (DCP), proof-rolling or other visual inspection techniques.

Any geotextile fabric and geogrid reinforcement that is utilized should be placed and overlapped as needed in accordance with the manufacturer's recommendations, which should be verified by a representative of Alpha-Omega Geotech, Inc. Proper placement of the reinforcing steel for drilled piers, grade beams, pier caps, foundation walls and other structural elements including any necessary wing walls and retaining walls should be verified prior to the placement of concrete. The subgrade under the slabs on grade and pavements should be checked to verify

they are in compliance with the density and moisture requirements. Wherever possible, in addition to compaction testing, cut and fill areas should be proof-rolled with a loaded tandem-axle dump truck to identify soft areas that will need to be corrected. A representative of Alpha-Omega Geotech, Inc. should observe this proof-rolling. Checks should also be made of the subbases, concrete and any pavement materials.

Finally, the inspection and testing services listed herein are given as a minimum and it should be understood that additional inspection and testing services might also be required or otherwise beneficial.

12.0 LIMITATIONS

This report is presented in broad terms to provide a comprehensive assessment of the interpreted subsurface conditions and their potential effect on the adequate design and economical construction of the Associated Plastic Surgeons Building project located in Lee's Summit, MO, as discussed herein. This report has been prepared for the exclusive use of our client for specific application to the project discussed herein and has been prepared within our client's directive and budgetary constraints and in accordance with generally accepted geotechnical engineering practices. No other warranty, expressed or implied, is made.

It should be noted that the concept of risk is an important aspect of the geotechnical engineering evaluation and report since the recommendations given in this report are not based on exact science but rather analytical tools and empirical methods in conjunction with engineering judgment and experience. Therefore, the recommendations given herein should not be considered risk-free and, more importantly, are not a guarantee that the interaction between the soil materials and the proposed structures will perform as planned. Nevertheless, the geotechnical engineering recommendations presented herein are Alpha-Omega Geotech, Inc.'s professional opinion of those measures that are necessary for the proposed structures to perform according to the proposed design based on the information provided to Alpha-Omega Geotech, Inc., the referenced information gathered during the course of this investigation and our experience with these conditions.

Any significant structural changes to the proposed new structure or its location on this site relative to where these test borings were completed shall be assumed to invalidate the conclusions and recommendations given in this report until we have had the opportunity to review these changes and, if necessary, modify our conclusions and recommendations accordingly. It is also strongly suggested that Alpha-Omega Geotech, Inc. should review your plans and specifications dealing with the earthwork, foundations, as well as any pavements prior to construction to confirm compliance with the recommendations given herein. Particular details of foundation design, construction specifications or quality control may develop, and we would be pleased to respond to any questions regarding these details.

If Alpha-Omega Geotech, Inc. is not retained to review the project plans and specifications, address to the proposed building or their location on the site relative to where these test borings were completed, provide the recommended construction phase observation, monitoring and testing services and respond to any subsurface conditions that are identified during construction to evaluate whether or not changes in the recommendations given in this report are needed, we cannot be held responsible for the impact of those conditions on the project or the future performance of the buildings, pavements and/or structures that may be involved.

The scope of our services did not include any environmental assessment or investigation for the presence of hazardous or toxic materials in the soil, surface water, ground water or air, either on, below or adjacent to this site. In addition, no determination regarding the presence or absence of wetlands was made. Furthermore, it should be understood that the scope of geotechnical services for this project does not include either specifically or by implication any biological (i.e. mold, fungi or bacteria) assessment of the site or the proposed construction. Any statements in this report or included on the boring logs regarding odors, colors and unusual or suspicious items or conditions are strictly for informational purposes only.

We appreciate the opportunity to be of service to Dev, Inc., and the project designers, as well as the project builders and look forward to working with you throughout the construction process. We are prepared to provide the Special Inspection services that will be required by the local building code under which this project is designed, as adopted by the City of Lee's Summit, MO, as well as the other necessary construction observation, monitoring and testing services discussed in this report. If you have any questions concerning this report, or if we may be of further assistance, please call us at (913) 371-0000.

Sincerely,
ALPHA-OMEGA GEOTECH, INC.

Garic Abendroth

Garic Abendroth, P.E.
Engineering Director

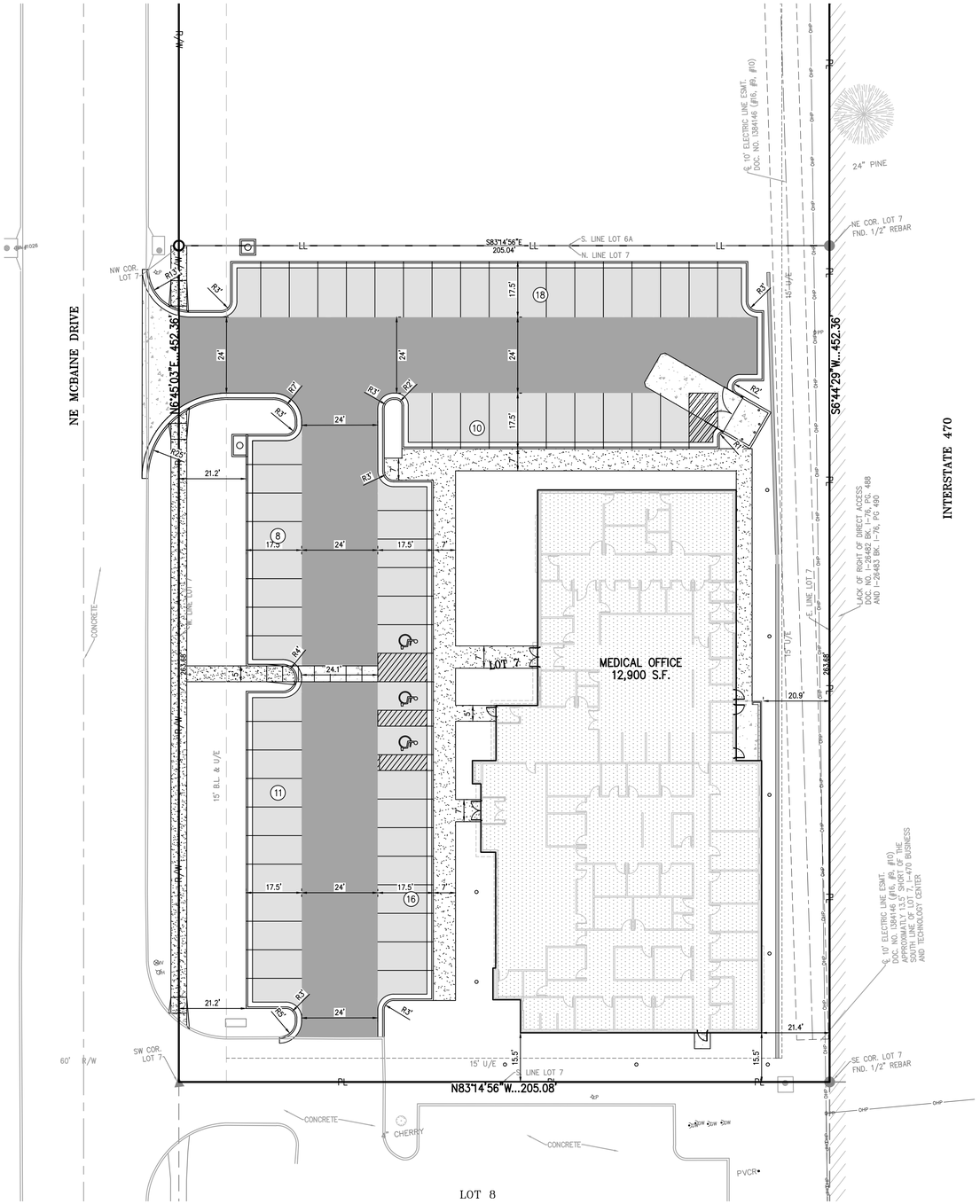
Enclosures

Appendix Section A

SITE SKETCH

Site and Boring Location Plans


Plastic Surgery Center
Medical Building Lee's Summit
Lakewood Lots 6 & 7
Legend
Boring Locations
B9
B10
B3
B4
B8
B5
B6
B7
B11
B1
B2
NE McBaine Dr
291
Google Earth
Image © 2024 Maxar Technologies
N
100 ft



BUILDING & LOT DATA

Site Area	54,071 S.F./1.24 Ac.
Zoning	PMIX
Proposed Building No. of Stories	1 Story
Total Building S.F.	12,900 S.F.
Floor Area Ratio (FAR)	0.24

PARKING SUMMARY

Parking Provided	
Standard Parking Provided	50 Spaces
Handicap Accessible Parking Spaces Provided	3 Spaces
Total Parking Provided	63 Spaces
Parking Required:	
5 Spaces For Every 1,000 S.F.	65 Spaces

OWNER/DEVELOPER:

XXXX

SITE PLAN NOTES:

1. All construction materials and procedures on this project shall conform to the latest revision of the following governing requirements, incorporated herein by reference:
   A) City ordinances & O.S.H.A. Regulations.
   B) The City of Lee's Summit Technical Specifications and Municipal Code.
   C) All construction shall follow the City of Lee's Summit Design and Construction Manual as adopted by Ordinance 5813. Where discrepancies exist between these plans and the Design and Construction Manual, the Design and Construction Manual shall prevail.
2. The contractor shall have one (1) signed copy of the plans (approved by the City) and one (1) copy of the appropriate Design and Construction Standards and Specifications at the job site at all times.
3. The contractor will be responsible for securing all permits, bonds and insurance required by the contract documents, City of Lee's Summit, Missouri, and all other governing agencies (including local, county, state and federal authorities) having jurisdiction over the work proposed by these construction documents. The cost for all permits, bonds and insurance shall be the contractors responsibility and shall be included in the bid for the work.
4. The contractor is responsible for coordination of his and his sub-contractor's work. The contractor shall assume all responsibility for protecting and maintaining his work during the construction period and between the various trades/sub-contractors constructing the work.
5. The demolition and removal(or relocation) of existing pavement, curbs, structures, utilities, and all other features necessary to construct the proposed improvements, shall be performed by the contractor. All waste material removed during construction shall be disposed off the project site. The contractor shall be responsible for all permits for hauling and disposing of waste material. The disposal of waste material shall be in accordance with all local, state and federal regulations.
6. Contractor shall be responsible for all relocations, including but not limited to, all utilities, storm drainage, sanitary sewer services, signs, traffic signals & poles, etc. as required. All work shall be in accordance with governing authorities specifications and shall be approved by such. All cost shall be included in base bid.
7. All existing utilities indicated on the drawings are according to the best information available to the Engineer; however, all utilities actually existing may not be shown. The contractor shall be responsible for contacting all utility companies for an exact field location of each utility prior to any construction. All underground utilities shall be protected at the contractor's expense. All utilities, shown and unshown, damaged through the negligence of the contractor shall be repaired or replaced by the contractor at his expense.
8. The contractor will be responsible for all damage to existing utilities, pavement, fences, structures and other features not designated for removal. The contractor shall repair all damages at his expense.
9. The contractor shall verify the flow lines of all existing storm or sanitary sewer connections and utility crossings prior to the start of construction. Notify the engineer of any discrepancies.
10. SAFETY NOTICE TO CONTRACTOR: In accordance with generally accepted construction practices, the contractor shall be solely and completely responsible for conditions of the job site, including safety of all persons and property during performance of the work. This requirement will apply continuously and not be limited to normal working hours. Any construction observation by the engineer of the contractor's performance is not intended to include review of the adequacy of the contractor's safety measures, in, on or near the construction site.
11. All site concrete (curbs, pavements, sidewalks, etc.) shall meet Kansas City Materials Metro Board (KCMMB) mix design specifications for 4,000 p.s.i. air entrained concrete. APWA detail references are provided for all geometrical and other design information.
12. Refer to the building plans for site lighting electrical requirements, including conduits, pole bases, pull boxes, etc.

SITE DIMENSION NOTES:

1. BUILDING TIES SHOWN ARE TO THE OUTSIDE FACE OF PROPOSED WALLS. THE SUBCONTRACTOR SHALL REFER TO THE ARCHITECTURAL PLANS FOR SPECIFIC DIMENSIONS AND LAYOUT INFORMATION FOR THE BUILDINGS.
2. ALL DIMENSIONS SHOWN FOR THE PARKING LOT AND CURBS ARE MEASURED FORM BACK OF CURB TO BACK OF CURB.

PAVEMENT MARKING AND SIGNAGE NOTES:

1. PARKING STALL MARKING STRIPES SHALL BE FOUR INCH (4") WIDE WHITE STRIPES. DIRECTIONAL ARROW AND HANDICAP STALL MARKINGS SHALL BE FURNISHED AT LOCATIONS SHOWN ON PLANS.
2. HANDICAP PAVEMENT MARKINGS AND SIGNS SHALL CONFORM TO ALL FEDERAL (AMERICANS WITH DISABILITIES ACT) AND STATE LAWS AND REGULATIONS.
3. TRAFFIC CONTROL DEVICES AND PAVEMENT MARKINGS SHALL CONFORM TO THE REQUIREMENTS OF THE "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES".
4. STOP SIGNS SHALL BE PROVIDED AT ALL LOCATIONS AS SHOWN ON PLANS AND SHALL CONFORM TO THE "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES". SIGNS SHALL BE 18" X 12", 18 GAUGE STEEL AND SHALL BE ENGINEER GRADE REFLECTIVE.
5. TRAFFIC CONTROL AND PAVEMENT MARKINGS SHALL BE PAINTED WITH A WHITE SHERWIN WILLIAMS S-W TRAFFIC MARKING SERIES B-29Y2 OR APPROVED EQUAL. THE PAVEMENT MARKING SHALL BE APPLIED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS. APPLY ON A CLEAN, DRY SURFACE AND AT A SURFACE TEMPERATURE OF NOT LESS THAN 70°F AND THE AMBIENT AIR TEMPERATURE SHALL NOT BE LESS THAN 60°F AND RISING. TWO COATS SHALL BE APPLIED.

LEGAL DESCRIPTION:

TRACT 1:

LOT 6A, 1-470 BUSINESS AND TECHNOLOGY CENTER, SECOND PLAT, LOTS 5A AND 6A, A SUBDIVISION IN LEE'S SUMMIT, JACKSON COUNTY, MISSOURI, ACCORDING TO THE RECORDED PLAT THEREOF.

TRACT 2:

LOT 7, 1-470 BUSINESS AND TECHNOLOGY CENTER, A SUBDIVISION IN LEE'S SUMMIT, JACKSON COUNTY, MISSOURI, ACCORDING TO THE RECORDED PLAT THEREOF.

TOTAL GROSS AREA = ±2.1294 ACRES / ±92,757 SQ.FT.
LOT 6A AREA = ±0.8881 ACRES / ±38,686 SQ.FT.
LOT 7 AREA = ±1.2413 ACRES / ±54,071 SQ.FT.

SITE KEY NOTES:

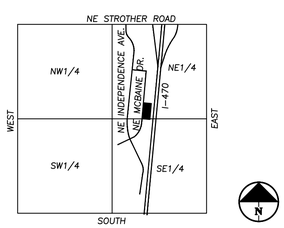
(A) CONSTRUCT 2' CURB & GUTTER (TYPICAL).

FLOOD NOTE:

THIS PROPERTY LIES WITHIN ZONE X, DEFINED AS AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN, AS SHOWN ON THE FLOOD INSURANCE RATE MAP PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY FOR THE CITY OF LEE'S SUMMIT, COMMUNITY NO. 290174, JACKSON COUNTY, MISSOURI, MAP NO. 29095C0430G, AND DATED JANUARY 20, 2017.

811 Know what's below. Call before you dig.

UTILITY NOTES:
VISUAL INDICATIONS OF UTILITIES ARE AS SHOWN. UNDERGROUND LOCATIONS SHOWN, AS FURNISHED BY THEIR LESSORS, ARE APPROXIMATE AND SHOULD BE VERIFIED IN THE FIELD AT THE TIME OF CONSTRUCTION. FOR ACTUAL FIELD LOCATIONS OF UNDERGROUND UTILITIES CALL 811.

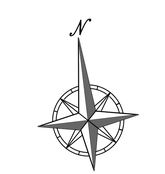


VICINITY MAP
SEC. 20-48N-31W

SCALE: 1"=2000'

LEGEND

- PL — PROPERTY LINE
- LL — LOT LINE
- R/W — RIGHT-OF-WAY
- 2' CURB & GUTTER
- 6" CURB
- B/L — BUILDING SETBACK LINE
- P/S — PARKING SETBACK LINE
- L/S — LANDSCAPE SETBACK LINE
- STANDARD DUTY ASPHALT PAVEMENT
- HEAVY DUTY ASPHALT PAVEMENT
- PROPOSED BUILDING
- CONCRETE PAVEMENT
- CONCRETE SIDEWALK



PHELPS ENGINEERING, INC.
1270 N. Winchester
Olathe, Kansas 66061
(913) 393-1155
FAX (913) 393-1066
www.phelpsengineering.com
PLANNING
ENGINEERING
IMPLEMENTATION

SITE PLAN

I-470 BUSINESS & TECHNOLOGY CENTER
NE McBAINE DR
LEE'S SUMMIT, MISSOURI 64064

No.	Date	Revisions:	By	App.

PROJECT NO. 240024
DATE:04-02-2024 DRAWN: AEB
CHECKED: DAF APPROVED: JDC
CERTIFICATE OF AUTHORIZATION KANSAS ENGINEERING - LS-82
ENGINEERING - E-391
CERTIFICATE OF AUTHORIZATION MISSOURI LAND SURVEYING-2007001128
ENGINEERING-2007002928

SHEET
C1

Appendix Section B

LABORATORY TEST RESULTS

Summary of Laboratory Testing

SLT 22205

Alpha-Omega Geotech, Inc.
1701 State Avenue
Kansas City, KS 66102
Office: (913) 371-0000 Fax: (913) 371-6710
Website: www.aogeotech.com

ALPHA-OMEGA GEOTECH

PROJECT NAME: ASSOCIATED PLASTIC SURGEONS BUILDING
PROJECT LOCATION: LOT 6 & 7, LAKEWOOD BUSINESS PARK, LSMO
PROJECT NUMBER: 240117 E
DATE: 6/7/2024

Boring Number	Sample Number	Depth or Elevation	Description	Natural Moisture (%)	Dry Unit Weight (pcf)	Atterberg Limits LL	PL	PI	USCS/ Visual Class.	% Passing No. 200	Unconfined Compression (psf)	%e	% Swell	Remarks
B1	SS-1	1.0-2.5	Light brown, spotted light reddish brown and light gray FAT CLAY						CH					N=9
B1	ST-2	3.0-5.0	Brown, spotted reddish brown FAT CLAY	22.6	102.5	56	22	34	CH		3872	10.7		PP=1.25
B1	ST-3	5.0-7.0	Light brown, speckled dark brown and light gray FAT CLAY						CH					PP=1.50
B1	SS-4	8.5-10.0	Olive, spotted light brown FAT/LEAN CLAY (Very hard, very slow drilling)						CH-CL					N=20
B2	SS-1	1.0-2.5	Brown, spotted reddish brown and dark brown FAT CLAY						CH					N=5
B2	ST-2	3.0-5.0	Light brown, spotted light gray and dark brown LEAN/FAT CLAY	23.5	100.8				CL-CH		2957	4.4		PP=2.50
B2	SS-3	5.0-6.5	Olive brown, spotted reddish brown LEAN/FAT CLAY						CL-CH					N=11
B2	SS-4	8.5-10.0	Brown, mottled light brown LEAN/FAT CLAY (Very hard, very slow drilling)						CL-CH					N=30
B3	SS-1	1.0-2.5	Brown, spotted dark brown FAT CLAY (Possible FILL)						CH					N=9

Summary of Laboratory Testing

SLT 22205

Alpha-Omega Geotech, Inc.
1701 State Avenue
Kansas City, KS 66102
Office: (913) 371-0000 Fax: (913) 371-6710
Website: www.aogeotech.com

ALPHA-OMEGA GEOTECH

PROJECT NAME: ASSOCIATED PLASTIC SURGEONS BUILDING
PROJECT LOCATION: LOT 6 & 7, LAKEWOOD BUSINESS PARK, LSMO
PROJECT NUMBER: 240117 E
DATE: 6/7/2024

Boring Number	Sample Number	Depth or Elevation	Description	Natural Moisture (%)	Dry Unit Weight (pcf)	Atterberg Limits LL	PL	PI	USCS/ Visual Class.	% Passing No. 200	Unconfined Compression (psf)	%e	% Swell	Remarks
B3	ST-2	3.0-5.0	Brown LEAN/FAT CLAY with trace of LIMESTONE fragments	23.6	102.2				CL-CH		1460	12.6		PP=0.25
B3	ST-3	5.0-7.0	Brown, spotted reddish brown FAT CLAY						CH					PP=1.00
B3	SS-4	8.5-10.0	Brown, mottled olive LEAN/FAT CLAY (Very hard, very slow drilling)						CL-CH					N=27
B4	SS-1	1.0-2.5	Brown, mottled light brown LEAN/FAT CLAY						CL-CH					N=5
B4	ST-2	3.0-5.0	Olive brown, spotted gray FAT CLAY	20.2	102.6	55	22	33	CH		2035	4.4		PP=2.50
B4	ST-3	5.0-5.9	Light olive, mottled light reddish brown LEAN/FAT CLAY						CL-CH					PP=1.00
B4	SS-4	8.5-10.0	Brown FAT/LEAN CLAY (Very hard, very slow drilling)						CH-CL					N=42
B5	SS-1	1.0-2.5	Brown, spotted dark brown FAT CLAY (Possible FILL)						CH					N=7
B5	ST-2	3.0-5.0	Brown, spotted dark brown and reddish brown LEAN/FAT CLAY						CL-CH					PP=2.50
B5	SS-3	5.0-5.1	Brown LEAN/FAT CLAY						CL-CH					N=11

Summary of Laboratory Testing

SLT 22205

Alpha-Omega Geotech, Inc.
1701 State Avenue
Kansas City, KS 66102
Office: (913) 371-0000 Fax: (913) 371-6710
Website: www.aogeotech.com

ALPHA-OMEGA GEOTECH

PROJECT NAME: ASSOCIATED PLASTIC SURGEONS BUILDING
PROJECT LOCATION: LOT 6 & 7, LAKEWOOD BUSINESS PARK, LSMO
PROJECT NUMBER: 240117 E
DATE: 6/7/2024

Boring Number	Sample Number	Depth or Elevation	Description	Natural Moisture (%)	Dry Unit Weight (pcf)	Atterberg Limits LL	PL	PI	USCS/ Visual Class.	% Passing No. 200	Unconfined Compression (psf)	%e	% Swell	Remarks
B5	SS-4	8.5-10.0	Brown, speckled reddish brown LEAN/FAT CLAY (Very hard, very slow drilling)						CL-CH					N=25
B6	SS-1	1.0-2.5	Brown FAT CLAY (Possible FILL)						CH					N=5
B6	ST-2	3.0-5.0	Olive, spotted reddish brown and gray FAT CLAY						CH					PP=1.75
B6	ST-3	5.0-5.7	Olive brown, spotted light brown FAT CLAY with trace of Weathered LIMESTONE fragments						CH					PP=3.50
B6	SS-4	8.5-10.0	Brown, spotted dark brown FAT/LEAN CLAY (Very hard, very slow drilling)						CH-CL					N=24
B7	SS-1	1.0-2.1	Brown, spotted dark brown FAT/LEAN CLAY (Possible FILL)						CH-CL					N=6
B7	ST-2	3.0-5.0	Brown, speckled reddish brown LEAN/FAT CLAY						CL-CH					PP=1.25

Summary of Laboratory Testing

SLT 22205

Alpha-Omega Geotech, Inc.
1701 State Avenue
Kansas City, KS 66102
Office: (913) 371-0000 Fax: (913) 371-6710
Website: www.aogeotech.com

ALPHA-OMEGA GEOTECH

PROJECT NAME: ASSOCIATED PLASTIC SURGEONS BUILDING
PROJECT LOCATION: LOT 6 & 7, LAKEWOOD BUSINESS PARK, LSMO
PROJECT NUMBER: 240117 E
DATE: 6/7/2024

Boring Number	Sample Number	Depth or Elevation	Description	Natural Moisture (%)	Dry Unit Weight (pcf)	Atterberg Limits LL	PL	PI	USCS/ Visual Class.	% Passing No. 200	Unconfined Compression (psf)	%e	% Swell	Remarks
B7	ST-3	5.0-6.6	Light brown, spotted light reddish brown, speckled light gray FAT CLAY						CH					PP=1.00
B7	SS-4	8.5-10.0	Brown, spotted reddish brown FAT/LEAN CLAY (Very hard, very slow drilling)						CH-CL					N=38
B8	SS-1	1.0-2.5	Brown, speckled reddish brown FAT/LEAN CLAY (Possible FILL)						CH-CL					N=42
B8	ST-2	3.0-5.0	Brown, spotted light brown FAT/LEAN CLAY						CH-CL					PP=2.50
B8	ST-3	5.0-6.6	Brown LEAN CLAY						CL					PP=1.00
B8	SS-4	8.5-10.0	Brown FAT/LEAN CLAY (Very hard, very slow drilling)						CH-CL					N=37
B9	SS-1	1.0-2.5	Light brown, speckled reddish brown FAT CLAY						CH					N=7
B9	ST-2	3.5-4.3	Olive, spotted dark brown FAT/LEAN CLAY (Very hard, very slow drilling)						CH-CL					N=50/3
B10	SS-1	1.0-2.5	Light reddish brown FAT CLAY						CH					N=3

Summary of Laboratory Testing

SLT 22205

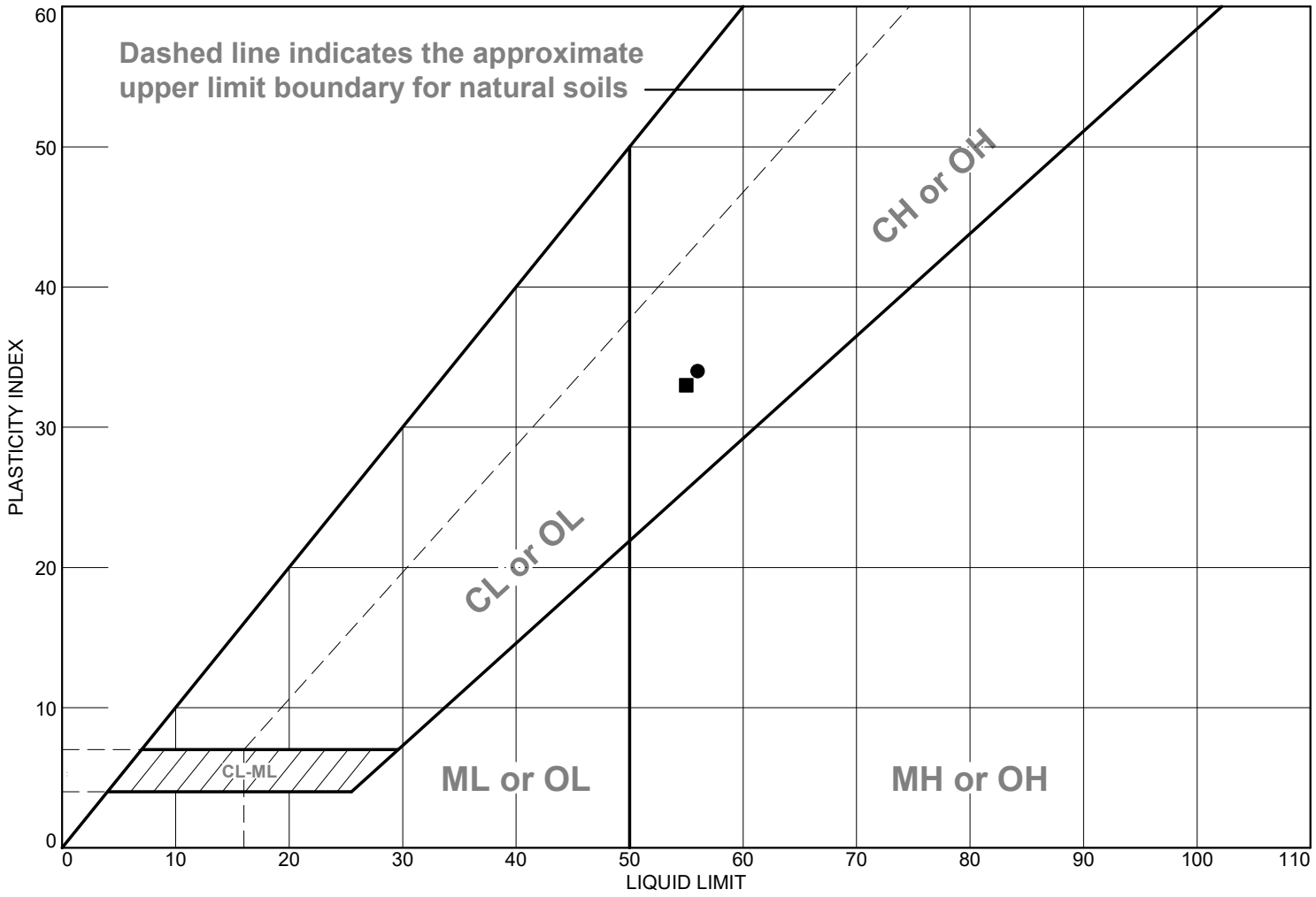
Alpha-Omega Geotech, Inc.
1701 State Avenue
Kansas City, KS 66102
Office: (913) 371-0000 Fax: (913) 371-6710
Website: www.aogeotech.com

ALPHA-OMEGA GEOTECH

PROJECT NAME: ASSOCIATED PLASTIC SURGEONS BUILDING
PROJECT LOCATION: LOT 6 & 7, LAKEWOOD BUSINESS PARK, LSMO
PROJECT NUMBER: 240117 E
DATE: 6/7/2024

Boring Number	Sample Number	Depth or Elevation	Description	Natural Moisture (%)	Dry Unit Weight (pcf)	Atterberg Limits LL	PL	PI	USCS/ Visual Class.	% Passing No. 200	Unconfined Compression (psf)	%e	% Swell	Remarks
B10	SS-2	3.5-5.0	Light brown LEAN/FAT CLAY						CL-CH					N=9
B10	SS-3	8.5-10.0	Brown LEAN/FAT CLAY (Very hard, very slow drilling)						CL-CH					N=56
B11	SS-1	1.0-2.5	Brown, spotted reddish brown FAT CLAY						CH					N=13
B11	SS-2	3.5-5.0	Brown, speckled dark brown LEAN/FAT CLAY						CL-CH					N=9
B11	SS-3	8.5-9.1	Light brown, speckled reddish brown FAT CLAY (Very hard, very slow drilling)						CH					N=50/2

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown, spotted reddish brown FAT CLAY	56	22	34			CH
■	Olive brown, spotted gray FAT CLAY	55	22	33			CH

Project No. 240117 E **Client:** DEV INC.

Project: ASSOCIATED PLASTIC SURGEONS BUILDING

● **Source of Sample:** B1 **Depth:** 3.0 **Sample Number:** ST-2

■ **Source of Sample:** B4 **Depth:** 3.0 **Sample Number:** ST-2

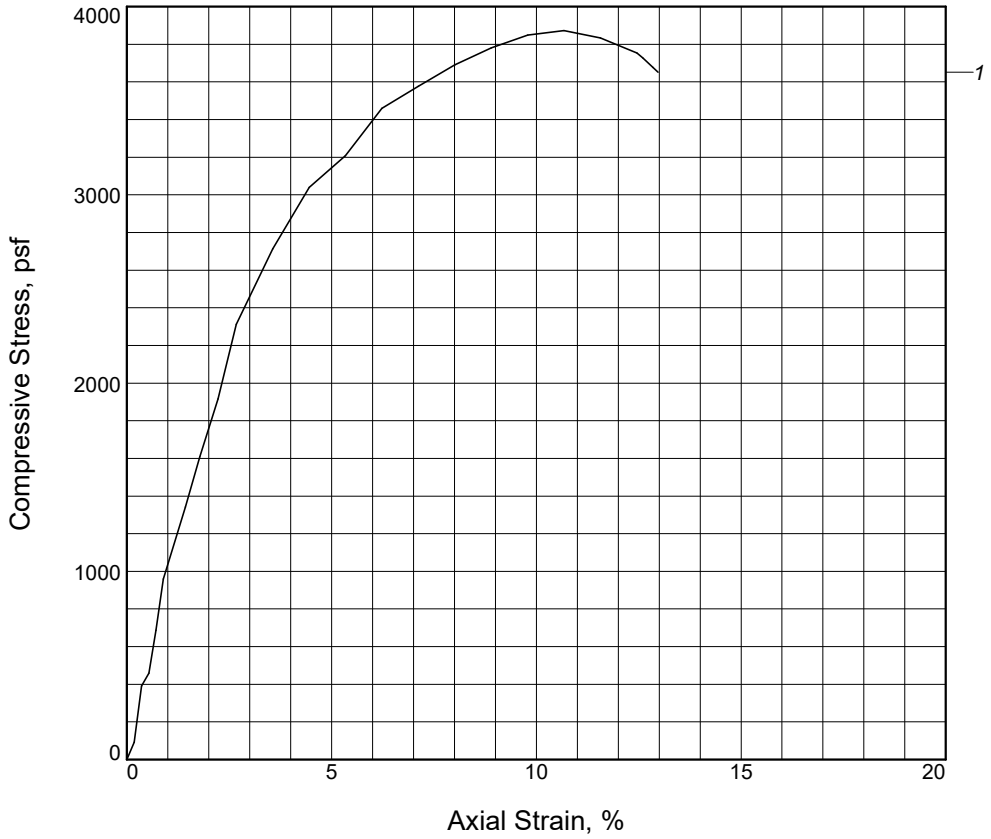
Remarks:

ALPHA-OMEGA GEOTECH

Figure

Tested By: A.M. **Checked By:** T.B.

UNCONFINED COMPRESSION TEST



Sample No.	1			
Unconfined strength, psf	3872			
Undrained shear strength, psf	1936			
Failure strain, %	10.7			
Strain rate, in./min.	0.088			
Water content, %	22.6			
Wet density, pcf	125.6			
Dry density, pcf	102.5			
Saturation, %	94.5			
Void ratio	0.6446			
Specimen diameter, in.	2.820			
Specimen height, in.	5.620			
Height/diameter ratio	1.99			

Description: Brown, spotted reddish brown FAT CLAY

LL = 56	**PL =** 22	**PI =** 34	**Assumed GS=** 2.70	**Type:** Undisturbed

Project No.: 240117 E
Date Sampled: 5/31/2024
Remarks:

Client: DEV INC.

Project: ASSOCIATED PLASTIC SURGEONS BUILDING

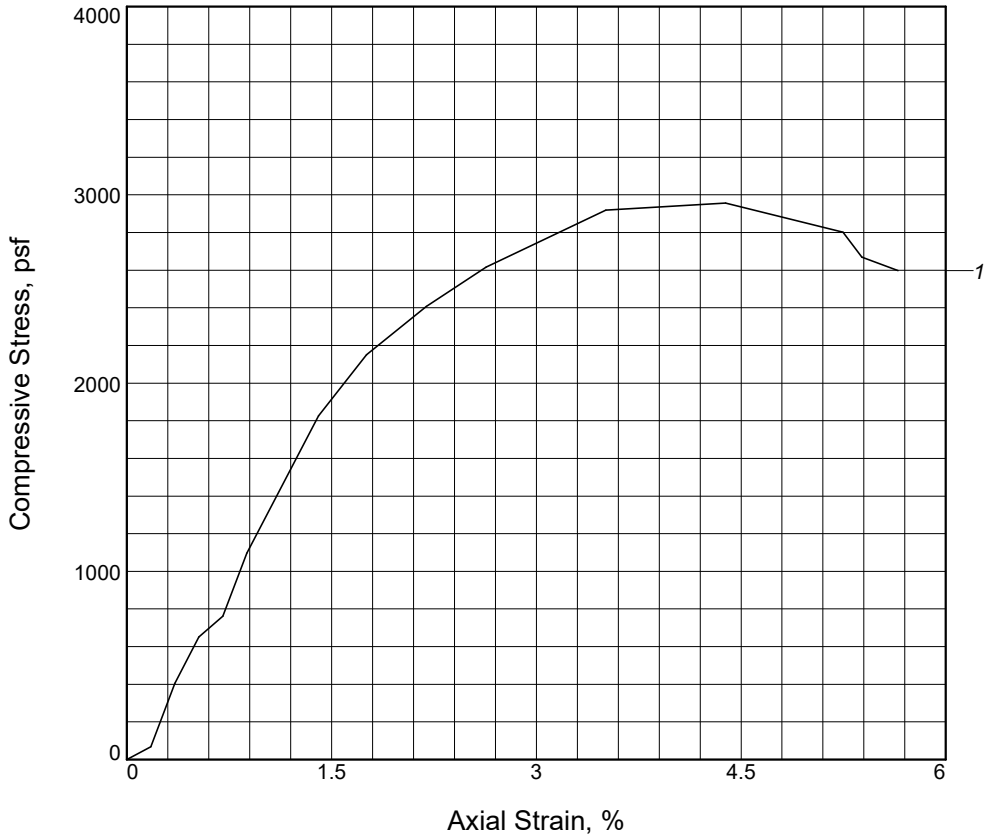
Source of Sample: B1 **Depth:** 3.0
Sample Number: ST-2

ALPHA-OMEGA GEOTECH

Figure 1 of 1

Tested By: D.B. **Checked By:** T.B.

UNCONFINED COMPRESSION TEST



Sample No.	1			
Unconfined strength, psf	2957			
Undrained shear strength, psf	1478			
Failure strain, %	4.4			
Strain rate, in./min.	0.088			
Water content, %	23.5			
Wet density, pcf	124.5			
Dry density, pcf	100.8			
Saturation, %	94.3			
Void ratio	0.6728			
Specimen diameter, in.	2.850			
Specimen height, in.	5.700			
Height/diameter ratio	2.00			

Description: Light brown, spotted light gray and dark brown LEAN/FAT CLAY

LL =	**PL =**	**PI =**	**Assumed GS=** 2.70	**Type:** Undisturbed

Project No.: 240117 E
Date Sampled: 5/31/2024
Remarks:

Client: DEV INC.

Project: ASSOCIATED PLASTIC SURGEONS BUILDING

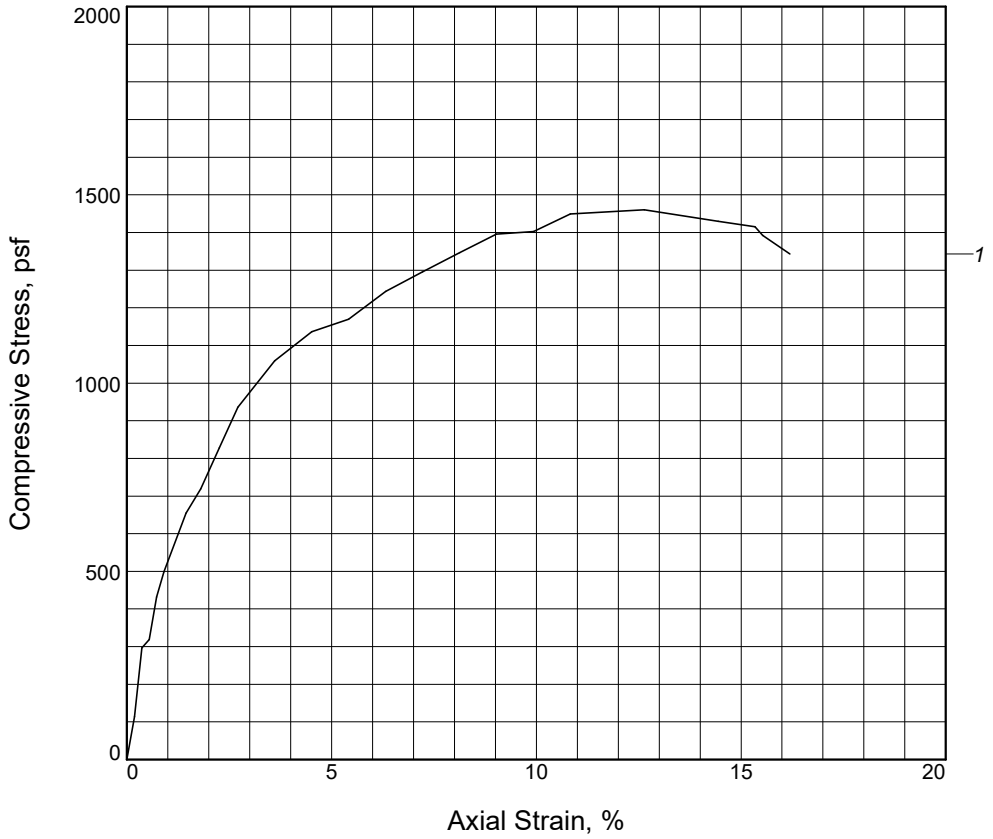
Source of Sample: B2 **Depth:** 3.0
Sample Number: ST-2

ALPHA-OMEGA GEOTECH

Figure 1 of 1

Tested By: D.B. **Checked By:** T.B.

UNCONFINED COMPRESSION TEST



Sample No.	1			
Unconfined strength, psf	1460			
Undrained shear strength, psf	730			
Failure strain, %	12.6			
Strain rate, in./min.	0.088			
Water content, %	23.6			
Wet density, pcf	126.3			
Dry density, pcf	102.2			
Saturation, %	97.9			
Void ratio	0.6495			
Specimen diameter, in.	2.830			
Specimen height, in.	5.540			
Height/diameter ratio	1.96			

Description: Brown LEAN/FAT CLAY with trace of LIMESTONE fragments

LL =	**PL =**	**PI =**	**Assumed GS=** 2.70	**Type:** Undisturbed

Project No.: 240117 E
Date Sampled: 5/31/2024
Remarks:

Client: DEV INC.

Project: ASSOCIATED PLASTIC SURGEONS BUILDING

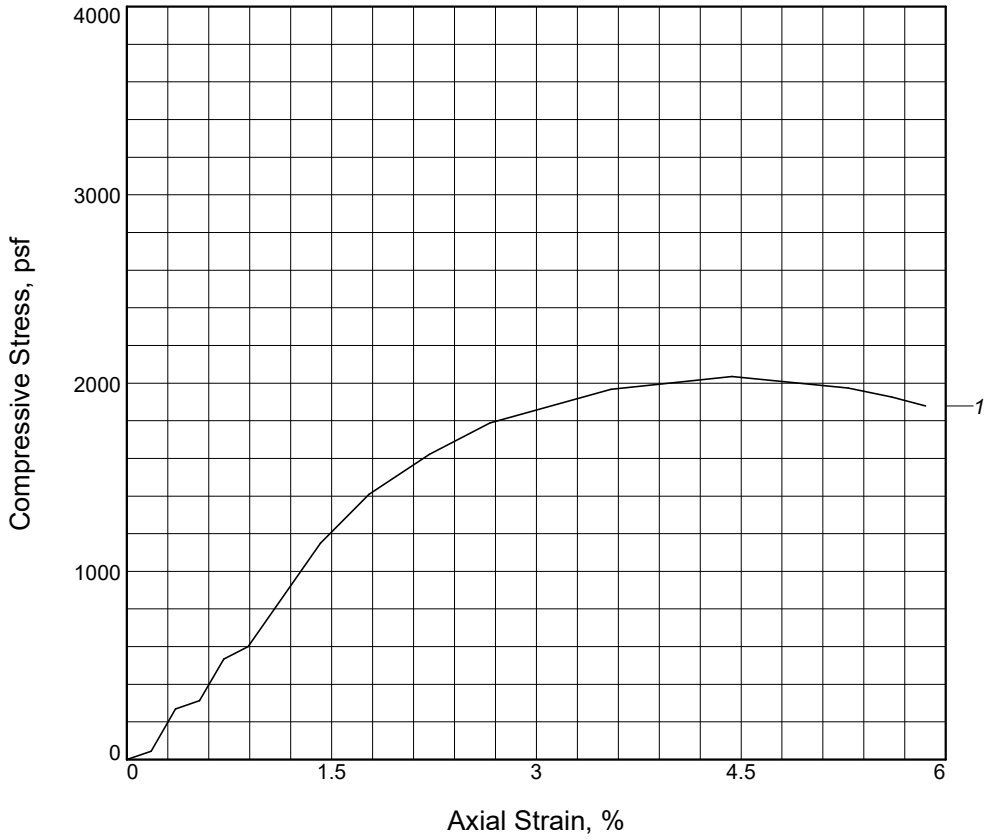
Source of Sample: B3 **Depth:** 3.0
Sample Number: ST-2

ALPHA-OMEGA GEOTECH

Figure 1 of 1

Tested By: D.B. **Checked By:** T.B.

UNCONFINED COMPRESSION TEST



Sample No.	1			
Unconfined strength, psf	2035			
Undrained shear strength, psf	1018			
Failure strain, %	4.4			
Strain rate, in./min.	0.088			
Water content, %	20.2			
Wet density, pcf	123.3			
Dry density, pcf	102.6			
Saturation, %	84.8			
Void ratio	0.6433			
Specimen diameter, in.	2.860			
Specimen height, in.	5.640			
Height/diameter ratio	1.97			

Description: Olive brown, spotted gray FAT CLAY

LL = 55	**PL =** 22	**PI =** 33	**Assumed GS=** 2.70	**Type:** Undisturbed

Project No.: 240117 E
Date Sampled: 5/31/2024
Remarks:

Client: DEV INC.

Project: ASSOCIATED PLASTIC SURGEONS BUILDING

Source of Sample: B4 **Depth:** 3.0
Sample Number: ST-2

ALPHA-OMEGA GEOTECH

Figure 1 of 1

Tested By: D.B. **Checked By:** T.B.

Appendix Section C

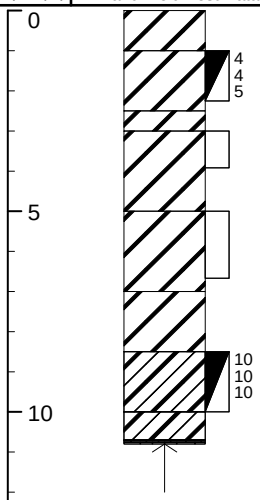
BORING LOGS

Note: The logs of subsurface conditions shown in this section apply only at the specific boring location and depths at the date indicated and might not be indicative of all subsurface conditions that may be encountered. This information is not warranted to be representative of subsurface conditions at other locations, depths and times. The passage of time or construction operations at or adjacent to this site may result in changes to the soil conditions at these boring locations and depths. As a result, the character of subsurface materials shall be each bidder's responsibility.

ALPHA-OMEGA GEOTECH

LOG OF BORING
No. B1

PROJECT: ASSOCIATED PLASTIC SURGEONS BUILDING **PROJECT NO.:** 240117 E
CLIENT: DEV INC.
PROJECT LOCATION: LOT 6 & 7, LAKEWOOD BUSINESS PARK, LEE'S SUMMIT, MO
LOCATION: SEE SITE SKETCH **ELEVATION:** N/D
DRILLER: KK & EG **LOGGED BY:** CW
DRILLING METHOD: POWER AUGER **DATE:** 5-28-24
DEPTH TO - WATER> INITIAL: ▽ NONE **AFTER 24 HOURS:** ▼ _____ **CAVING>** ℄ NONE

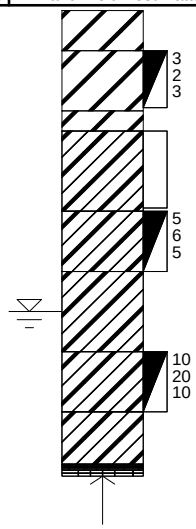


Depth (ft.)	Description	w%	DDen pcf	LL	PI	200 %	Uncomp. psf	PPen. tsf	USCS/ Visual Class.
0	Light brown, spotted light reddish brown and light gray FAT CLAY								CH
1.0	Light brown, spotted light reddish brown and light gray FAT CLAY								CH
2.5	Light brown, spotted light reddish brown and light gray FAT CLAY	22.6	102.5	56	34		3872	1.25	CH
3.0	Brown, spotted reddish brown FAT CLAY							1.50	CH
5.0	Light brown, speckled dark brown and light gray FAT CLAY								CH
7.0	Light brown, speckled dark brown and light gray FAT CLAY								CH-CL
8.5	Olive, spotted light brown FAT/LEAN CLAY (Very hard, very slow drilling)								CH-CL
10.0	Olive, spotted light brown FAT/LEAN CLAY (Very hard, very slow drilling)								LS
10.7	Weathered LIMESTONE (Very hard, very slow drilling)								
10.8	Auger refusal on Weathered LIMESTONE at about 10.8 feet. End of boring at about 10.8 feet.								

ALPHA-OMEGA GEOTECH

LOG OF BORING
No. B2

PROJECT: ASSOCIATED PLASTIC SURGEONS BUILDING **PROJECT NO.:** 240117 E
CLIENT: DEV INC.
PROJECT LOCATION: LOT 6 & 7, LAKEWOOD BUSINESS PARK, LEE'S SUMMIT, MO
LOCATION: SEE SITE SKETCH **ELEVATION:** N/D
DRILLER: KK & EG **LOGGED BY:** CW
DRILLING METHOD: POWER AUGER **DATE:** 5-28-24
DEPTH TO - WATER> INITIAL: ▽ 7.5' **AFTER 24 HOURS:** ▽ _____ **CAVING>** ℄ NONE

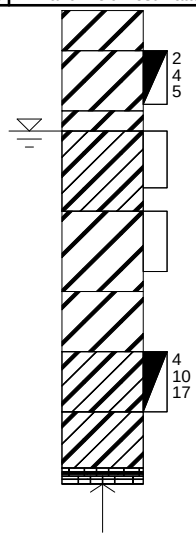


Depth (ft.)	Description	w%	DDen pcf	LL	PI	200 %	Uncomp. psf	PPen. tsf	USCS/ Visual Class.
0	Brown, spotted reddish brown and dark brown FAT CLAY								CH
1.0	Brown, spotted reddish brown and dark brown FAT CLAY								CH
2.5	Brown, spotted reddish brown and dark brown FAT CLAY	23.5	100.8				2957	2.50	CH / CL-CH
3.0	Light brown, spotted light gray and dark brown LEAN/FAT CLAY								CL-CH
5.0	Olive brown, spotted reddish brown LEAN/FAT CLAY								CL-CH
6.5	Olive brown, spotted reddish brown LEAN/FAT CLAY								CL-CH / LS
8.5	Brown, mottled light brown LEAN/FAT CLAY (Very hard, very slow drilling)								CL-CH
10.0	Brown, mottled light brown LEAN/FAT CLAY (Very hard, very slow drilling)								CL-CH
11.3	Weathered LIMESTONE (Very hard, very slow drilling)								LS
11.6	Auger refusal on Weathered LIMESTONE at about 11.6 feet. End of boring at about 11.6 feet.								

ALPHA-OMEGA GEOTECH

LOG OF BORING
No. B3

PROJECT: ASSOCIATED PLASTIC SURGEONS BUILDING **PROJECT NO.:** 240117 E
CLIENT: DEV INC.
PROJECT LOCATION: LOT 6 & 7, LAKEWOOD BUSINESS PARK, LEE'S SUMMIT, MO
LOCATION: SEE SITE SKETCH **ELEVATION:** N/D
DRILLER: KK & EG **LOGGED BY:** CW
DRILLING METHOD: POWER AUGER **DATE:** 5-28-24
DEPTH TO - WATER> INITIAL: ▽ 3.0' **AFTER 24 HOURS:** ▽ **CAVING>** ℄ NONE



Depth (ft.)	Description	w%	DDen pcf	LL	PI	200 %	Uncomp. psf	PPen. tsf	USCS/ Visual Class.
0	Brown, spotted dark brown FAT CLAY (Possible FILL)								CH
1.0	Brown, spotted dark brown FAT CLAY (Possible FILL)								CH
2.5	Brown, spotted dark brown FAT CLAY (Possible FILL)	23.6	102.2				1460	0.25	CH / CL-CH
3.0	Brown LEAN/FAT CLAY with trace of LIMESTONE fragments							1.00	CH
5.0	Brown, spotted reddish brown FAT CLAY								CH
7.0	Brown, spotted reddish brown FAT CLAY								CL-CH
8.5	Brown, mottled olive LEAN/FAT CLAY (Very hard, very slow drilling)								CL-CH
10.0	Brown, mottled olive LEAN/FAT CLAY (Very hard, very slow drilling)								CL-CH
11.4	Weathered LIMESTONE (Very hard, very slow drilling)								LS
11.8	Auger refusal on Weathered LIMESTONE at about 11.8 feet. End of boring at about 11.8 feet.								

ALPHA-OMEGA GEOTECH

LOG OF BORING
No. B4

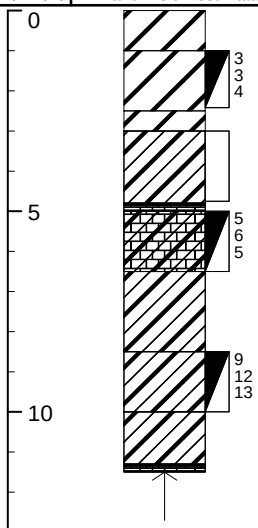
PROJECT: ASSOCIATED PLASTIC SURGEONS BUILDING **PROJECT NO.:** 240117 E
CLIENT: DEV INC.
PROJECT LOCATION: LOT 6 & 7, LAKEWOOD BUSINESS PARK, LEE'S SUMMIT, MO
LOCATION: SEE SITE SKETCH **ELEVATION:** N/D
DRILLER: KK & EG **LOGGED BY:** CW
DRILLING METHOD: POWER AUGER **DATE:** 5-28-24
DEPTH TO - WATER> INITIAL: ▽ NONE **AFTER 24 HOURS:** ▽ _____ **CAVING>** ℄ NONE

Depth (ft.)	Description	w%	DDen pcf	LL	PI	200 %	Uncomp. psf	PPen. tsf	USCS/ Visual Class.
0	Brown, mottled light brown LEAN/FAT CLAY								CL-CH
	WOH 2 3								
1.0	Brown, mottled light brown LEAN/FAT CLAY								CL-CH
2.5	Brown, mottled light brown LEAN/FAT CLAY								CL-CH
3.0	Olive brown, spotted gray FAT CLAY	20.2	102.6	55	33		2035	2.50	CH
5									
5.0	Light olive, mottled light reddish brown LEAN/ FAT CLAY							1.00	CL-CH
5.9	Weathered LIMESTONE (Very hard, very slow drilling)								LS / CL-CH
	9 17 25								
6.8	Light olive, mottled light reddish brown LEAN/ FAT CLAY								CH-CL
8.5	Brown FAT/LEAN CLAY (Very hard, very slow drilling)								CH-CL / LS
10.0	Light olive, mottled light reddish brown LEAN/ FAT CLAY								
10.8	Weathered LIMESTONE (Very hard, very slow drilling)								
11.0	Auger refusal on Weathered LIMESTONE at about 11.0 feet. End of boring at about 11.0 feet.								
10									
15									
20									
25									
30									
35									

ALPHA-OMEGA GEOTECH

LOG OF BORING
No. B5

PROJECT: ASSOCIATED PLASTIC SURGEONS BUILDING **PROJECT NO.:** 240117 E
CLIENT: DEV INC.
PROJECT LOCATION: LOT 6 & 7, LAKEWOOD BUSINESS PARK, LEE'S SUMMIT, MO
LOCATION: SEE SITE SKETCH **ELEVATION:** N/D
DRILLER: KK & EG **LOGGED BY:** CW
DRILLING METHOD: POWER AUGER **DATE:** 5-28-24
DEPTH TO - WATER> INITIAL: ▽ NONE **AFTER 24 HOURS:** ▼ _____ **CAVING>** ℄ NONE

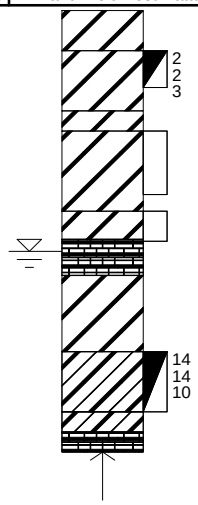


Description	Depth (ft.)	w%	DDen pcf	LL	PI	200 %	Uncomp. psf	PPen. tsf	USCS/ Visual Class.
Brown, spotted dark brown FAT CLAY (Possible FILL)	1.0								CH
Brown, spotted dark brown FAT CLAY (Possible FILL)	2.5								CH
Brown, spotted dark brown FAT CLAY (Possible FILL)	3.0							2.50	CL-CH
Brown, spotted dark brown and reddish brown LEAN/FAT CLAY	4.8								LS
Weathered LIMESTONE (Very hard, very slow drilling)	5.0								CL-CH
Brown LEAN/FAT CLAY w LIMESTONE fragments	6.5								CL-CH
Brown LEAN/FAT CLAY	8.5								CL-CH
Brown, speckled reddish brown LEAN/FAT CLAY (Very hard, very slow drilling)	10.0								LS
Brown, speckled reddish brown LEAN/FAT CLAY	11.3								
Weathered LIMESTONE (Very hard, very slow drilling)	11.5								
Auger refusal on Weathered LIMESTONE at about 11.5 feet. End of boring at about 11.5 feet.									

ALPHA-OMEGA GEOTECH

LOG OF BORING
No. B6

PROJECT: ASSOCIATED PLASTIC SURGEONS BUILDING **PROJECT NO.:** 240117 E
CLIENT: DEV INC.
PROJECT LOCATION: LOT 6 & 7, LAKEWOOD BUSINESS PARK, LEE'S SUMMIT, MO
LOCATION: SEE SITE SKETCH **ELEVATION:** N/D
DRILLER: KK & EG **LOGGED BY:** CW
DRILLING METHOD: POWER AUGER **DATE:** 5-28-24
DEPTH TO - WATER> INITIAL: ▽ 6.0' **AFTER 24 HOURS:** ▼ **CAVING>** ℄ NONE

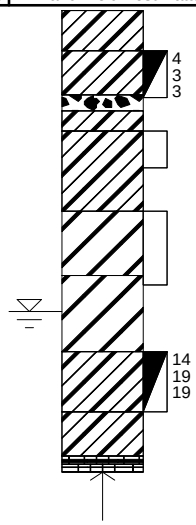


Depth (ft.)	Description	w%	DDen pcf	LL	PI	200 %	Uncomp. psf	PPen. tsf	USCS/ Visual Class.
0	Brown FAT CLAY (Possible FILL)								CH
1.0	Brown FAT CLAY (Possible FILL)								CH
2.5	Brown FAT CLAY								CH
3.0	Olive, spotted reddish brown and gray FAT CLAY							1.75	CH
5								3.50	CH
5.0	Olive brown, spotted light brown FAT CLAY with trace of Weathered LIMESTONE fragments								LS
5.7	Weather LIMESTONE (Very hard, very slow drilling)								CH
6.6	Olive brown, spotted light brown FAT CLAY with trace of Weathered LIMESTONE fragments								CH-CL
8.5	Brown, spotted dark brown FAT/LEAN CLAY (Very hard, very slow drilling)								CH-CL
10.0	Brown, spotted dark brown FAT/LEAN CLAY								LS
10.5	Weather LIMESTONE (Very hard, very slow drilling)								
11.0	Auger refusal on Weathered LIMESTONE at about 11.0 feet. End of boring at about 11.0 feet.								
10									
15									
20									
25									
30									
35									

ALPHA-OMEGA GEOTECH

LOG OF BORING
No. B7

PROJECT: ASSOCIATED PLASTIC SURGEONS BUILDING **PROJECT NO.:** 240117 E
CLIENT: DEV INC.
PROJECT LOCATION: LOT 6 & 7, LAKEWOOD BUSINESS PARK, LEE'S SUMMIT, MO
LOCATION: SEE SITE SKETCH **ELEVATION:** N/D
DRILLER: KK & EG **LOGGED BY:** CW
DRILLING METHOD: POWER AUGER **DATE:** 5-28-24
DEPTH TO - WATER> INITIAL: ▽ 7.5' **AFTER 24 HOURS:** ▽ **CAVING>** ℄ NONE



Depth (ft.)	Description	w%	DDen pcf	LL	PI	200 %	Uncomp. psf	PPen. tsf	USCS/ Visual Class.
0	Brown, spotted dark brown FAT/ LEAN CLAY (Possible FILL)								CH-CL
1.0	Brown, spotted dark brown FAT/LEAN CLAY (Possible FILL)								CH-CL
2.1	Gravel (Possible FILL)							1.25	CH-CL
2.5	Brown, spotted dark brown FAT/ LEAN CLAY (Possible FILL)								CL-CH
3.0	Brown, speckled reddish brown LEAN/FAT CLAY							1.00	CH
5.0	Light brown, spotted light reddish brown, speckled light gray FAT CLAY								CH
6.6	Light brown, spotted light reddish brown, speckled light gray FAT CLAY								CH-CL
8.5	Brown, spotted reddish brown FAT/LEAN CLAY (Very hard, very slow drilling)								CH-CL
10.0	Brown, spotted reddish brown FAT/LEAN CLAY								CH-CL
11.1	Weather LIMESTONE (Very hard, very slow drilling)								LS
11.5	Auger refusal on Weathered LIMESTONE at about 11.5 feet. End of boring at about 11.5 feet.								

ALPHA-OMEGA GEOTECH

LOG OF BORING
No. B8

PROJECT: ASSOCIATED PLASTIC SURGEONS BUILDING **PROJECT NO.:** 240117 E
CLIENT: DEV INC.
PROJECT LOCATION: LOT 6 & 7, LAKEWOOD BUSINESS PARK, LEE'S SUMMIT, MO
LOCATION: SEE SITE SKETCH **ELEVATION:** N/D
DRILLER: KK & EG **LOGGED BY:** CW
DRILLING METHOD: POWER AUGER **DATE:** 5-28-24
DEPTH TO - WATER> INITIAL: ▽ 4.8' **AFTER 24 HOURS:** ▽ **CAVING>** ℄ NONE

Elevation / Depth (ft.)	Soil Symbols, Sampler Symbols and Field Test Data	Description	Depth	w%	DDen pcf	LL	PI	200 %	Uncomp. psf	PPen. tsf	USCS/ Visual Class.
0	3 2 2	Brown, speckled reddish brown FAT/LEAN CLAY (Possible FILL)	1.0								CH-CL
		Brown, speckled reddish brown FAT/LEAN CLAY (Possible FILL)	2.5							2.50	CH-CL
5		Brown, speckled reddish brown FAT/LEAN CLAY (Possible FILL)	3.0							1.00	CH-CL / CL
		Brown, spotted light brown FAT/LEAN CLAY	5.0								CL
	9 17 20	Brown LEAN CLAY	7.0								CL
10		Brown LEAN CLAY	8.5								CH-CL
		Brown FAT/LEAN CLAY (Very hard, very slow drilling)	10.0								CH-CL
		Brown FAT/LEAN CLAY	11.5								LS
15		Weather LIMESTONE (Very hard, very slow drilling)	11.8								
		Auger refusal on Weathered LIMESTONE at about 11.8 feet. End of boring at about 11.8 feet.									
20											
25											
30											
35											

ALPHA-OMEGA GEOTECH

LOG OF BORING
No. B9

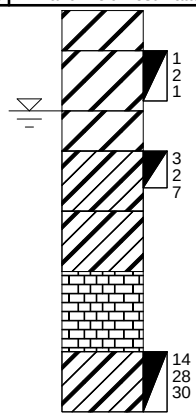
PROJECT: ASSOCIATED PLASTIC SURGEONS BUILDING **PROJECT NO.:** 240117 E
CLIENT: DEV INC.
PROJECT LOCATION: LOT 6 & 7, LAKEWOOD BUSINESS PARK, LEE'S SUMMIT, MO
LOCATION: SEE SITE SKETCH **ELEVATION:** N/D
DRILLER: KK & EG **LOGGED BY:** CW
DRILLING METHOD: POWER AUGER **DATE:** 5-28-24
DEPTH TO - WATER> INITIAL: ▽ NONE **AFTER 24 HOURS:** ▼ **CAVING>** ℄ NONE

Elevation / Depth (ft.)	Soil Symbols Sampler Symbols and Field Test Data	Description	w%	DDen pcf	LL	PI	200 %	Uncomp. psf	PPen. tsf	USCS/ Visual Class.
0	3 3 4	Light brown, speckled reddish brown FAT CLAY								CH
1.0		Light brown, speckled reddish brown FAT CLAY								CH
2.5	6 50/3	Light brown, speckled reddish brown FAT CLAY								CH
3.5		Olive, spotted dark brown FAT/LEAN CLAY (Very hard, very slow drilling)								CH-CL
4.3		Weather LIMESTONE (Very hard, very slow drilling)								LS
4.7		Auger refusal on Weathered LIMESTONE at about 4.7 feet. End of boring at about 4.7 feet.								
5										
10										
15										
20										
25										
30										
35										

ALPHA-OMEGA GEOTECH

LOG OF BORING
No. B10

PROJECT: ASSOCIATED PLASTIC SURGEONS BUILDING **PROJECT NO.:** 240117 E
CLIENT: DEV INC.
PROJECT LOCATION: LOT 6 & 7, LAKEWOOD BUSINESS PARK, LEE'S SUMMIT, MO
LOCATION: SEE SITE SKETCH **ELEVATION:** N/D
DRILLER: KK & EG **LOGGED BY:** CW
DRILLING METHOD: POWER AUGER **DATE:** 5-28-24
DEPTH TO - WATER> INITIAL: ▽ 2.5' **AFTER 24 HOURS:** ▼ **CAVING>** NONE



Depth (ft.)	Description	w%	DDen pcf	LL	PI	200 %	Uncomp. psf	PPen. tsf	USCS/ Visual Class.
0	Light reddish brown FAT CLAY								CH
1.0	Light reddish brown FAT CLAY								CH
2.5	Light reddish brown FAT CLAY								CH
3.5	Light brown LEAN/FAT CLAY								CL-CH
5.0	Light brown LEAN/FAT CLAY								CL-CH
6.5	Weather LIMESTONE (Very hard, very slow drilling)								LS
8.5	Brown LEAN/FAT CLAY (Very hard, very slow drilling)								CL-CH
10.0	End of boring at about 10.0 feet								

OFFSET 28.0' WEST

ALPHA-OMEGA GEOTECH

LOG OF BORING
No. B11

PROJECT: ASSOCIATED PLASTIC SURGEONS BUILDING **PROJECT NO.:** 240117 E
CLIENT: DEV INC.
PROJECT LOCATION: LOT 6 & 7, LAKEWOOD BUSINESS PARK, LEE'S SUMMIT, MO
LOCATION: SEE SITE SKETCH **ELEVATION:** N/D
DRILLER: KK & EG **LOGGED BY:** CW
DRILLING METHOD: POWER AUGER **DATE:** 5-28-24
DEPTH TO - WATER> INITIAL: ▽ NONE **AFTER 24 HOURS:** ▼ _____ **CAVING>** ℄ NONE

Elevation / Depth (ft.)	Soil Symbols Sampler Symbols and Field Test Data	Description	w%	DDen pcf	LL	PI	200 %	Uncomp. psf	PPen. tsf	USCS/ Visual Class.
0		Brown, spotted reddish brown FAT CLAY								CH
	5 6 7	1.0								
		Brown, spotted reddish brown FAT CLAY								CH
		2.5								
		Brown, spotted reddish brown FAT CLAY								CH
	3 4 5	3.5								
		Brown, speckled dark brown LEAN/FAT CLAY								CL-CH
5		5.0								
		Brown, speckled dark brown LEAN/FAT CLAY								CL-CH
		8.5								
	4 50/2	Light brown, speckled reddish brown FAT CLAY (Very hard, very slow drilling)								CH
10		9.1								
		End of boring at about 9.1 feet								
15										
20										
25										
30										
35										

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	FAT CLAY
	LEAN/FAT CLAY
	Weathered LIMESTONE
	FAT / LEAN CLAY w/ Limestone fragments
	Gravel
	LEAN CLAY
	LIMESTONE

Symbol	Description
Misc. Symbols	
	Drill rejection
	Water table during drilling
Soil Samplers	
	Standard penetration test
	Undisturbed thin wall Shelby tube

Notes:

1. Borings were drilled on May 28, 2024 using solid auger, split spoon sampler and shelby tube sampler techiniques.

2. Ground water was encountered while drilling at the reported depths.

3. Borings were staked by Alpha-Omega, Inc.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs. Abbreviations are:

DDen = natural dry density (pcf)
LL = Liquid limit
w% = natural moisture content (%)
PI = Plasticity index
UComp = Unconfined compression (psf)
PPen = Pocket Penetrometer
-200 = percent passing #200 sieve (%)
RQD = Rock Quality
DCP = Dynamic Cone Penetrometer