CITY COUNCIL AGENDA ITEM COVER MEMO

Agenda Item Number: _____

Meeting Type: Regular _____ Meeting Date: May 22, 2014

Action Requested By: Engineering _____ Agenda Type: Resolution _____

Subject Matter:

Agreement with Vette Properties, LLC

Exact Wording for the Agenda:

Resolution authorizing the Mayor to enter into a Real Estate Sales Contract between the City of Huntsville and Vette Properties, LLC for Proposed Logicore Headquarters, Project No. 65-14-SP28

Note: If amendment, Please state title and number of the original

Item to be considered for: Action _____ Unanimous Consent Required: No _____

Briefly state why the action is required; why it is recommended; what council action will provide, allow and accomplish and; any other information that might be helpful.

Purchase Agreement for land in Cummings Research Park in the total amount of $935,300.00. Account numbers: (10%) 24-0000-3080-0000 ($93,530.00) and (90%) 24-0000-3081-0000 ($841,770.00)

Associated Cost: _____ Budgeted Item: _____

MAYOR RECOMMENDS OR CONCURS: _____

Department Head: _____ Date: 5/12/14

PK

ROUTING SLIP
CONTRACTS AND AGREEMENTS

Originating Department: Urban Development Council Meeting Date: **5/22/2014**

Department Contact: **Lynn Majors** Phone # **256-427-5201**

Contract or Agreement: **Real Estate Sales Contract**

Document Name: **Vette Properties, LLC-Logicore Headquarters 65-14-SP28**

City Obligation Amount: **$935,300.00 +/-**

Total Project Budget: **$935,300.00 +/-**

Uncommitted Account Balance: **0**

Account Number:

10%	**24-0000-3080-0000**	$93,530.00
90%	24-0000-3081-0000	$841,770.00

Procurement Agreements

Not Applicable	**Not Applicable**

Grant-Funded Agreements

Not Applicable — **Grant Name:**

Department	Signature	Date
1) Originating		5/20/14
2) Legal		
3) Finance		
4) Originating		
5) Copy Distribution		
a. Mayor's office (1 copies)		
b. Clerk-Treasurer (Original & 2 copies)		

RESOLUTION NO. 14-____

BE IT RESOLVED by the City Council of the City of Huntsville, Alabama, that the Mayor be, and is hereby authorized to enter into an Agreement to Purchase with Vette Properties, LLC for Proposed Logicore Headquarters, Project No. 65-14-SP28, on behalf of the City of Huntsville, a municipal corporation in the State of Alabama, which said agreement is substantially in words and figures similar to that certain document attached hereto and identified as "Real Estate Purchase Agreement between the City of Huntsville and Vette Properties, LLC," consisting of eight (8) pages plus thirty-three (33) additional pages consisting of Exhibits "A", "B", and "C" and the date of May 22, 2014, appearing on the margin of the first page, together with the signature of the President or President Pro Tem of the City Council, an executed copy of said document being permanently kept on file in the Office of the City Clerk-Treasurer of the City of Huntsville, Alabama.

ADOPTED this the 22nd day of May, 2014.

President of the City Council of
the City of Huntsville, Alabama

APPROVED this the 22nd day of May, 2014.

Mayor of the City of
Huntsville, Alabama

REAL ESTATE SALES CONTRACT

STATE OF ALABAMA)
)
COUNTY OF MADISON)

This Real Estate Sales Contract ("Contract") entered into on this the 22 day of May, 2014, by and between City of Huntsville, a municipal corporation in the State of Alabama ("Seller") and VETTE PROPERTIES, LLC, an Alabama limited liability company organized under the laws of the State of Alabama ("Purchaser").

WITNESSETH:

For in consideration of the sum of the promises and mutual covenants hereinafter set forth, and for other and valuable consideration hereinafter provided, the parties do hereby agree as follows, to wit:

I. AGREEMENT TO BUY AND SELL

The Purchaser agrees to buy and the Seller agrees to sell a 9.4 acre Tract of real property described in Exhibit "A", attached hereto and incorporated herein by reference, in accordance with the covenants and conditions of this contract.

II. DUE DILIGENCE PERIOD.

Between the execution date of this Contract and the date of Closing, Purchaser and Purchaser's agents, employees, contractors, representatives and other designees (collectively the "Purchaser's Designees") shall have the right to enter the Property for the purposes of inspecting the Property, conducting soil tests, conducting surveys, mechanical and structural engineering tests, and conducting any other investigations, examinations, tests and inspections as Purchaser may reasonably require to assess the condition of the Property; provided, however, that (i) any activities by or on behalf of Purchaser, including, without limitation, the entry by Purchaser or Purchaser's Designees with respect to the Property ("Purchaser's Activities") shall not damage the Property in any manner whatsoever, and (ii) in the event the Property is altered or disturbed in any manner in connection with any of Purchaser's Activities, Purchaser shall immediately return the Property to the condition existing prior to Purchaser's Activities.

_____
President of the City Council
of the City of Huntsville, Alabama

Date: May 22, 2014

Purchaser shall have until the date sixty (60) days after the date the Contract was executed (the "Due Diligence Date") to perform such investigations, examinations, tests and inspections as Purchaser shall deem necessary or desirable to determine whether the Property is suitable and satisfactory to Purchaser in its sole discretion. In the event that Purchaser shall determine, it its sole and absolute discretion, that the Property is not suitable and satisfactory to Purchaser, Purchaser shall have the right to terminate the Contract by delivering written notice to the Seller not later than the Due Diligence Date. In the event Purchaser gives Seller notice of termination, the Earnest Money shall be promptly returned to Purchaser, all rights and obligations of the parties under this Contract shall expire, and this Contract shall become null and void.

III. PURCHASE PRICE

In consideration of the Seller's agreement to sell the Tract to Purchaser, Purchaser agrees to pay to Seller the sum of $99,500 per acre, for a total price of $935,300.00 payable in full on the date of closing as hereinafter defined. If a final survey to be provided by Seller reveals the total acreage is more or less than 9.4 acres, the Purchase Price shall be adjusted accordingly.

IV. CLOSING

Except as otherwise agreed, Closing shall occur upon five (5) days' notice by Purchaser to Seller at the Office of the City Attorney of the City of Huntsville or such other place as agreed upon by the parties. Closing shall occur not more than ninety (90) days from the date hereof; provided, however, at the election of the Purchaser, Seller shall grant as additional thirty (30) days upon the payment to Seller, as interest, of three percent (3%) of the unpaid balance of the Purchase Price at least two (2) days prior to the ninetieth (90th) day following the date hereof.

V. CONVEYANCE

Seller agrees to convey said property and will furnish to Purchaser a good and merchantable title by a properly executed warranty deed substantially in the form attached hereto as Exhibit "B", free from any and all encumbrances, subject only to easements, restrictions set out in the attached deed, rights-of-way of record, ad valorem taxes due and payable for the year 2014, and the protective covenants of Cummings Research Park West, as recorded in Deed Book 826 at Page 602 in the Office of the Judge of Probate of Madison County. If, subsequent to the execution of this contract, the Purchaser determines to finance this venture, through Industrial Development Bonds, then, upon Purchaser's request, said deed shall be delivered in the name of the Industrial Development Board of the City of Huntsville, a public corporation and instrumentality organized under the laws of the State of Alabama, as Grantee. Purchaser understands said restrictions are binding on the property and may be amended from time to time and Purchaser agrees that Purchaser shall comply with said restrictions as amended. If, prior to closing, Purchaser discovers an objection to or defect in title to the property, Seller, at Seller's option, shall have a reasonable time (but not in excess of thirty (30) days following the receipt of Purchaser's written notice of objections) within which to cause the same to be cured. If the defects or objections are not timely cured to Purchaser's satisfaction, (i) Purchaser may waive

such defects or objections and proceed to close or (ii) Purchaser may cancel its agreement by notice in writing to Seller, and any money paid to Seller pursuant to this Contract, shall be refunded to Purchaser within ten (10) business days of such notice (including interest payments for extensions); and each of the parties shall be released from further liability to the other. Purchaser shall notify Seller of any defect or objection in writing within ten (10) days following receipt or notice of such title defect.

VI. CONSTRUCTION

Purchaser agrees to obtain a building permit, complete all site preparation, and to commence the actual physical construction of the facility thereon, as approved by the Architectural Control Committee, within twelve (12) months from the date of the conveyance, and to diligently pursue without material interruption, Force Majeure Events (hereinafter defined), excepted, the construction of the said facility until completed according to approved plans and specifications. As used herein, the term "Force Majeure Events" shall mean any events or occurrences whatsoever which prevent or delay Purchaser's performance hereunder and which are beyond the reasonable control of Purchaser, including without limitation, an act of God, war, riot, civil commotion, or other disturbance, sovereign conduct, national emergencies, acts of civil or military authority, strike or other labor difficulties, fire, flood, catastrophe, insurrection, power or other utility failure, transportation failure, or governmental action. In the event Purchaser fails to begin substantial construction within the time described above, then the Seller may, at its option, within three hundred sixty (360) days of Purchaser's failure, repurchase the above described Tract of land for a sum equal to the total purchase price paid by the Purchaser therefore plus the reasonable value of any improvements. Purchaser also understands that there are certain building restrictions in existence with respect to property located within Cummings Research Park West, and that certain approvals are necessary for the design and construction of any structure(s) on the Tract. Purchaser agrees to comply with any and all rules and regulations with respect to structures on the Tract, as they may be amended from time to time. Purchaser will indemnify and hold harmless Seller from and against any and all liability arising out of the destruction of or damage to the property, or injuries or loss to, or death of any person in connection with the development, improvement or construction upon the real property described herein, or any activity or project conducted thereon, other than liability for any loss, damages or injuries that may result from Seller's own intentional, wrongful or negligent acts. The provisions of this paragraph shall survive the closing.

VII. DEFAULT

Should Purchaser fail to carry out the terms and conditions of this Contract in accordance, with all of its provisions, this Contract shall terminate with no further obligations between the parties and Seller shall retain any money paid to Seller as liquidated damages. Should Seller fail to carry out this Contract in accordance with all of its provisions, (1) Purchaser shall have the option to demand a refund of any monies or any extension interest Purchaser may have paid or caused to be paid to Seller, together with payment to Purchaser by Seller of any sums expended by Purchaser for title opinions and due diligence investigation of the property, and upon payment of such sums to Purchaser by Seller, this Contract shall terminate, or (2)

Purchaser may, without demanding a return of any money, proceed with a suit for specific performance of this contract. In the event that any breach or default by any party to this Contract results in legal proceedings, the party adjudged to be in default shall pay, in addition to such other sums as may be due hereunder, the costs and expenses of such legal proceedings, including the reasonable attorney's fees of the other parties.

VIII. ADDITIONAL PROVISIONS

A. Policies and Procedures- Hazardous Materials. Purchaser shall develop and implement policies and procedures for the storage, use, receipt and disposition of any hazardous materials that come onto its premises. Purchaser will not offer or accept, under these policies, hazardous materials for transportation in commerce unless said materials are properly classed, described, packaged, marked, labeled, and in such condition for proper shipment as required under Title 49 Code of Federal Regulations, Parts 171-179. The packaging of hazardous materials coming into or going out of its facilities shall be maintained in compliance with the regulations specified for each specific mode of transportation. This includes the proper handling and transport of all materials via air, highway, rail or water.

Materials handling, as part of all manufacturing operations, will be conducted within the confines of the building. This will include the inspection of product, material packing/unpacking, and all functions requiring product or by-product preparation for transportation.

In the event by-product material removal becomes necessary, procedures will be placed into effect to ensure proper removal. Prior to the transport of materials, complete material evaluation will be conducted to ensure proper compliance with all applicable transportation requirements. All options will be evaluated for the beneficial reclamation or recycling for by-product material.

Purchaser insures that its intrastate, interstate, and internal operations will be in compliance with all applicable requirements, and that it will fully comply with all federal, state, and local laws, regulations or ordinances regarding environmental, safety, industrial hygiene, and/or hazardous material requirements.

IX. SELLER CONSTRUCTION AND FINANCIAL OBLIGATIONS.

Seller agrees to complete the following to the satisfaction of the Purchaser:

A. Within thirty (30) days after the date of closing, Seller shall clear all vegetation and brush along the shoreline and promptly remove all related debris from the Property;

B. Within thirty (30) days after the date of closing, Seller shall clear all vegetation and brush from all setbacks, 150 feet from the curb, and remove all such debris from the Property.

C. The Seller shall rough grade the site, to include the removal of any unsuitable materials in the area of proposed building pads and parking lot, in accordance with the geotechnical

report by Geo Solution, LLC dated March 26th, 2014 for the site, attached hereto as Exhibit C. The Seller shall grade the site to drain and shall not be responsible for providing borrow material to backfill and compact the site for development. The Seller shall remove unusable material from the site and stockpile excess topsoil on site for the Purchaser's use during construction. The Purchaser shall be responsible for grading of the site to proposed elevations to include providing suitable backfill material and compaction requirements for development. Any excess material not used shall be the Purchaser's responsibility to remove off site.

D. Within thirty (30) days after the date of closing, Seller shall remove all debris and stockpiles of unsuitable soil from the site.

E. Within thirty (30) days prior to the start of construction, Seller shall provide and ensure proper utility development and provision up to Buyer's property lines. These provisions shall include, but not be limited to, all electrical primary units, the provision of natural gas to meter, storm and sanitary sewer lines, transformers, and water lines. Metering fees and impact fees associated with providing utilities on the site will be the Purchaser's responsibility.

F. Purchaser shall provide the Seller with an existing Phase I Environmental Assessment which the Seller will use to provide an updated Phase I Environmental Assessment to the Purchaser to determine whether the Property is suitable and satisfactory.

The provisions of this paragraph shall survive the closing.

X. APPROVALS BY THE CITY

Wherever in this Development Agreement the approval of the City is required (other than approval of any contract or written agreement) such approval shall not be unreasonably withheld. The City shall grant to Developer such access and construction easements as are necessary in order to construct and operate the Project, including utility, drainage and storm water easements as the parties agree are necessary or appropriate for the development and use of the Project.

XI NOTICES. Except as provided elsewhere in this Development Agreement, whenever any notice, request, demand or similar communication (a "Notice") is required or permitted to be given under this Development Agreement, then the Notice shall be given in writing and shall be deemed to have been served and given if (1) delivered in person to the address set forth below for the party to who the Notice is given; (2) placed in the United States mail, postage prepaid, certified mail, return receipt requested and addressed to such party at the business day after same has been mailed as described herein; (3) sent by electronic mail or facsimile mail transmittal; or (4) sent by Federal Express or similar overnight courier service, prepaid and addressed to such party at the address hereinafter specified for next business day delivery (and such Notice shall be deemed given when delivered to the appropriate address).

DEVELOPER: VETTE PROPERTIES, LLC

360C Quality Circle, Suite 350
Huntsville, AL 35806
Attention: Ashley Davis
Email: awdavis@logicorehsv.com

CITY: Mayor of the City of Huntsville
P.O. Box 308
Huntsville, Alabama 35804
Fax: (256) 427-5257

With a copy to: Office of the City Attorney
P.O. Box 308
Huntsville, AL 35804
Attn: City Attorney
Email: Peter.Joffrion@huntsvilleal.gov
Fax: (256) 427-5026

XI. ENTIRE AGREEMENT

This contract, with Exhibits A, B and C attached hereto, and the restrictions and covenants of as herein referenced, constitute the entire agreement between the parties. All statements, representations covenants heretofore made and any other agreements not incorporated herein are void and of no force and effect.

[SIGNATURES ON FOLLOWING PAGES]

IN WITNESS WHEREOF, the parties have entered their hands and seals and attest to the same with the signature of the Mayor being the official act of said municipality in accordance with his duly constituted authority.

THE CITY OF HUNTSVILLE, ALABAMA,
a municipal corporation in the State of Alabama

BY: _____
Its Mayor

ATTEST:

_____
City Clerk-Treasurer

VETTE PROPERTIES, LLC, an Alabama limited liability company

BY: _____

Its: Manager

WITNESS:

_____

STATE OF ALABAMA)
COUNTY OF MADISON)

I, the undersigned, Notary Public in and for said County in said State, hereby certify that **Tommy Battle**, whose name as Mayor of **the City of Huntsville**, is signed to the foregoing Contract and who is known to me, acknowledged before me on this day that, being informed of the contents of such instrument, he, as such Mayor and with full authority, executed the same voluntarily for and as the act of said City of Huntsville, on the day the same bears date.

Given under my hand this the _____ day of May, 2014.

_____
NOTARY PUBLIC
[NOTARIAL SEAL] My Commission Expires: _____

STATE OF ALABAMA)
COUNTY OF MADISON)

I, the undersigned, Notary Public in and for said County in said State, hereby certify that _____ _____, whose name as _____ of **Vette Properties, LLC**, an Alabama limited liability company, is signed to the foregoing instrument and who is known to me, acknowledged before me on this day that, being informed of the contents of such instrument, s/he, as such officer and with full authority, executed the same voluntarily for and as the act of said limited liability company.

Given under my hand this the _____ day of May, 2014.

_____
NOTARY PUBLIC
[NOTARIAL SEAL] My Commission Expires: _____

EXHIBIT "A"

Subject Property described as:

LOT 3B OF A RESUBDIVISION OF LOT 3 OF A RESUBDIVISION OF BLOCK 8 OF CUMMINGS RESEARCH PARK WEST PLAT BOOK 11, PAGE 28 AS RECORDED IN DOCUMENT No. 20111128000638500 IN THE OFFICE OF THE JUDGE OF PROBATE OF MADISON COUNTY, ALABAMA, CONTAINING 9.4 ACRES, MORE OR LESS.

EXHIBIT "B"

STATE OF ALABAMA)

MADISON COUNTY)

WARRANTY DEED

KNOW ALL PERSONS BY THESE PRESENTS, that the **City of Huntsville, Alabama,** an Alabama municipal corporation ("Grantor"), for an in consideration of Ten Dollars ($10.00) and other good and valuable consideration , the receipt and legal sufficiency of which are hereby acknowledged, does hereby grant, bargain, sell and convey unto _____, a _____ ("Grantee"), subject to the matters hereinafter set forth, the real property situated in Madison County, Alabama, described on Exhibit A attached hereto and incorporated herein by reference (the "Property").

TO HAVE AND TO HOLD the Property, together with all the rights, tenements, hereditaments and appurtenances thereto belonging or in any way appertaining, unto Grantee, its successors and assigns forever; subject, however, to the Exceptions.

IN WITNESS WHEREOF, Grantor has caused this instrument to be executed on or as of the _____ day of _____, 2014.

CITY OF HUNTSVILLE, ALABAMA,
a municipal corporation in the State of Alabama

By: _____
Tommy Battle, Mayor

ATTEST:

By: _____
Charles E. Hagood
Clerk-Treasurer

STATE OF ALABAMA)
COUNTY OF MADISON)

I, the undersigned, a notary public in and for said County, in said State, hereby certify that Tommy Battle and Charles E. Hagood, whose names as Mayor and City Clerk-Treasurer respectively, of The City of Huntsville, Alabama, a municipal corporation are signed to the foregoing document, and who are known to me, acknowledged before me on this day that, being informed of the contents of the instrument, they, as such officers and with full authority, executed the same for and as the act of said municipal corporation on the day the same bears date.

GIVEN under my hand and official seal this the ____day of _____, 2014.

_____
Notary Public

THIS INSTRUMENT PREPARED BY:
Ashley W. Davis
LogiCore Corporation
360C Quality Circle, Suite C
Huntsville, AL 35806
Telephone: (256) 533-5789

EXHIBIT "C'

Geotechnical Report by GEO Solution, LLC dated March 26th, 2014 – see attached

LOGICORE CORPORATION
C/o CHAMBLESS KING ARCHITECTS
12 WEST JEFFERSON STREET 300
MONTGOMERY, ALABAMA 36104

PROPOSED LOGICORE HEADQUARTERS BUILDINGS
CUMMINGS RESEARCH PARK
VOYAGER WAY AND EXPLORER BOULEVARD
HUNTSVILLE, ALABAMA
PROJECT NO.: 14-0181

MARCH 26, 2014

GEO SOLUTIONS, L.L.C.
Geotechnical Engineering and Materials Testing Services

PREPARED BY:

GEO SOLUTIONS, L.L.C.
7201 OPPORTUNITY BLVD.
HUNTSVILLE, ALABAMA 35810

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GEO-SOLUTIONS, L.L.C.

Geotechnical Engineering and Materials Testing Services

March 26, 2014

Logicore Corporation
C/o Chambless King Architects
12 West Jefferson Street, Suite 300
Montgomery, Alabama 36104

ATTENTION: Mr. John Chambless

SUBJECT: Report of Geotechnical Consulting Services
Proposed Logicore Headquarters
Voyager Way and Explorer Boulevard
Huntsville, Alabama
Project No.: 14-0181

Dear Mr. Chambless:

We are pleased to present the results of our geotechnical exploration for the subject project. The services performed were in general accordance with the scope of services presented in our proposal, G-14-044, dated March 5, 2014. This report explains our understanding of the project, documents our findings and presents our conclusions and geotechnical engineering recommendations.

1.0 INTRODUCTION

This geotechnical exploration was conducted in order to evaluate general subsurface conditions at the site of the proposed Logicore Headquarters Building in Cummings Research Park West. The site is located at the southwest corner of Voyager Way and Explorer Boulevard in Huntsville, Alabama (See Figure 1). The purpose of our services was to evaluate general subsurface conditions and provide design criteria and site preparation recommendations for the proposed construction.

2.0 PROJECT INFORMATION

2.1 Proposed Construction

The proposed structures will consist of two office buildings. One of the buildings will be a one story structure with a footprint of approximately 10,200 square feet. The second building will be a two story structure with a footprint of approximately 14,300 square feet. We understand both buildings will be steel frame structures with slab-on-grade floors, stone and glass veneer. In addition, parking and entrance drive areas associated with the proposed structures are proposed at the

subject site. A conventional shallow foundations system is proposed to support the structures.

2.2 Existing Conditions

The subject site consist of a 9.78 acre parcel and is currently undeveloped. Portions of the site are currently wooded with a mixture of mature trees and underbrush. The remainder of the site has been cleared in the past. Landscaping debris and soil stockpiles are also visible on the site. The site generally drains from east to west. The site is bordered by Explorer Boulevard on the north side, by Voyager Way on the east side, by a undeveloped lot on the south side, and by an existing storm water lake on the west side.

3.0 SCOPE OF SERVICES

The purpose of the services performed was to evaluate general surface conditions across the property. The following geotechnical services were performed.

- Review of available geologic literature including published geologic maps and USDA soil maps.
- Subsurface exploration consisted of the excavation logging and sampling of eight soil test borings within the proposed building limits and four borings in the proposed pavement areas. All building borings were drilled to a depth of 20 feet and included Standard Penetration Test sampling at selected intervals. Pavement borings were drilled to a depth of 5 feet each and included continuous Standard Penetration Test sampling. At the completion of drilling, the borings were left open for 24 hours, groundwater levels recorded and then backfilled with soil auger cuttings.
- Laboratory testing to evaluate moisture content and plasticity characteristics.
- Compilation and analysis of the field and laboratory data.
- Preparation of this geotechnical engineering report. The report will include the following:
    - Existing soil composition and construction characteristics;
    - Recommendations for subgrade preparation, including site stripping, undercutting and treatment of onsite soils;
    - Anticipated excavation conditions including the presence of rock and the suitability of onsite soils for reuse as fill;
    - Pavement design and construction recommendations:
        - Subgrade preparation;
        - Asphalt section (light and heavy duty);
        - Concrete section (heavy duty only).
    - Building foundation recommendations:
        - Subgrade preparation;
        - Foundation design criteria including an allowable bearing capacity, anticipated settlement and seismic site classification;
        - Floor slab design criteria.

- Groundwater elevation and potential for perched water table;
- Special conditions that would impact the cost or construction methods of the project; and
- Other potential geotechnical considerations which could impact design and construction.

4.0 SITE INFORMATION

Review of published geologic maps indicates the Tuscumbia Limestone underlies the site. The Limestone typically consists of a light gray oolitic, very coarse, bioclastic, crinoidal limestone, with light-gray chert nodules and concretions locally abundant. Weathering in this formation typically results in a clayey silt or silty clay soil that ranges from 5 to greater than 20 feet thick. Further, the bedrock surface is often highly irregular.

Sinkholes have been known to form in areas underlain by the Tuscumbia Limestone. Subsurface conditions typically associated with sinkholes were not encountered at the locations drilled. However, it should be noted that several sinkholes have been encountered within a one-quarter mile radius of the site.

5.0 EXPLORATION METHODS

Our exploration consisted of excavating, sampling and logging 12 soil test borings. The boring locations are indicated on Figure 2. Prior to drilling, the locations were established in the field by taping and pacing from known landmarks. Therefore the locations indicated should be considered approximate. The drillers took soil samples using a split-barrel sampler driven by an automatic hammer system according to ASTM D1586. The automatic hammer system typically results in SPT N-values approximately 15 to 20 percent lower than those obtained with a rope and cathead system. An engineer was on site during drilling operations to record and log the results of Standard Penetration Tests (SPT N-values).

6.0 SUBSURFACE CONDITIONS

Subsurface conditions are summarized in the following sections.

6.1 Surface Cover

Surface topsoil was encountered in a few of the borings drilled. Where encountered, the topsoil ranged from 2 to 18 inches thick. It should be noted that buried topsoil was encountered beneath the fill at most of the locations drilled.

6.2 Soil Fill

Fill soils were encountered in most of the borings drilled. The fill soils were typically of poor quality and composition. The fill typically was described as a brown silty CLAY mixed with topsoil and some organics. The fill soils were observed in the borings to depths varying from 1 to 5 feet below the existing ground surface. The fill soil conditions encountered are summarized in the following table.

Table 6.3 Summary of Residuum Conditions (continued)			
Boring No.	Depth to Stiff Residuum (Feet)	Range of SPT N-values (blows/foot)*	Remarks
P-2	3 1/2	6	Overlain by fill and old topsoil
P-3	1	11 to 15	---
P-4	2 1/2	13 to 17	Overlain by fill

NE – Not Encountered

*Depth as measured from the existing ground surface.

6.4 Groundwater

Groundwater levels were checked during drilling operations and 24 hours after drilling operations were completed. At the time of drilling and 24 hours after drilling operations were completed, groundwater was not encountered in any of the borings drilled. Groundwater levels fluctuate due to seasonal rain events and locally heavy precipitation. Future groundwater levels may be encountered at depths not found in our borings. The installation and monitoring of peizometers would be required to further evaluate groundwater conditions at the site.

6.5 Auger Refusal

Auger refusal is the depth at which the borings can be advanced no further through conventional soil auger drilling techniques. Rock core drilling or rotary wash drilling is necessary to drill deeper. At the locations drilled auger refusal was not encountered to the depths explored.

7.0 DISCUSSIONS AND CONCLUSIONS

Poor quality fill soils and underlying buried topsoil encountered at most of the locations drilled will require undercutting especially in building pads. Proposed elevations and grading plans were not available at this time. Once grading plans are available we request the opportunity to review them. Additional recommendations may be required based on the proposed grades. Based on site observations, we have assumed cuts and fills to grade will be minimal, generally on the order of 2 feet or less. Some deeper cuts to grade may be required in the vicinity of boring P-1 due to existing fill soils in this area.

Based on the soil conditions encountered and our understanding of the proposed buildings, it is our opinion the poor quality fill soils underlain by topsoil is present within the building pads will not support the long loads of the structures. Accordingly, we recommend the fill soils and underlying topsoil be undercut to stiff residual soils. The depth to stiff residual soils varied between 1½ and 6 feet. Deeper topsoil was observed particularly in the vicinity of boring B-4 and B-5. Deeper undercutting may be encountered in this area to reach stiff residual soils.

In the proposed pavement areas, after stripping of topsoil, existing fill soils will be exposed over most of the site. The quality of the existing fill soils varies significantly. In general, if the fill soils are free of organics, topsoil, and can be stabilized, they may be left in place. However, where fill soils are unstable, or mixed with topsoil and organics, we recommend undercutting to stiff residual soils. The stiff residual soils were generally encountered at an average depth of 2½ feet below the existing ground surface in pavement areas. In areas where new fill is to be placed, it may be possible to leave the existing fill inplace. This can be discussed further after a grading plan has been prepared.

Soil stockpiles and landscaping debris was observed on portions of the site. Based on our observations the soil stockpiles generally consisted of poor quality fill mixed with topsoil and organics. These soils should not be utilized within the proposed pavement or building areas. The landscaping debris observed onsite should be disposed of properly.

The site is currently undeveloped. However, some grading has occurred on the site. Extensive development has also occurred around the site including the construction of a retention pond immediately to the west of the site. In addition varying amounts of fill and stockpiles of soil were observed on the site. Evidence of borrow activity on the site was not encountered in our borings. However, based on previous experience with similar sites, it has been our experience that on previously graded sites the risk is higher of encountering unforeseen obstacles such as borrow pits, buried construction debris, etc.

8.0 RECOMMENDATIONS

8.1 Site Preparation-Building Pad Area

Site preparation in the building pad area should include the removal of all topsoil, vegetation, root systems and any existing vegetation. An average topsoil stripping depth of 6 inches is anticipated across building pad areas. Deeper grubbing of tree root systems will be required in wooded areas.

After topsoil stripping, fill soils will be exposed across most of the site. Fill soils are generally of poor quality and mixed with significant amounts of topsoil and organics. Accordingly, these fill soils should be undercut to stiff residual soils. Depth to stiff residual soils will vary from 1½ to 6 feet. The limits of the proposed buildings, attached canopies, or other associated structural areas should be staked in the field prior to undercutting activities. The limits of undercutting should extend a minimum of 10 feet beyond the proposed building limits and any associated structural areas. As mentioned in the "Discussions and Conclusions" section of this report, deeper undercutting may be required in the vicinity of borings B-4 and B-5. The undercutting activities should be monitored by the geotechnical engineer of record or his representative.

After undercutting, the exposed subgrade should be reviewed by the geotechnical engineer-of-record, or his representative. After the exposed subgrade has been reviewed and approved the resulting excavation may be backfilled with select soil fill. The select soil fill should be selected and placed according to the proceeding section titled "Fill Placement".

In areas where residual soil is exposed at finish subgrade, we recommend it be scarified, moisture conditioned and compacted in place. The subgrade should then be proofrolled. Areas which pump and/or rut should be undercut to stiff soil.

8.2 Site Preparation – Access Roadways and Parking Lots

Site preparation within the proposed pavement areas should include the removal of all topsoil, vegetation, root systems, and any existing vegetation.

After stripping of topsoil and cuts to grade, fill soils will likely be exposed across most of the pavement areas. Provided the fill soils are relatively free of organics and topsoil, they may be scarified moisture conditioned and compacted in place. Fills mixed with topsoil and organics should be undercut to stiff residual soils or such that a minimum of 2 feet of select soil may be placed to achieve soil subgrade. After cuts to grade and prior to placement of any fill the exposed subgrade should be reviewed according to the proceeding section titled "Subgrade Review".

In areas where residual soil is exposed at finish subgrade, we recommend it be scarified, moisture conditioned and compacted in place. The subgrade should then be proofrolled. Areas which pump and/or rut should be undercut to stiff soil.

Once a grading plan has been prepared we request the opportunity to review it. At this time we anticipate there will be some undercutting required in pavement areas. We recommend an allowance be provided in the project budget for undercutting and replacement of poor quality fill soils.

8.3 Subgrade Review

Areas that are at final soil subgrade, or that are to receive structural fill, should be evaluated by the geotechnical Engineer-of-record or his representative. Such an evaluation typically consists of proofrolling with a fully loaded tandem axel dump truck. Multiple passes are recommended. Areas which pump and/or rut will require undercutting or some other form of mitigation. Specific recommendations will be provided by the geotechnical engineer-of-record during earthwork activities.

8.4 Site Degradation During Construction

The upper soils are fine-grained and sensitive to moisture variations. They will quickly break down if wet and subjected to heavy construction equipment traffic, such as grading operations during inclement weather. Thus, earth-moving equipment should not be allowed back on site until it has adequately dried.

If subgrade areas become disturbed, additional effort on the contractor's part will be required to repair soft, wet soils. This additional effort could include the removal of disturbed upper soils to facilitate grading activities. Alternatively, if the soil moisture content is not too high and weather conditions are suitable, wet soils could be disked, dried and compacted in place.

8.5 Excavations

A grading plan was not available at the time of this evaluation. However, we have assumed maximum cuts associated with site grading (undercutting) will be on the order of 5 to 6 feet. Based on the conditions encountered at the locations

drilled, it is our opinion cuts to these depths are possible using a combination of dozers and scrapers.

Excavations deeper than 4 feet should either be braced or laid back in accordance with OSHA requirements. We anticipate a 1(H):1(V) temporary construction slope should be adequate. However, the final slope configuration should be selected by the geotechnical engineer-of-record based on his observations in the field.

8.6 Fill Placement

We recommend that structural fill be free of organic matter and debris, rocks greater than 3 inches and composed of soils with a Plasticity Index of less than 35 percent and a standard Proctor maximum dry density of greater than 95 pounds per cubic foot. Based on our exploration to date, it appears the on-site residual soils will be suitable for use as select fill. The topsoil and any undercut old fill should be used in landscape berms or other non-building or pavement areas. If fill has to be imported to the site we request a 72 hour notice prior to importing. This notice will allow us to obtain samples of the fill and perform the necessary laboratory tests to confirm the import fill meets the project requirements.

The geotechnical engineer-of-record or his representative should observe fill placement and compaction to ensure that the fill is being placed, spread and compacted in a uniform and consistent manner. Soil fill should be placed in 8-inch loose lifts and compacted to the following percentages of ASTM D-698, standard Proctor.

BUILDING PAD
98% ASTM D698
PARKING AREAS
95% ASTM D698
ACCESS ROADWAY
100% ASTM D698 – Upper 6 inches 95% ASTM D698 – Below 6 inches

Fill soils should be moisture conditioned as necessary, to achieve a moisture content from -1 to +3 percent of the standard Proctor Optimum at the time of compaction. The contractor should acknowledge that both compaction and soil moisture content requirements must be met.

Field density tests should be performed on the fill to verify the contractor is achieving the recommended percent compaction and moisture content. The following table presents commonly accepted testing frequencies.

Location	Test Frequency	Retest Frequency
Building Pads	1 test per lift per 2,500 ft² (minimum of 4 tests per lift)	1 retest per failing test
Pavement Areas	1 test per lift per 5,000 ft²	1 retest per failing test
Trench Backfill	1 test per lift per 250 ft of trench	1 retest per failing test

8.7 Fill Slopes

While a final grading plan was not available, we have assumed fill slopes up to 5 feet may be utilized at the site. Fill slopes constructed of properly compacted fill soil, and up to the anticipated height may be built at an inclination of 2.5(H):1(V), of flatter. Compaction of the fill should extend out to the slope face. One way to achieve this is to over build the slope and then cut it back to the desired configuration.

Topsoil may be used on the surface of the slopes. However, slopes should be planted as soon as practicable after grading. Water should not be allowed to pond along the top or toe of slopes. Slopes should be keyed into undisturbed residual soils. Keys should be a minimum of 2 feet deep and one equipment width wide. In areas where the existing slopes are at a gradient greater than 4(H):1(V), benching into the existing ground surface will be required. Benches should have a maximum height of 2 feet.

8.8 Foundations

Based on our understanding of the proposed construction and anticipated foundation loads, and provided the site is prepared in accordance with the recommendations presented in this report, it is our opinion the proposed structures may be supported on a system of shallow conventional foundations.

Structural plans were not available for review, however based on our discussions with the architect we have assumed the following:

- The building will be supported on a combination of isolated columns and continuous perimeter foundations;
- Exterior wall loads will be on the order of 5 to 7 kips per lineal feet;
- Column loads will be less than 200 kips; and
- The structures can withstand normal settlement of 1 inch total and ½ inch differential between adjacent columns.

Once structural plans and loads are available we request the opportunity to review them.

Interior and exterior foundations should bear a minimum of 24 inches below the proposed lowest outside adjacent subgrade elevations. Foundations bearing on stiff residual soil or properly compacted fill may be designed for a maximum allowable bearing pressure of 3,000 pounds per square foot. Foundations should be designed assuming a total settlement of 1 inch and a differential settlement of ½ inch. Based on our experience on adjacent sites with similar soil conditions, a site classification of C may be used for seismic design purposes.

The following should be considered an integral part of the spread foundation design recommendations.

- Minimum dimensions of 24 inches for isolated column footings and 18 inches for rectangular or continuous foundations should be included in the design. Interior and exterior foundations should have embedment dept of 18 to 24 inches, respectively.

- All foundation excavations should be evaluated by the geotechnical engineer-of-record or his representative prior to concrete placement, to confirm that the bearing surface is in compliance with the anticipated bearing soils. Any material disturbed during excavation should be removed prior to concrete placement.
- Any over-excavated foundation excavations may be backfilled with lean concrete to the design bearing level. Lean concrete should have a minimum unconfined compressive strength of 2,000 psi.
- Foundation concrete should be placed the same day the excavation is made. If this is not possible, the foundation excavation should be adequately protected. One acceptable method of protection is to place a 2 to 3 inch thick layer of lean concrete in the bottom of the foundation excavation.
- All roof drains should be directed away from the foundations and positive drainage should be established and maintained to reduce the amount of surface water entering the near surface soils.
- Site grading plans should be prepared, which provide for positive drainage away from the structure, and the contractor should be directed to conduct grading operations in such a manner as to provide positive drainage during the construction period. Positive drainage is typically described as a gradient of at least 2 percent for a distance of 10 feet away from the structure.

8.9 Floor Slabs

We believe floor slabs for the proposed structure can be built on-grade achieving support from properly compacted fill. In order to provide a capillary break and more uniform bearing, slabs should be underlain by a minimum of 4 inches of compacted open-graded granular material. A polyethylene vapor barrier, (6 mil minimum) should be installed if moisture sensitive floor coverings are proposed.

On most projects, there is a significant time lag between initial grading and the time when the contractor is ready to place concrete for the slab-on-grade. The geotechnical engineer-of-record or his representative should evaluate floor subgrades prior to construction of concrete floors. This may include proofrolling with a loaded dump truck. We suggest that provisions be included in the project specifications for the contractor to restore subgrade soils to an acceptable condition prior to the construction of floor slabs. Such restoration may include moisture conditioning of the surficial soils and recompaction to the project requirements.

8.10 Groundwater/Drainage

It is our opinion groundwater will not have an impact on mass grading. While some groundwater may be encountered in deeper utility excavations, based on our experience on sites with similar conditions, we anticipate such excavations can be temporarily dewatered using open sumps and pumps.

Surface drainage should also be controlled during earthwork and construction activities. Positive drainage should be established around the construction activities to allow water to drain away from the improvement areas.

At the approach of inclement weather, the subgrade should be sloped to drain and sealed to the best extent possible. Areas that "bird bath" should be drained or pumped dry. Heavy equipment should not be allowed back on the pad area until it has adequately dried.

8.11 Pavement Considerations

Based on our experience with similar developments, the following pavement sections are presented for consideration.

Light Duty Pavement
- 1" Bituminous Concrete Wearing
- 2" Bituminous Concrete Binder
- 6" Aggregate Base (ALDOT 825, Type B)

Heavy Duty Pavement and Main Access Drives – Option 1
- 1" Bituminous Concrete Wearing
- 3" Bituminous Concrete Binder
- 8" Aggregate Base (ALDOT 825, Type B)

Heavy Duty Pavement (Truck Docks/Dumpster Pad Areas) – Option 2
- 6" Portland Cement Concrete Pavement*
- 4" Aggregate Base (ALDOT 825, Type B)

*Concrete should have a 28 day compressive strength of at least 4,000 lbs/in^2

The American Concrete Institute (ACI) indicates that reinforcing is typically not necessary in concrete pavements if a liberal joint pattern is used in design and proper workmanship conditions. ACI recommends joint spacing not exceed 30 times the concrete thickness. Therefore, a joint spacing no greater than 15 feet is recommended for the 6 inch thick concrete pavement section.

8.12 Follow-up Services

Our services should not end with submission of this report. GEO Solutions should stay involved on the project throughout design and construction to maintain continuity and to verify our recommendations are properly interpreted and implemented. To achieve this, we should review project plans and specifications with designers to ensure that our recommendations are fully incorporated. We also should be retained to monitor and test site preparation during construction.

Site preparation will be a critical aspect of this project. Our familiarity with the site and with subgrade recommendations makes us a valuable part of your construction quality assurance team. In addition, a qualified engineering technician and/or engineer should observe and test all structural fill, any structural concrete, pavements, review foundations, and inspect structural steel. GEO Solutions strongly recommends such services be provided under direct

contract with the client (vice under direct contract with the contractor) to prevent any conflict of interest.

9.0 LIMITATIONS

This report has been prepared for the exclusive use of Chambless King Architects, and their designers for specific application to the project previously discussed. If other parties wish to rely on this report for other than informational purposes, they may do so by executing our standard terms and conditions upon written request.

Our recommendations have been prepared using generally accepted standards of geotechnical engineering practice in the State of Alabama. No other warranty is expressed or implied. This company is not responsible for the conclusions, opinions or recommendations of others based on this data.

Our recommendations are based on the design information furnished to us, the data obtained from the previously described subsurface exploration and our past experience. They do not reflect variations in the subsurface conditions, which are likely to exist between our borings and in unexplored portions of the site due to the inherent variability of the subsurface conditions in this geologic region as well as previous site usage. If such variations are found during construction, it will be necessary to re-evaluate our conclusions and recommendations based upon onsite observations of the conditions.

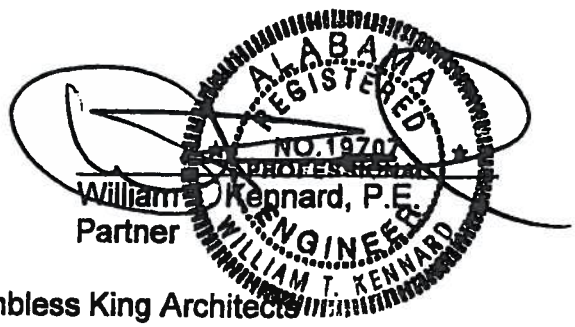
10.0 CLOSURE

We appreciate the opportunity to be of service to you. If you have any questions, please call.

Respectfully submitted,

GEO SOLUTIONS, L.L.C.

David Martin, E.I.
Project Manager



William T. Kennard, P.E.
Partner

Distribution: (4) Mr. John Chambless, Chambless King Architects

LOGICORE CORPORATION
VOYAGER WAY
HUNTSVILLE, ALABAMA

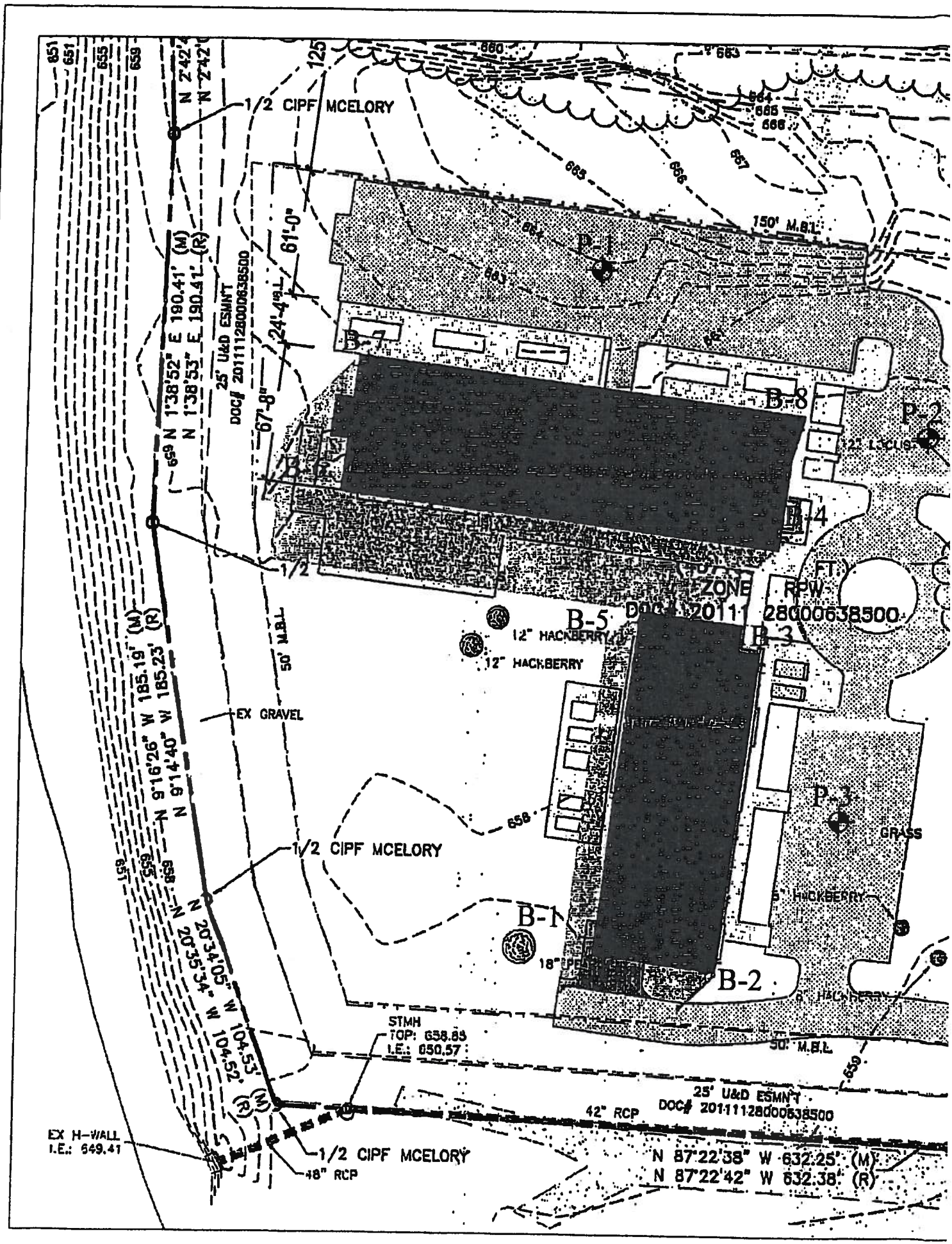
FIGURE 1

SITE LOCATION PLAN

GEO SOLUTIONS, LLC
Geotechnical Engineering and Materials Testing Services

7201 Opportunity Boulevard
Huntsville, Alabama 35810
PH (256)837-6708 FX (256)837-6702

SCALE:	1"=2500'
PROJ:	14-0181
DATE:	3/24/2014
# 1 OF 2	



1/2 CIPF MCELORY
N 2°42'4
N 2°42'0
N 1°38'52" E 190.41' (M)
N 1°38'53" E 190.41' (R)
25' U&D ESMN'T
DOC# 20111128000638500
61'-0"
24'-4"
67'-8"
150' M.B.L.
P-1
P-2
P-3
B-1
B-2
B-3
B-4
B-5
B-7
B-8
12" HACKBERRY
12" HACKBERRY
ZONE
RPW
DOC# 20111128000638500
50' M.B.L.
EX GRAVEL
N 9°16'26" W 185.19' (M)
N 9°14'40" W 185.23' (R)
1/2 CIPF MCELORY
N 20°34'05" W 104.53' (M)
N 20°35'34" W 104.52' (R)
GRASS
STMH
TOP: 658.85
I.E.: 650.57
50' M.B.L.
25' U&D ESMN'T
DOC# 20111128000638500
42" RCP
EX H-WALL
I.E.: 649.41
1/2 CIPF MCELORY
48" RCP
N 87°22'38" W 632.25' (M)
N 87°22'42" W 632.38' (R)

BORING NO: **B-1**

TEST BORING RECORD

PROJECT: Logicore - Cumming Research Park West		JOB NO: 14-0181
PROJECT LOCATION: Huntsville, Alabama		
ELEVATION:	BORING DATE: 3/14/2014	BORING BACKFILLED: 3/14/2014
DRILLING METHOD: H.S.A.	RIG TYPE: CME 75	HAMMER: Automatic
GROUNDWATER:	BORING DIAMETER (IN): 3.25	SHEET 1 OF 1

Remarks:

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS / 6"	PP (TSF)
		0	Brown, moist, silty CLAY mixed with topsoil						
			FILL						
			Old Topsoil						
			Red, moist, stiff, silty CLAY					2 - 8 - 8	5
			RESIDUUM					6 - 6 - 8	1.5
		5						4 - 4 - 8	1.75
			firm					3 - 3 - 4	1.25
		10	stiff with chert					4 - 5 - 6	2.75
		15	red and yellow					5 - 5 - 6	3.5
		20	very stiff					6 - 7 - 15	1.5
			Boring terminated at 20 feet.						
		25							
		30							
		35							

BORING RECORD BORINGS.GPJ GEO SOLUTIONS.GDT 3/26/14

TEST BORING RECORD

BORING NO: **B-2**

PROJECT: Logicore - Cumming Research Park West		JOB NO: 14-0181
PROJECT LOCATION: Huntsville, Alabama		
ELEVATION:	BORING DATE: 3/14/2014	BORING BACKFILLED: 3/14/2014
DRILLING METHOD: H.S.A.	RIG TYPE: CME 75	HAMMER: Automatic
GROUNDWATER:	BORING DIAMETER (IN): 3.25	SHEET 1 OF 1

Remarks:

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS / 6"	PP (TSF)
		0	Topsoil: 18 inches						
			Red, moist, stiff, silty CLAY RESIDUUM					3 - 6 - 6	4
								5 - 5 - 6	2.25
		5						3 - 4 - 5	2
			very stiff					6 - 8 - 9	3
		10	with chert and manganese dioxide nodules					5 - 7 - 9	3.5
		15	stiff					5 - 6 - 8	3.5
			yellow and red					4 - 5 - 6	3.5
		20	Boring terminated at 20 feet.						
		25							
		30							
		35							

BORING RECORD BORINGS.GPJ GEO SOLUTIONS.GDT 3/26/14

TEST BORING RECORD

BORING NO: **B-3**

PROJECT: Logicore - Cumming Research Park West		JOB NO: 14-0181
PROJECT LOCATION: Huntsville, Alabama		
ELEVATION:	BORING DATE: 3/14/2014	BORING BACKFILLED: 3/14/2014
DRILLING METHOD: H.S.A.	RIG TYPE: CME 75	HAMMER: Automatic
GROUNDWATER:	BORING DIAMETER (IN): 3.25	SHEET 1 OF 1

Remarks:

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS / 6"	PP (TSF)
		0	Brown , moist, silty CLAY mixed with topsoil FILL					2 - 3 - 5	1.5
			Old Topsoil					2 - 4 - 4	1.75
		5	Red and brown, moist, stiff, silty CLAY RESIDUUM					2 - 3 - 5	1.5
			Red					4 - 4 - 6	2.25
		10						3 - 4 - 6	2
		15	very stiff, with chert, and manganese dioxide nodules					3 - 7 - 10	1.5
		20	Boring terminated at 20 feet.					5 - 9 - 12	2
		25							
		30							
		35							

BORING RECORD BORINGS.GPJ GEO SOLUTIONS.GDT 3/26/14

BORING NO: **B-4**

TEST BORING RECORD

PROJECT: Logicore - Cumming Research Park West		JOB NO: 14-0181
PROJECT LOCATION: Huntsville, Alabama		
ELEVATION:	BORING DATE: 3/14/2014	BORING BACKFILLED: 3/14/2014
DRILLING METHOD: H.S.A.	RIG TYPE: CME 75	HAMMER: Automatic
GROUNDWATER:	BORING DIAMETER (IN): 3.25	SHEET 1 OF 1

Remarks:

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS / 6"	PP (TSF)
		0	Brown, moist, silty CLAY mixed with topsoil FILL					2 - 2 - 3	1
			Old Topsoil					3 - 4 - 4	1.25
		5	Red and brown, moist, stiff, silty CLAY RESIDUUM					2 - 2 - 3	1.25
								4 - 5 - 6	1.5
		10						4 - 5 - 6	1.75
			very stiff with manganese dioxide nodules					6 - 8 - 8	2.25
		15							
			with chert fragments and manganese dioxide nodules					6 - 12 - 12	4.5
		20	Boring terminated at 20 feet.						
		25							
		30							
		35							

BORING RECORD BORINGS.GPJ GEO SOLUTIONS.GDT 3/26/14

BORING NO: **B-5**

TEST BORING RECORD

PROJECT: Logicore - Cumming Research Park West		JOB NO: 14-0181
PROJECT LOCATION: Huntsville, Alabama		
ELEVATION:	BORING DATE: 3/14/2014	BORING BACKFILLED: 3/14/2014
DRILLING METHOD: H.S.A.	RIG TYPE: CME 75	HAMMER: Automatic
GROUNDWATER:	BORING DIAMETER (IN): 3.25	SHEET 1 OF 1

Remarks:

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS / 6"	PP (TSF)
		0	Brown, moist, silty CLAY mixed with topsoil FILL					2 - 3 - 4	2
								4 - 4 - 4	1.5
			Old Topsoil					2 - 2 - 3	1
		5	Reddish brown, moist, stiff, silty CLAY RESIDUUM					3 - 4 - 5	1.5
			red and brown					4 - 5 - 7	1.5
		10							
			with manganese dioxide nodules					4 - 6 - 8	2
		15							
			red and yellow, very stiff with chert					4 - 9 - 10	2
		20	Boring terminated at 20 feet.						
		25							
		30							
		35							

BORING RECORD BORINGS.GPJ GEO SOLUTIONS.GDT 3/26/14

BORING NO: **B-6**

TEST BORING RECORD

PROJECT: Logicore - Cumming Research Park West		JOB NO: 14-0181
PROJECT LOCATION: Huntsville, Alabama		
ELEVATION:	BORING DATE: 3/14/2014	BORING BACKFILLED: 3/14/2014
DRILLING METHOD: H.S.A.	RIG TYPE: CME 75	HAMMER: Automatic
GROUNDWATER:	BORING DIAMETER (IN): 3.25	SHEET 1 OF 1

Remarks:

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS / 6"	PP (TSF)
		0	Brown, moist, silty CLAY mixed with topsoil FILL					5 - 12 - 11	5
								10 - 10 - 10	1.5
			Old Topsoil					3 - 3 - 3	1.25
		5	Red, moist, firm, silty CLAY RESIDUUM					3 - 3 - 4	1.25
		10	stiff, with chert fragments					3 - 5 - 6	1.5
		15	red and brown, very stiff, with manganes dioxide nodules					6 - 7 - 9	1.5
			with abundant chert fragments					5 - 7 - 9	4
		20	Boring terminated at 20 feet.						
		25							
		30							
		35							

BORING RECORD BORINGS.GPJ GEO SOLUTIONS.GDT 3/26/14

BORING NO: **B-7**

TEST BORING RECORD

PROJECT: Logicore - Cumming Research Park West		JOB NO: 14-0181
PROJECT LOCATION: Huntsville, Alabama		
ELEVATION:	BORING DATE: 3/14/2014	BORING BACKFILLED: 3/14/2014
DRILLING METHOD: H.S.A.	RIG TYPE: CME 75	HAMMER: Automatic
GROUNDWATER:	BORING DIAMETER (IN): 3.25	SHEET 1 OF 1

Remarks:

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS / 6"	PP (TSF)
		0	Brown and red, moist, silty CLAY mixed with organics and topsoil FILL					7 - 9 - 12	5
								10 - 12 - 14	5
		5	Old Topsoil					4 - 4 - 5	2.25
			Brownish red, moist, firm, silty CLAY with manganese dioxide nodules RESIDUUM					2 - 2 - 4	2.5
		10	stiff					3 - 3 - 5	2
		15	very stiff with chert fragments					6 - 9 - 12	2.5
		20	Boring terminated at 20 feet.					3 - 8 - 10	4
		25							
		30							
		35							

BORING RECORD BORINGS.GPJ GEO SOLUTIONS.GDT 3/26/14

BORING NO: **B-8**

TEST BORING RECORD

PROJECT: Logicore - Cumming Research Park West		JOB NO: 14-0181
PROJECT LOCATION: Huntsville, Alabama		
ELEVATION:	BORING DATE: 3/14/2014	BORING BACKFILLED: 3/14/2014
DRILLING METHOD: H.S.A.	RIG TYPE: CME 75	HAMMER: Automatic
GROUNDWATER:	BORING DIAMETER (IN): 3.25	SHEET 1 OF 1

Remarks:

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS / 6"	PP (TSF)
		0	Brown and tan, damp, silty CLAY mixed with topsoil					7 - 11 - 10	4.5
			FILL					15 - 15 - 15	4.5
		5	Old topsoil					5 - 5 - 6	1.25
			Red, moist, stiff, silty CLAY with manganese dioxide nodules					3 - 3 - 5	1
			RESIDUUM						
		10	firm					2 - 3 - 4	0.75
		15	Tan and red, moist, very stiff CLAY					6 - 9 - 12	4.5
			with chert fragments					4 - 6 - 9	4
		20	Boring terminated at 20 feet.						
		25							
		30							
		35							

BORING RECORD BORINGS.GPJ GEO SOLUTIONS.GDT 3/26/14

BORING NO: **P-1**

TEST BORING RECORD

PROJECT: Logicore - Cumming Research Park West		JOB NO: 14-0181
PROJECT LOCATION: Huntsville, Alabama		
ELEVATION:	BORING DATE: 3/14/2014	BORING BACKFILLED: 3/14/2014
DRILLING METHOD: H.S.A.	RIG TYPE: CME 75	HAMMER: Automatic
GROUNDWATER:	BORING DIAMETER (IN): 3.25	SHEET 1 OF 1

Remarks:

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS / 6"	PP (TSF)
		0	Topsoil: 2 inches						
			Brown and red, damp, silty CLAY with chert FILL				●	9 - 7 - 8	4
							●	7 - 7 - 8	3.5
			moist with manganese dioxide nodules				●	4 - 4 - 8	2.5
		5	Boring terminated at 5 feet.						
		10							
		15							
		20							
		25							
		30							
		35							

BORING RECORD BORINGS.GPJ GEO SOLUTIONS.GDT 3/26/14

BORING NO: **P-2**

TEST BORING RECORD

PROJECT: Logicore - Cumming Research Park West		JOB NO: 14-0181
PROJECT LOCATION: Huntsville, Alabama		
ELEVATION:	BORING DATE: 3/14/2014	BORING BACKFILLED: 3/14/2014
DRILLING METHOD: H.S.A.	RIG TYPE: CME 75	HAMMER: Automatic
GROUNDWATER:	BORING DIAMETER (IN): 3.25	SHEET 1 OF 1

Remarks:

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS / 6"	PP (TSF)
		0	Brown and tan, moist, silty CLAY FILL					2 - 4 - 4	1
			Old topsoil					4 - 4 - 5	1
		5	Red, moist, firm, silty CLAY with manganese dioxide nodules RESIDUUM					3 - 3 - 3	0.5
			Boring terminated at 5 feet.						
		10							
		15							
		20							
		25							
		30							
		35							

BORING RECORD BORINGS.GPJ GEO SOLUTIONS.GDT 3/26/14

BORING NO: **P-3**

TEST BORING RECORD

PROJECT: Logicore - Cumming Research Park West		JOB NO: 14-0181
PROJECT LOCATION: Huntsville, Alabama		
ELEVATION:	BORING DATE: 3/14/2014	BORING BACKFILLED: 3/14/2014
DRILLING METHOD: H.S.A.	RIG TYPE: CME 75	HAMMER: Automatic
GROUNDWATER:	BORING DIAMETER (IN): 3.25	SHEET 1 OF 1

Remarks:

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS /6"	PP (TSF)
		0	Topsoil: 12 inches						
			Red, moist, stiff, silty CLAY with manganese dioxide nodules RESIDUUM					4 - 5 - 6	1
								6 - 7 - 8	1.5
								7 - 6 - 7	1
		5	Boring terminated at 5 feet.						
		10							
		15							
		20							
		25							
		30							
		35							

BORING RECORD BORINGS.GPJ GEO SOLUTIONS.GDT 3/26/14

TEST BORING RECORD

BORING NO: **P-4**

PROJECT: Logicore - Cumming Research Park West		JOB NO: 14-0181
PROJECT LOCATION: Huntsville, Alabama		
ELEVATION:	BORING DATE: 3/14/2014	BORING BACKFILLED: 3/14/2014
DRILLING METHOD: H.S.A.	RIG TYPE: CME 75	HAMMER: Automatic
GROUNDWATER:	BORING DIAMETER (IN): 3.25	SHEET 1 OF 1

Remarks:

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS / 6"	PP (TSF)
		0	Brown and tan, damp, silty CLAY with organics FILL					4 - 8 - 9	4
			Red, moist, stiff to very stiff, silty CLAY with manganese dioxide nodules RESIDUUM					9 - 8 - 9	2.5
		5	Boring terminated at 5 feet.					8 - 7 - 6	3
		10							
		15							
		20							
		25							
		30							
		35							

BORING RECORD BORINGS.GPJ GEO SOLUTIONS.GDT 3/26/14

ATTERBERG LIMITS, ASTM D 421/ASTM D 4318 (Method A)

Project: Logicore - Cummins Research West Job No.: 14-0181 Date: 3/21/14

LIQUID LIMIT

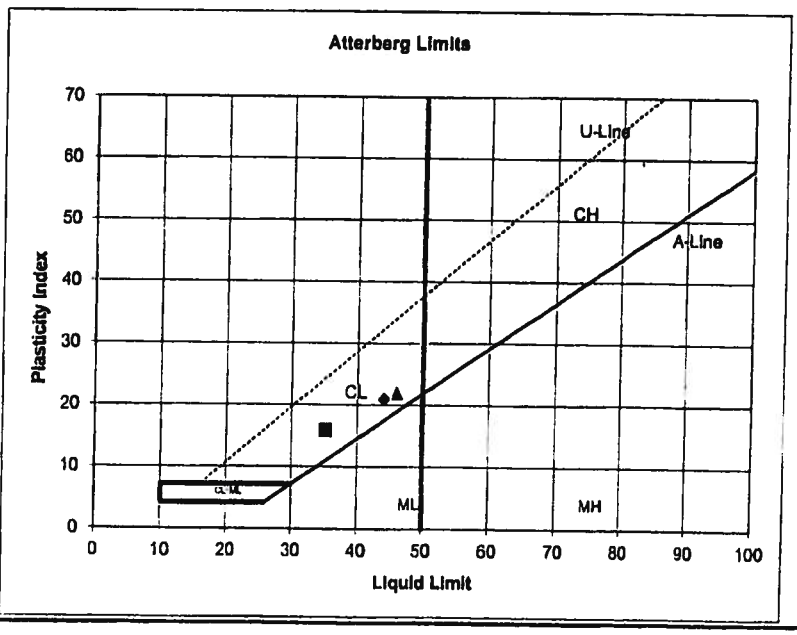
Sample Location		Tare No.	Tare Weight (grams)	Weight of Wet Soil & Tare (grams)	Weight of Dry Soil & Tare (grams)	Number of Blows	Moisture Content %	Liquid Limit
Boring No.	Depth							
B-1	3.5-5	2J	21.6	39.99	34.31	24	44.7	44
B-1	3.5-5	X	21.49	41.02	35.02	25	44.3	44
B-3	3.5-5	L	21.56	40.03	35.32	27	34.2	35
B-3	3.5-5	O	21.52	38.49	34.13	25	34.6	35
B-7	6-7.5	2F	21.43	41.16	34.93	24	46.1	46
B-7	6-7.5	1B	21.7	39.28	33.69	24	46.6	46

PLASTIC LIMIT

Sample Location		Tare No.	Tare Weight (grams)	Weight of Wet Soil & Tare (grams)	Weight of Dry Soil & Tare (grams)	Moisture Content %	Plastic Limit
Boring No.	Depth						
B-1	3.5-5	M	21.55	30.09	28.48	23.2	23
B-1	3.5-5	H	21.42	28.93	27.52	23.1	23
B-3	3.5-5	5A	26.27	34.05	32.79	19.3	19
B-3	3.5-5	1G	21.56	28.91	27.73	19.1	19
B-7	6-7.5	5B	25.99	32.31	31.10	23.7	24
B-7	6-7.5	P	21.45	28.25	26.94	23.9	24

ATTERBERG LIMITS

Sample Location		Liquid Limit	Plastic Limit	Plasticity Index	Symbol
Boring No.	Depth				
B-1	3.5-5	44	23	21	◆
B-3	3.5-5	35	19	16	■
B-7	6-7.5	46	24	22	▲



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Moisture Content, ASTM D 2216

Project: Logicore - Cummins Research Park West Job No. 14-0181 Date: 3/21/14
Reviewed:

Sample Location		Tare Weight	Wet Weight & Tare	Dry Weight & Tare	Weight of Wet Soil	Weight of Dry Soil	Moisture Content
Boring No.	Depth	grams	grams	grams	grams	grams	%
B-1	1.5-3	6.9	354.9	287.1	348.0	280.2	24.2
	3.5-5	7.0	314.1	249.6	307.1	242.6	26.6
	6-7.5	8.4	497.7	378.7	489.3	370.3	32.1
	9-10.5	8.4	489.7	367.3	481.3	358.9	34.1
	14-15.5	6.9	456.6	325.2	449.7	318.3	41.3
	18.5-20	6.8	381.4	273.4	374.6	266.6	40.5
B-3	3.5-5	7.0	408.6	326.1	401.6	319.1	25.9
	6-7.5	6.9	338.4	226.4	331.5	219.5	51.0
	9-10.5	6.9	460.1	353.9	453.2	347.0	30.6
	14-15.5	8.4	386.8	298.7	378.4	290.3	30.3
	18.5-20	7.0	439.1	336.6	432.1	329.6	31.1
B-7	1.5-3	7.0	495.4	420.8	488.4	413.8	18.0
	3.5-5	7.0	362.0	294.8	355.0	287.8	23.3
	6-7.5	7.0	386.6	305.0	379.6	298.0	27.4
	9-10.5	7.0	266.4	206.4	259.4	199.4	30.1
	14-15.5	7.1	392.0	295.1	384.9	288.0	33.6
	18.5-20	7.2	403.8	300.1	396.6	292.9	35.4

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