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# SUBSURFACE INVESTIGATION

**FOR** 

**HOME 2 HOTEL OLD FANNIN ROAD** FLOWOOD, MISSISSIPPI

**OCTOBER 2013** 

 $\mathbf{BY}$ 

GEOTECHNICAL ASSOCIATES NETWORK, LLC 110 BEECHTREE ROAD VICKSBURG, MISSISSIPPI 39183-7464





# SUBSURFACE INVESTIGATION FOR HOME 2 HOTEL OLD FANNIN ROAD FLOWOOD, MISSISSIPPI

### PURPOSE

The purposes of this subsurface investigation are as follows:

- a. To determine the general characteristics of the subsurface soils within the area of the proposed construction;
- b. To determine by field and laboratory testing, the physical characteristics of the foundation soils and the soil samples collected; and
- c. To make recommendations for foundation construction at this particular location.

#### FIELD INVESTIGATION

Six subsurface borings were made for the proposed construction of Home 2 Hotel, Old Fannin Road, Flowood, Mississippi. were advanced with a truck-mounted, powered, continuous-flight Auger cuttings of the soil medium were collected at changes in strata, and at intervals not exceeding five feet in depth. All samples taken were stored in sealed containers for later classification and testing. In addition, standard penetration resistance values (see ASTM D-1586-84) were determined and recorded on the boring logs for the various materials encountered. The Standard Penetration Test (SPT) gives an indication of the consistency and the in-place shear strength of cohesive soils and the relative density of cohesionless soils by recording the number of blows required, by a 140-pound hammer falling 30 inches, to drive a 2-inch O.D. splitspoon sampler one foot. Any static water levels noted in the borings while drilling or after completion of drilling and sampling operations at the site were measured and recorded on the boring logs.

#### LABORATORY INVESTIGATION

Laboratory testing of selected soil samples included visual classification, Atterberg limits on cohesive soils with determination of the plasticity index (PI), grain size analyses, and in situ moisture contents. Atterberg limits (ASTM D-4318-93) were run on the clayey soils in an effort to estimate the susceptibility of these soils to shrink and swell with changes in moisture content. Liquid and plastic limits were run on samples selected from some of the various materials encountered. The liquid limit (LL) is the moisture content at which a soil changes from a plastic state to a viscous liquid state. The plastic limit is the moisture content at which a soil changes from a solid state to a plastic state. The plasticity index is the numerical difference between the liquid limit and the plastic limit and is indicative of the relative activity or sensitivity of a cohesive soil.

Grain size analyses (ASTM D-422-63) were conducted on representative samples of the various soils encountered to determine the particle size distribution of materials comprising the strata. Results of these tests were utilized in classifying the soils by the Unified Soil Classification System and in estimating the California Bearing Ratio (CBR) of the soils. Classifications for each of the soil samples are shown on the boring logs that are attached to this report.

To aid in the general interpretation of the soil conditions at the site, in situ moisture contents were determined for samples selected from the various soils encountered. This determination was made possible by placing extracted samples in sealed containers immediately upon removal from each interval. The results of these and other tests are recorded on the attached boring logs.

#### SUBSURFACE CONDITIONS

The proposed construction is located in Section 23, Township 6 North, Range 2 East, Old Fannin Road, Flowood, Rankin County, Mississippi. Physiographically, the location is in the Gulf Coastal Plain Province of North America and in the Jackson Prairie Province of Mississippi. It is in and adjacent to the Pearl River alluvial valley. Structurally, it is northeast of the Jackson Dome and in the Mississippi Interior Salt Basin. Stratigraphically, the soils in this area were mainly derived

from Eocene Yazoo Formation (Yazoo Clay), Quaternary terrace (fluvial) deposits, and alluvial sediments deposited by the Pearl River. The Yazoo Formation in this part of Mississippi is a marine unit characterized by expansive clays and can present serious engineering problems as a result of this expansive nature; in its highly weathered state, it is only moderately expansive. The fluvial and alluvial deposits can exhibit abrupt lithologic changes.

Six borings were placed at the site of the proposed construction: three boring to depths of 15 feet (Boring Nos. B-1, B-2, and B-3), one boring to a depth of 20 feet (Boring No. B-4), and two borings to depths of 5 feet (Boring Nos. P-1 and P-2). The near-surface materials at the site consisted of lean clays (CL) overlying heavy clays (CH), as shown in the Soils Data Table below. Organic materials were noted in Boring Nos. B-2, B-3, and P-1. Colors of these materials were varying combinations of tan, and gray, with some black and bluish gray being noted in some of the samples. The consistencies of these clays were medium to hard, as inferred from Standard Penetration Test (SPT) data.

# Soils Data Table

Home 2 Hotel & Parking Old Fannin Road Flowood Mississippi

Boring No.	Lean Clay (CL)	Heavy Clay (CH)	Total Depth
B-1	0' – 10'	10' – 15'	15'
B-2	0' – 10'	10' – 15'	15'
B-3	0' – 10'	10' – 15'	15'
B-4	0' - 10'	10' - 20'	20'
P-1	0' - 5'		5'
P-2	0' - 5'		5'

Depths are in feet (') below the surface.

Lean clays (CL) were encountered at the surface in all six of the borings at the site (see Soils Data Table above). Organic materials were noted from the surface to 2½ feet deep in Boring No. B-2, from the surface to 3½ feet deep in Boring No. B-3, and from the surface to 3 feet deep in Boring No. P-1. The consistencies varied from medium to hard, as suggested by SPT blow counts which ranged from 7 blows to 36 blows, and averaged 16.8 blows. These are low to medium plasticity materials: the plasticity indices ranged from 8 percent to 28 percent (averaging 17.4 percent), and the liquid limits ranged from 26 percent to 45

percent (averaging 36.5 percent). The shrink/swell potential of these strata is low to medium, and small to moderate changes in volume could be noted with changes in water content. The percentages of these materials passing through the #200 grain-size sieve ranged from 88.8 percent to 97.0 percent, and averaged 94.6 percent, reflecting the relatively small variations in sand content of the clays.

Heavy clay (CH) was encountered below the lean clays in each of the borings at the site (as shown in the Soils Data Table above). The consistencies were very stiff, as inferred from a SPT blow count of 21 blows. The field moisture contents ranged from 15.2 percent to 23.2, and averaged 19.3 percent. These are high to very high plasticity clays with liquid limits varying from 50 percent to 79 percent (averaging 56.4 percent), and plasticity indices ranging from 32 percent to 58 percent (averaging 37,.9 percent). These materials have a large to very large shrink/swell potential, and large to very large changes in volume could be noted with changes in water content. The percent passing of these materials passing the #200 grain-size sieve were 92.2 percent to 98.0 percent, and averaged 95.1 percent.

No water was observed in any of the borings at the site after completion of drilling and sampling operations. The actual water table at the site can only be determined with long-term observations. We note that groundwater conditions in this area do fluctuate during the year with variations in rainfall and other environmental factors. Therefore, the groundwater levels and soil moisture contents in the near-surface materials will vary throughout the year and will probably be different if tested at a different time.

#### RECOMMENDATIONS FOR SITE PREPARATION AND FOUNDATIONS

We understand that this project will consist of a 4-story hotel on Old Fannin Road, Mississippi. The following conclusions and recommendations are based on our understanding of the proposed construction, information gathered during the exploration, accepted geotechnical engineering principles and practices, and our experience with similar sites and subsurface conditions. This report has been prepared for the exclusive use of Southern Hospitality Services, LLC, 84 Grandview Circle, Brandon, Mississippi in the planning and design of the hotel. We request that we be informed of any significant changes to the proposed construction so we might review our recommendations in light of the new information. We should also be given an opportunity to

review the final foundation and grading plans, as well as applicable portions of the project specifications, prior to construction.

Final plans and specifications were not available at the time of this geotechnical report, but it is our understanding that the placement of the building will be on a lot that is essentially flat. Based upon our interpretation of the soil conditions at the site, and the assumption that no large or unusual loads are anticipated, it is our opinion that the proposed construction could be supported by a combination of foundation units, such as grade beams and spread footings. The foundation could consist of a monolithically cast, reinforced concrete, slab on-grade with turned-down, continuous grade beams and interior stiffeners to produce a beam diaphragm system. Column loads could be supported by isolated spread footings or thickened sections. Further details of our recommendations are discussed below.

#### SITE PREPARATION

The near-surface fill material occurring under the proposed construction area consisted of lean clays (CL) overlying heavy clays (CH), as shown in the Soils Data Table above. The consistencies of these clays were medium to hard, as inferred from Standard Penetration Test (SPT) data.

The <u>hotel</u> will be constructed on a woody area. We recommend that the foundation soil be excavated a minimum of 6 inches below the existing contours to remove the topsoil within an area beneath and where possible, extending a minimum of 3 feet beyond the perimeter of the proposed addition. After removing the trees, another 2 ½ feet of soil should be excavated and replaced. Compacted select fill should be used to bring the site up to construction grade.

It is our understanding that <u>elevators</u> are generally operated by a piston founded approximately 8 feet in depth below the FFE of the ground floor. If the hotel elevator is founded at 8 feet, we recommend excavating another 6 feet of the in place soil below the excavation and replacing this material with compacted select fill. This excavation should extend a minimum of 3 feet outside the footprints of the elevators.

There will be a <u>swimming pool</u> on the east side of the hotel. The boring data indicate a layer of heavy clay (CH) material 10 feet below the surface. The foundation soil should be excavated a

minimum of 6 inches to remove any organics, topsoil, brush, and soft wet soil within an area beneath and extending a minimum of 10 feet beyond the perimeter of the pool, if possible. After the removal of the topsoil, we recommend that the deepest point in the pool be a minimum of 5 feet above the heavy clay at 10 feet. All the excavated lean clay (CL) material could be used as select fill if the proper moisture content and compaction control are maintained.

#### COMPACTION CONTROL

Following the excavation we recommend that the subgrade in all areas be evaluated by a geotechnical engineer or his representative prior to fill placement. The engineer may recommend proof-rolling the areas as a means of evaluating the suitability of the subgrade for fill. Proof-rolling consists of systematically patrolling the area, preferably in perpendicular directions, utilizing a heavily loaded dump truck (minimum 20 tons) or other suitable vehicle approved by the engineer. areas which pump or rut excessively, and which cannot be densified by continued rolling, should be undercut to suitable material and properly backfilled. If proof-rolling is not possible, the sub-grade beneath the buildings could be evaluated at selected locations with a hand-held Humbolt Cone Penetrometer or equivalent. The measured penetration resistance at each location can be subsequently converted to an in situ bearing capacity for the foundations.

Select structural fill material should then be placed in the foundation area in maximum loose lifts of 8 inches and be compacted to a minimum of 98 percent of the standard Proctor density (ASTM D-698-91) within 2 percentage points of optimum moisture content. Sufficient field density tests should be conducted to insure compaction requirements are met during construction. As a rule of thumb, we recommend a minimum of two density tests be performed for each 2000 square feet of surface area per lift. In addition, monitoring of fill construction and compaction will result in minimizing future settlement of the fill and structures. Therefore, we believe that it is important that a qualified geotechnical engineer or certified technician monitor earthwork operations and that this work not be controlled by the earthwork contractor.

The select, structural fill material should consist of a material having a liquid limit of less than 40 percent and a plasticity index between 8 percent and 20 percent. The excavated material which includes topsoil and any debris should not serve as select fill and should be disposed of outside the foundation areas. Other material at the site that meets the specifications, noted above, could be used as select fill.

#### FOUNDATION STRENGTHS

The foundation system should bear in the cut or in the controlled, select fill at a minimum depth 24 inches below the finished grade elevation. Minimum depths needed to offset wind forces should be verified by your structural engineer. All foundation members should be reinforced both top and bottom, sufficient to resist differential movement, and the completed foundation system should provide for uniform distribution of applied loads to the bearing soils. The maximum soil pressure under the foundation members should not exceed 2.3 kips per square foot for continuous foundation units or 2.6 kips per square foot for individual spread footings. Foundations sized in accordance with recognized criteria for the above stated allowable soil bearing pressure should provide a factor of safety of 2.0 - 3.0 against ultimate failure of the soil medium with total estimated settlements of 1.0 inch, more or less.

Note that the soils at this site consisted of lean clay (CL) that can lose strength with increases in moisture content. The soils at this site also contain heavy clays (CH) that can lose strength with changes in moisture content and shrink and swell with changes in moisture. It is important to properly control the moisture content of these soils during construction. inspections of several schools that have had differential movement have noted gutters exiting beside the foundations and inadequate grades for the swales that should remove surface The final site-grading plan should provide for quick runoff of surface waters away from the building foundations in all directions. Beds for flowers and shrubs should not be boxed in and should be sloped down away from the building foundation. Sprinkler systems located close to the building foundation should be controlled by nearby soil moisture content and not specific time schedules. In addition, any foundation soils in exposed excavations that become wet or soft should be removed and replaced prior to footing installation. The landscape plans should insure that large water consuming trees and shrubs are not located within 50 feet of the perimeter of the foundation

members. Where any large trees or stumps are removed or where any plumbing or electrical trenches are cut under the foundation, select fill material should be used and compacted.

All foundation recommendations made in this report are contingent upon proper execution of the earthwork requirements noted herein. We believe that it is very important that a qualified geotechnical engineer familiar with working with these type soils be present after excavation and during fill placement. In addition, sufficient field density tests should be taken to insure that the compaction criteria are satisfied and to reduce the possibility of differential settlement at this location.

#### RECOMMENDATIONS FOR PARKING AREAS AND ACCESS DRIVES

The near-surface materials at the site, which will be the in situ material for the subgrade for the parking areas and access drives, were primarily composed of lean clay (CL). The consistency for the near-surface clay materials ranged from medium to stiff, as inferred from Standard Penetration Test (SPT) blow counts.

The foundation soil should be excavated a minimum of 1 foot, independent of the amount of select fill to be used, to remove any topsoil, roots, and organics. The soils at this site are variable in both strength and composition. Every effort should be made to insure that the exposed soils do not "dry out" during construction. Any soft or wet areas encountered during construction which cannot be stabilized should be undercut and filled with compacted select material.

We recommend proof-rolling the area as a means of evaluating the suitability of the subgrade for fill or pavement support. Proof-rolling is defined above. We recommend that, after proof-rolling, the subgrade soils for any cut sections should be compacted to 98 percent standard Proctor density (ASTM D-698-91) within 2 percentage points of optimum moisture content to a depth of 8 inches.

Compacted select fill should then be placed to bring the subgrade up to elevation where required. Prior to placing the select fill in any area, we recommend that the subgrade be evaluated by a geotechnical engineer or his representative to determine the suitability of the subgrade.

Select-fill material should consist of a soil having a liquid limit of not more than 40 percent and a plasticity index between 8 percent and 22 percent. This soil should be placed in maximum loose lifts of 8 inches and also compacted to a minimum of 98 percent standard Proctor density. Compaction for the entire site could be attained using a rubber tired or sheeps foot roller. After preparation of the subgrade, the remaining pavement structure can then be placed according to the recommendations provided below.

Based on the type of soils encountered, we anticipate that a CBR value greater than 3 will be representative of the strength of the prepared subgrade soils and compacted fill placed at this site, assuming proper control of the soil moisture content. It is our assumption that the parking lot and access drive will be used by the patrons, employees, and a minimum of two-axle trucks for any deliveries; this precludes street traffic. Based on that assumption and the soil properties, we have selected a Structural Number (SN) of 2.3 for the parking lot and 2.9 for the access drive design and the dumpster pad (based on AASHTO Guide for Design of Pavement Structures, Chapter 4, Low-Volume Road Design, 1986). The following pavements should be used, assuming proper compaction of the subgrade soils.

#### LIGHT PARKING

## Alternative #1

- a) Base Course Five (5) inches of hot mixed Bituminous Base course (BB-1, Type 6) conforming to Mississippi State Highway Department (MSHD) Specifications.
- b) Surface Course One and one half (1 ½) inches of hot mixed bituminous Surface Course (SC-1, Type 8) conforming to MSHD Specifications.

# Alternative # 2

- a) Granular Subbase Six (6) inches of crushed limestone, No. 610 conforming to MSHD Specifications.
- b) Base Course Four (4) inches of hot mixed Bituminous Base, (BB-1, Type 6) conforming to MSHD Specifications.
- c) Surface Course One and one-half (1 ½) inches of hot mixed bituminous Surface Course, (SC-1, Type 8) conforming to MSHD Specifications.

## Alternative #3

Surface Course - Five (5) inches of Portland Cement Concrete.

## ACCESS ROADS

## Alternative #1

- a) Base Course Six and one-half (6 ½) inches of hot mixed Bituminous Base, (BB-1, Type 6) conforming to (MSHD) Specifications.
- b) Surface Course One and one-half (1 ½) inches of hot mixed bituminous Surface Course, (SC-1, Type 8) conforming to MSHD Specifications.

## Alternative # 2

Surface - Six (6) inches of Portland Cement Concrete.

#### DUMPSTER PAD

Surface - Six (6) inches of Portland Cement Concrete. The dumpster pad should be the total length of the dumpster and the garbage truck.

The concrete pavement recommendations are for non-reinforced Portland Cement concrete pavement placed on a eight-inch-thick 610 limestone base course base course placed on the compacted subgrade. The base course should be compacted to a minimum of 98 percent standard Proctor density immediately prior to concrete placement. The concrete should have a minimum 28-day flexural strength of 650 psi and a compressive strength of 4000 psi. Joint spacing, joint configuration, mix design, mix placement, and curing should conform to the recommendations of the American Concrete Institute (ACI) and the Portland Cement Association (PCA).

Applicable Mississippi State Highway Department specifications and structural number coefficients utilized in the pavement recommendations are provided as follows:

a) <u>Bituminous Surface Course</u> - Structural Coefficient = 0.44- hot mixed bituminous Surface Course (SC-1, Type 8) - Mississippi Standard Specifications for Road and Bridge Construction (1990)

edition), Section 703, Pages 703-14&15 or from the AASHTO Interim Guide for Design of Pavement Structures.

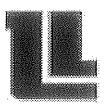
- b) Bituminous Base Course Structural Coefficient = 0.34 hot mixed Bituminous Base Course (BB-1, Type 6) Mississippi Standard Specifications for Road and Bridge Construction (1990 edition), Section 703, Pages 703-14&15 or from the AASHTO Guide.
- c) <u>Granular subbase</u> Structural Coefficient = 0.11 crushed limestone, No. 610, ASTM D 2940-98 Specifications or from the AASHTO Guide.

All pavement design recommendations made in this report are contingent upon proper execution of the subgrade requirements noted herein. We believe that it is very important that a qualified geotechnical engineer, familiar with working with such soils, be present after excavation and during proof-rolling, fill, and compaction. In addition, sufficient field density tests should be taken to insure that the compaction criteria are satisfied, and to reduce the possibility of settlement at this location. It is important that a good drainage system be established to quickly remove surface water, thus leaving no standing water.

# REPORT LIMITATIONS

The recommendations made in this report are based on the assumption that the borings are representative of the subsurface conditions throughout the site. Therefore, we cannot warrant that our boring logs represent subsurface conditions at other locations or times. If during construction, any unusual or significantly different conditions are encountered, we should be advised in order to review the changed conditions, and subsequently reconsider any of the above recommendations.

Further, we are available to review those portions of the plans and specifications relating to earthwork and foundations for this particular project and request that we be retained to do so in order to determine whether the plans and specifications are consistent with the recommendations contained within this report. In addition, we are available to observe foundation construction procedures, including interpretation of the use of on-site materials and compaction of the structural fill, quality control of concrete placement, and other field observations and quality control measures as required.



PROJECT:

# ladner testing laboratories, inc

CLIENT:

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DATE:

10/18/2013

		STORY) ID PARKING	SOUTHERN HOSPITALII 84 GRANDVIEW CIRCLE		LAB NO: BORE NO:			476-13-A B-1			
FLOWO		), MS		TECHNICIAN: S						3.R.	
SAMPL	r c		BRANDON, MS 39047	/ A COTS & D. 1 5 0 5 D.	17/	DENTE	TIT	LTIO	V TEOT	(ASTM D-	1500
			TUBE	(ASTM D-1587)	FIEL		11	(ATTO	PASS	(ASTM D-	1300)
DEPTH	4 MP	VIOLAT DESCRIPTION	I DEMIDIZO	CONGRESSON	MOIS			DI 0/	#200	UNIFIED	
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		,									
	χ			STIFF							10
	ഺ										
	У			VERY STIFF							18
5	Δ	TAN & GRAY LEAN CLAY (5' - 10')			12.2	38.	٨	21.0	95.4	CL	
		TANK CIKAT EDAN COAT (5 · 10)			12.2	36.	٠	21.0	25.4	CL	
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	X			HARD			ŀ				36
10		TAN & GRAY HEAVY CLAY (10' - 15')			18.0	50.	0	35.0	94.8	СН	
	$\nabla$			VERY STIFF							21
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		WATER DEPTH 0	FT. AFTER 0	HRS.	BORI	NG TE	RI	MINAT	ED AT	15	FT.



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	(4 STORY) SOUTHERN HOSPITALITY SERVICES, LLC LAB NO: 476-11 AND PARKING 84 GRANDVIEW CIRCLE BORE NO: B-2									-A		
SAMPLES	ļ.	AUGER(ASTM D	1452)		A TURE	(ASTM D-1587) X PENETRATION TEST(ASTM D-158						
DEPTH X		AOGER(ASTML	7-1432)	MALCOUNTERS AND A REPORT LAND	I TOBE	(ASTM D-1307)	FIELD MOIS		KATIO	PASS #200	UNIFIED	STD.
DEPTH &		VISUAL DESC	RIPTION	- REMARI	KS	CONSISTENCY	%	LL%	PI %	%	CLASS	PEN
5	GRAY &	z TAN LEAN CLAY W/OR z TAN LEAN CLAY (2 1/2'		2 1/2')		STIFF VERY STIFF	11.0	34.0	9.0	92.6	CL	9 24
10	<u> </u>	t TAN LEAN CLAY (8 1/2) t TAN HEAVY CLAY (10'				VERY STIFF	12.4	40.0	21.0	93.2	CL	25
15	GRAY,	FAN & BLACK HEAVY CI	LAY (13 1/2' -	- 15')		VERY STIFF	21.6	58.0	38.0	96.2	СН	21
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		CR DEPTH C				_HRS.		G TER			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	FT.



BLACK, GRAY & TAN LEAN CLAY (3 1/2' - 8 1/2')

TAN & GRAY LEAN CLAY (8 1/2' - 10')

TAN & GRAY HEAVY CLAY (10' - 15')

WATER DEPTH

WATER DEPTH \_\_\_

0

FT.

FT.

AFTER

AFTER

0 HRS.

0 HRS.

# ladner testing laboratories, inc

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STIFF

STIFF

19.5

18.0

20.5

43.0

41.0

54.0

BORING ELEVATION

BORING TERMINATED AT

25.0

24.0

36.0

94.0

93.8

98.0

CL

CL

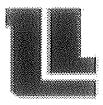
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0

FT.

13

							, (22)						
HOME 2 (4 STORY) SOUT					CLIENT:			D	ATE:		10/18/2013 476-13-A		
					SOUTHERN H	(OSPITALII	Y SERVICES, LLO	e L	AB NO	:			
				84 GRANDVII	EW CIRCLE	;	В	BORE NO:		B-3			
FLOWOOD, MS							Т	ECHNI	CIAN:	S.C. / I	3.R.		
					BRANDON, M	<b>1</b> S 39047		.					
SAMPL	ES:		AUGER(	ASTM D-1452)	<del></del>	TUBE	(ASTM D-1587)	X P	ENETI	RATIO	N TEST	Γ(ASTM D-	1586)
	LE							FIELD			PASS		
	9							MOIST			#200	UNIFIED	STD.
DEPTH	SA		VISUA	L DESCRIPTIO		CONSISTENCY	%	LL%	PI %	%	CLASS	PEN	
0		GRAY & TA	N LEAN CI	AY W/ORGANICS (	) - 3 1/2')			21.6	41.0	21.0	96.2	CL	
										•			
	$\nabla$						MEDIUM						7



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PROJECT:
HOME 2 (4 STORY)
HOTEL AND PARKING
FLOWOOD MS

CLIENT:

SOUTHERN HOSPITALITY SERVICES, LLC

DATE: LAB NO: 10/18/2013

84 GRANDVIEW CIRCLE

BORE NO:

476-13-A B-4

TECHNICIAN: S.C. / B.R.

FLOWC	BRANDON, MS 39047									
SAMPL	ES	AUGER(ASTM D-1452)		TUBE(ASTM D-15			RATIO	N TEST	(ASTM D-	1586)
DEPTH	SAMPLE	VISUAL DESCRIPTION	ı - REMARKS	CONSIST	FIEI MOIS ENCY %	ST	PI %	PASS #200 %	UNIFIED CLASS	STD. PEN
0		GRAY LEAN CLAY (0 - 1')			16.4	32.0	10.0	88.8	CL	
		GRAY & TAN LEAN CLAY (1' - 5')			12.2	38.0	14.0	96.6	CL	
5		TAN & GRAY LEAN CLAY (5' - 10')			13.4	38.0	14.0	95.1	CL	
10		TAN HEAVY CLAY (10' - 13')			16,5	54.0	34.0	92.2	СН	
					20.0		32.0	94.2	СН	
15		TAN & GRAY HEAVY CLAY (13' - 15')  TAN & GRAY HEAVY CLAY (15' - 20')			23.2		58.0	97.2	сн	
			÷							
20										
25										
30										
		WATER DEPTH 0	FT. AFTER	0 HRS.	BOR	ING ELE	VATIO	N	0	FT.
			FT. AFTER	0 HRS.	BOR	ING TER	MINAT	ED AT	20	FT.



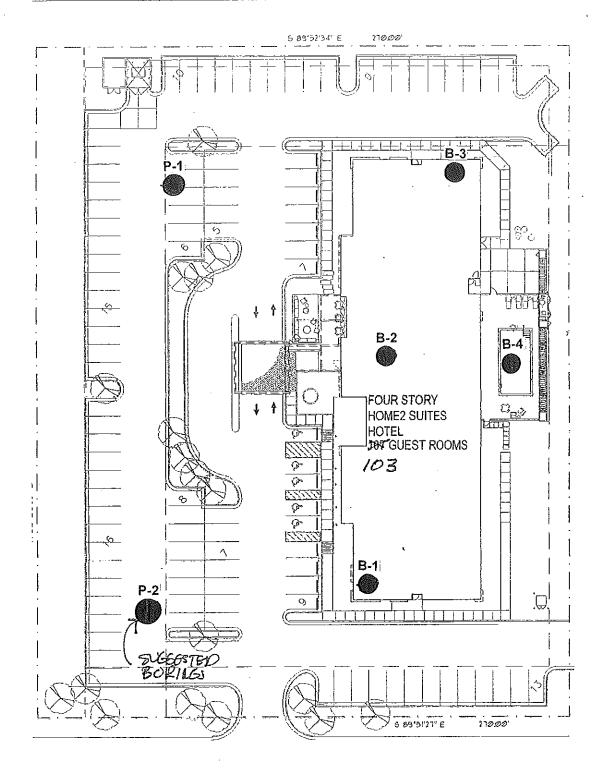
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	. (4 AN	STORY) D PARKING		84 GR/	TT: ÆRN HOSP ANDVIEW C	IRCLI		C L	ATE: AB NO: ORE NO ECHNI	O:	10/18/2013 476-13-A P-1 S.C. / B.R.			
SAMPL	ES	: AUGER(ASTM D	)-1452)	J		THRE	(ASTM D-	1587)	X P	ENETI	RATIO	V TEST	'(ASTM D-	1586)
			7-14 <i>32)</i>		J%&	TODE	(AOIMID-	1307)			I I	PASS	(ASIMID-	1 <i>360)</i>
	7								FIELD					
	Z								MOIST	1		#200	UNIFIED	STD.
DEPTH	SA	VISUAL DESC	RIPTIO	N - REM	IARKS		CONSIS	TENCY	%	LL%	PI %	%	CLASS	PEN
0		GRAY LEAN CLAY W/ORGANICS			· · · · · · · · · · · · · · · · · · ·		ĺ		12,6	35.0	17.0	94.8	CL	
·		GRAT LEAN CLAT WORGANICS	3 (0 - 3 )						12,0	35.0	17.0	94.8	CL	
5		BLUISH GRAY & TAN LEAN CLA	AY (3 <sup>1</sup> - 5 <sup>1</sup> )						22.2	36.0	20.0	96.0	CL	
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		4												
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25														
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		MANAGE STREET		TYP	. Tarres	^	TIPO		nonn:	O 507 307	710000		^	TYP
		WATER DEPTH 0		FT.	AFTER_		_		BORIN			,		FT.
		WATER DEPTH 0	1	ET	ARTER	0	HRS		RORIN	to TERR®	VIINAT	KILL AT	5	FT



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PROJECT HOME 2 ( HOTEL A FLOWOO	4 STORY ND PARI			84 GR		IRCLI	ΓΥ SERVICES, LL Ξ		2013 -A 3.R.							
SAMPLE	S:	AUGER(AST)	M D-1452)	<del></del>		TUBE	(ASTM D-1587)	X	PENETRATION TEST(ASTM D-158							
DEPTH S	4				324//			FIELI	)		PASS		<u> </u>			
ق ا					MOIST						#200	UNIFIED	STD.			
ревти <	<b>}</b>	VISUAL DI	SCRIBTIC	N . PF	AARKS		CONSISTENCY			PI %	%	CLASS	PEN.			
	1		MONITE THE	)[ ( - IVI2])	IAIG	•	CONSISTENCE					·	A LOIN			
0	GRAY L	EAN CLAY (0 - 1')						7.3	26.0	8.0	93.8	CL				
	GRAY &	TAN LEAN CLAY (1	l' - 5')					12.9	45.0	28.0	96.4	CL				
5								-				<u> </u>				
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	WATE	R DEPTH	0	_FT.	AFTER_	0	HRS.	BORI	G ELE	VATIO	N	0	FT.			
	WATE	R DEPTH	0	FT.	AFTER	0	HRS.	BORT	G TER	MINAT	ED AT	· 5	FT.			



DHE2
SUITE!
FLOWCOD

HOSPITALITY-DRIVE-

HOME 2 (4 STORY) HOTEL AND PARKING FLOWOOD, MS

DATE: 10/18/2013

LAB NO.: 476-13-A