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SUBSURFACE INVESTIGATION

FOR

YOGI YOUTH CENTER
GREENWAY DRIVE AND CAUSEY DRIVE
JACKSON, MISSISSIPPI

JULY 2008

BY

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YOGI YOUTH CENTER
GREENWAY DRIVE AND CAUSEY DRIVE
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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

Seven subsurface borings were made for the proposed construction at Greenway Drive and Causey Drive in Jackson, Mississippi. The borings were advanced with a truck mounted, powered, continuous flight auger. 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. 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 site of the proposed new construction is at Greenway Drive and Causey Drive in Section 11, Township 5 North, Range 1 West in Jackson, Hinds County, Mississippi. Physiographically, the location is in the Gulf Coastal Plain Province of North America and in the Jackson Prairie Province of Mississippi. Structurally, it is southwest of the Jackson Dome and in the Mississippi Interior Salt Basin. Stratigraphically, soils are derived from the Eocene Yazoo Formation, which was deposited in a marine environment. The Yazoo Formation can present significant engineering problems because of its expansive property.

Seven borings were placed at the site. One was drilled to a depth of 40 feet (Boring No. B-3), four were drilled to depths of 15 feet (Boring Nos. B-1, B-2, B-4, and B-5), and two were drilled to depths of 5 feet (Boring Nos. B-6 and B-7). The soils encountered were lean clay and silty lean clay (CL), and heavy clay (CH). As inferred from Standard Penetration Test (SPT) data, the consistencies of these clays ranged from soft to very stiff.

Lean clays (CL) were encountered at to surface in each of the seven borings at the site. These clays were in the top 2 ½ feet of Boring No. B-4, the top 3 ½ feet of Boring No. B-1, and in the top 5 feet of Boring Nos. B-2, B-3, B-5, B-6 and B-7. The soil between 5 and 7 feet deep in Boring No. B-2 was classified as a silty lean clay. The colors of these lean and silty lean clays consisted of various combinations of brown, gray, and tan. The SPT data suggest the consistencies these clays ranged from soft to stiff, with measured blow counts varying from 4 to 9 blows averaging approximately 6 blows. The field moisture contents ranged from 11.0 percent to 26.4 percent and averaged 19.0 percent. These are low to medium plasticity materials with plasticity indices ranging from 10 percent to 26 percent (averaging approximately 17 percent) and liquid limits ranging from 33 percent to 47 percent (averaging approximately 39 percent). These lean clays have a low to moderate shrink/swell potential, and are therefore are subject to some small to moderate changes in volume with changes in moisture content. The percentage of these clays passing the #200 grain-size sieve ranged from 89.4 percent to 97.8 percent, and averaged 94.8 percent.

Heavy clay (CH - weathered Yazoo Clay) was encountered below the lean clay in each of the deeper borings. These materials were encountered at a depth of 2 ½ feet in Boring No. B-4, at a depth of 3 ½ feet in Boring No. B-1, at depths of 5 feet in Boring Nos. B-3 and B-5, and at a depth of 7 feet in Boring No. B-2. The SPT inferred that consistency of this heavy clay was medium with measured blow counts of 6 and 7 blows in the material. The field moisture contents ranged from 15.0 percent to 52.0 percent and averaged 31.5 percent. These are high to very high plasticity clays with liquid limits ranging from 53 percent to

163 percent (averaging 77 percent) and plasticity indices ranging from 30 percent to 124 percent (averaging approximately 54 percent). This heavy clay has a high to very high shrink/swell potential, and is subject to large, significant changes in volume with changes in moisture content. The percentage passing the #200 grain-size sieve ranged from 87.4 percent to 98.1 percent and averaged 95.7 percent.

In Boring No. B-3, blue and gray heavy clay (CH - unweathered Yazoo Clay) was encountered between 35 and 38 ½ feet deep and blue heavy clay (CH - unweathered Yazoo Clay) was encountered between 38 ½ and 40 feet deep. The SPT data suggest that the consistency of this material is to very stiff with a measured blow count of 20 blows between 38 ½ and 40 feet deep. The field moisture contents varied from 40.0 percent to 45.0 percent and averaged 42.5 percent.

Water was noted during drilling at a depth of 7 ½ feet in Boring No. B-2. No water was observed in the borings after completion of drilling at the site. 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 youth center building incorporating a gymnasium located at the corner Greenway Drive and Causey Drive, Jackson, 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 B.A.P.S. Inc., Attn: Mr. Roy Patel, Brandon, Mississippi in the planning and design of the building. 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 construction will be on a lot that will be on a lot that has been graded essentially flat. Our interpretation of the soil conditions was determined from borings located inside the building footprint. Based upon the anticipated foundation strengths at the site, and the assumption that no large or unusual loads are anticipated, it is our opinion that the building 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. Because of the expansive heavy clay near the surface, the building could also be supported on a pile foundation if the economics are favorable. Further details of our recommendations are discussed below.

SITE PREPARATION

The near-surface material occurring under the construction area consisted of lean clays (CL) overlying heavy clay (CH). The lean clay ranged from a thickness of 2 ½ to 7 feet over the heavy clay and would not provide enough cover to minimize any shrinking and swelling that could cause differential movement. These materials had consistencies that ranged from soft to very stiff, as inferred from Standard Penetration Test (SPT) blow counts.

SLAB ON-GRADE FOUNDATION

If the slab on-grade is chosen, we recommend excavating 9 feet of soil, to a minimum of 10 feet outside the building footprint, to remove topsoil, any wet material, and the expansive heavy clay. The site should be brought up to construction grade with compacted select fill.

Following any 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. Any 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 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 foundation.

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% 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 structure. 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.

It is important that the select structural fill material should consist of a material having a liquid limit of less than 40% and a plasticity index between 8% and 20%. The excavated materials, if it includes topsoil and any debris, should not serve as select fill and should be disposed of outside the foundation area. Material that meets select fill specifications could be used as fill.

FOUNDATION STRENGTHS

GRADE BEAMS AND SPREAD FOOTINGS: If the foundation system chosen is grade beams and spread footings, they should bear 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. After the placement of select fill, the maximum soil pressure under the foundation members should not exceed 2.1 kips per square foot for continuous foundation units or 2.4 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 inch, more or less.

PILE FOUNDATIONS

PILE FOOTINGS: If heavy loads are anticipated, it is our opinion that the buildings should be founded on drilled-and-belled, end bearing piles at a depth of 35 feet. The maximum soil pressure under the foundation members should not exceed 10 kips per square foot for individual piles. To isolate the building from the heavy clay, a double layer of J-voids could be used under the grade beams and also under the floor slab. Foundations sized in accordance with recognized criteria for the above stated allowable soil bearing pressure should provide a factor of safety of 2.0 against ultimate failure of the soil medium.

SITE MAINTENANCE

Note that the soils at this site contain lean clays (CL) that can lose strength with increases in moisture content and heavy clay (CH) that can shrink and swell with changes in moisture content. It is important to properly control the moisture content of these soils during construction. Recent inspections of several buildings that have had differential movement have noted water exiting from gutters beside the foundations and inadequate grades for the swales that should remove surface water. The final site-grading plan should provide for quick runoff of surface waters away from the building foundations in all directions. Any 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, were primarily composed of lean clays (CL). The consistencies of these soils, as estimated from the SPT blow counts at the site for the foundation clay materials, were soft to medium.

Presently there is a drainage ditch that crosses the site that is designated for the new parking area. The area is not sloped to drain freely and the soil in the eastern part of this area is soft ranging from a depth of 1 ½ feet to greater than 4 feet. It is not clear if this is an old drainage ditch that may have been filled in or just fill from past landscaping.

It is our recommendation that this area be excavated a minimum of 6 inches to remove any topsoil and brush. After the topsoil is excavated and assuming the exposed material can be stabilized, the next 2 feet should be excavated and stockpiled. This material can be used back in the parking area if it meets the select fill classification and the moisture specifications.

The bottom of the excavation should be compacted to 98% standard Proctor density. 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 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.

If the bottom of the excavation can not be stabilized due to the soft material, foundation support in the very soft areas could be attained by bridging the materials with a geotextile fabric placed in the bottom of the excavation. Following placement of the fabric, compacted select fill material should be added by pushing it in from the edge with a dozer or by a track hoe placing the material on the fabric. The geotextile on the bottom of the excavation should have the minimum specifications noted on the attached table. Woven geotextiles should be placed where the surface is smooth and non-woven geotextiles where there are protrusions and sharp edges sticking from the soil.

Minimum Geotextile Specification Requirements

Geotextile Property	**ASTM Test Method**	**Minimum Requirement**
Grab Strength (lbs)	D 4632	200 Nonwoven (NW) 300 Woven (W)
Puncture Strength (lbs)	D 4833	80 NW----110 W
Burst Strength (psi)	D 3786	250 NW----500 W
Trapezoid Tear (lbs)	D 4533	80 NW----110 W
Apparent Opening Size (mm)	D 4751	< 0.43
Permittivity (sec)	D 4491	0.05
Ultraviolet Degradation (% Retained Strength @ 500hrs)	D 4355	50
Polymer Type	--------	Polyester (PET) or Polypropylene (PP)

Compacted fill should then be placed to bring the parking lot up to subgrade 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.

The top 8 inches of the subgrade, natural material or select fill, should be compacted to a minimum of 98% standard Proctor density, as noted above. Select fill material should consist of a soil having a liquid limit of not more than 40% and a plasticity index between 10% and 22%. This soil should be placed in maximum loose lifts of 8 inches and also compacted to a minimum of 98% standard Proctor density. Compaction for the 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 existing subgrade soils at this site, assuming proper control of the soil moisture content. It is our assumption that the parking lots will be used by the members and a minimum number of two-axle trucks for any deliveries; this precludes street traffic. Based on that assumption and the soil properties, we selected a Structural Number (SN) of 2.3 for the parking lot design and recommend the following foundation treatment. One of the following pavement alternatives should be used, assuming proper compaction of the subgrade soils:

PARKING AREAS

Alternative #1

a) Base Course - Six (6) inches of hot mixed Bituminous Base course (Type BB-1) conforming to Mississippi State Highway Department (MSHD) Specifications.

b) Surface Course - One and one half (1 ½) inches of hot mixed bituminous Surface Course (Type SC-1) conforming to MSHD Specifications.

Alternative #2

a) Clay Gravel Base or Subbase - Eight (8) inches of clay gravel, Class 4, Group B conforming to MSHD Specifications.

b) Base Course - Three (3) inches of hot mixed Bituminous Base course (Type BB-1) conforming to MSHD Specifications.

c) Surface Course - One and one half (1 ½) inches of hot mixed bituminous Surface Course (Type SC-1) conforming to MSHD Specifications.

<u>Alternative #3</u>

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

The concrete pavement recommendations are for non-reinforced Portland Cement concrete pavement placed on a eight-inch-thick clay gravel base course placed on the compacted subgrade. The clay gravel base course should be compacted to a minimum of 98% 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 3000 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 (Type SC-1) - Mississippi Standard Specifications for Road and Bridge Construction (1976 edition) or from the AASHTO Interim Guide for Design of Pavement Structures.

b) <u>Bituminous Base Course</u> - Structural Coefficient = 0.34 - hot mixed Bituminous Base course (Type BB-1) - Mississippi Standard Specifications for Road and Bridge Construction (1976 edition), Section 301, page 257 and Section 703, page 785 or from the AASHTO Guide.

c) <u>Clay Gravel Base or Subbase</u> - Structural Coefficient = 0.11 - Class 4, Group B - Mississippi Standard Specifications for Road and Bridge Construction (1976 edition), Section 304, page 275 and Section 703, page 773 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.

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P.O. Box 2363/ Gulfport, Mississippi 39505/ (228) 604-2527

PROJECT:	CLIENT:	
YOGI YOUTH CENTER BAPS, INC./GREENWAY DRIVE JACKSON MS	ROY PATEL, CHA 84 GRANDVIEW CIRCLE BRANDON MS 39047	**DATE** 7/18/2008 **LAB NO.** 204-08-A **BORE NO.** B-1 **TECHNICIAN** MILYN

SAMPLES: ☐ **AUGER(ASTM D-1452)** ■ **TUBE(ASTM D-1587)** ☒ **PENETRATION TEST(ASTM D-1586)**

DEPTH	SAMPLE	VISUAL DESCRIPTION - REMARKS	CONSISTENCY	FIELD MOIST %	LL%	PI %	PASS #200 %	UNIFIED CLASS	STD. PEN
0		BROWN LEAN CLAY (0-2 1/2')		12.0	39.0	16.0	95.0	CL	
	X		MEDIUM						7
		BROWN LEAN CLAY (2 1/2'-3 1/2')		24.0	45.0	21.0	96.0	CL	
	X	TAN & GRAY HEAVY CLAY (3 1/2'-5')	MEDIUM		56.0	30.0	98.1	CH	7
5		TAN & GRAY WEATHERED YAZOO CLAY (5'-8 1/2')		22.6	95.0	78.0	97.6	CH	
	X	TAN-GRAY WEATHERED YAZOO CLAY W/CALCAREOUS (8 1/2'-15')	MEDIUM	20.6	114.0	91.0	98.0	CH	6
10									
				42.0					
15									
20									
25									
30									

WATER DEPTH 0 **FT.** **AFTER** 0 **HRS.** **BORING ELEVATION** 0 **FT.**

WATER DEPTH 0 **FT.** **AFTER** 0 **HRS.** **BORING TERMINATED AT** 15 **FT.**

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YOGI YOUTH CENTER BAPS, INC./GREENWAY DRIVE JACKSON MS	ROY PATEL, CHA 84 GRANDVIEW CIRCLE BRANDON MS 39047	**DATE** 7/18/2008 **LAB NO.** 204-08-A **BORE NO.** B-2 **TECHNICIAN** MILYN

SAMPLES: AUGER(ASTM D-1452) | TUBE(ASTM D-1587) | X PENETRATION TEST(ASTM D-1586)

DEPTH	SAMPLE	VISUAL DESCRIPTION - REMARKS	CONSISTENCY	FIELD MOIST %	LL%	PI %	PASS #200 %	UNIFIED CLASS	STD. PEN
0		BROWN LEAN CLAY (0-2 1/2')		17.0	44.0	22.0	96.6	CL	
	X		MEDIUM						6
		GRAY & BROWN LEAN CLAY (2 1/2'-5')		26.0	36.0	13.0	95.2	CL	
	X		MEDIUM						5
5		GRAY SILTY LEAN CLAY-SATURATED (5'-7')		17.1	33.0	10.0	97.4	CL	
		TAN HEAVY CLAY (7'-8 1/2')		26.0	54.0	31.0	94.0	CH	
		TAN & GRAY WEATHERED YAZOO CLAY (8 1/2'-15')		52.0	16.3	12.4	97.8	CH	7
10									
15									
20									
25									
30									

WATER DEPTH 7.5 **FT.** **AFTER** 0.1 **HRS.** **BORING ELEVATION** 0 **FT.**

WATER DEPTH 0 **FT.** **AFTER** 0 **HRS.** **BORING TERMINATED AT** 15 **FT.**

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SAMPLES: [ ] **AUGER(ASTM D-1452)** [■] **TUBE(ASTM D-1587)** [X] **PENETRATION TEST(ASTM D-1586)**

DEPTH	SAMPLE	VISUAL DESCRIPTION - REMARKS	CONSISTENCY	FIELD MOIST %	LL%	PI %	PASS #200 %	UNIFIED CLASS	STD. PEN
0		BROWN LEAN CLAY (0-2 1/2')		13.0	41.0	16.0	95.2	CL	
	X		SOFT						4
		BROWN LEAN CLAY (2 1/2'-3 1/2')		23.0	41.0	16.0	89.4	CL	
5	X	(3 1/2'-5')	MEDIUM	24.1	47.0	24.0	91.0	CL	5
		BROWN & TAN HEAVY CLAY (5'-7')		23.7	54.0	32.0	95.0	CH	
		BROWN & TAN HEAVY CLAY (7'-10')		25.0	54.0	34.0	94.6	CH	
10	X		MEDIUM						7
		TAN & GRAY HEAVY CLAY-WEATHERED YAZOO CLAY (10'-17')		36.4					
15									
		GRAY & TAN WEATHERED YAZOO CLAY (17'-30')		49.8					
20									
25									
30									

WATER DEPTH 0 **FT.** **AFTER** 0 **HRS.** **BORING ELEVATION** 0 **FT.**

WATER DEPTH 0 **FT.** **AFTER** 0 **HRS.** **BORING TERMINATED AT** 40 **FT.**

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SAMPLES: [ ] AUGER(ASTM D-1452) [■] TUBE(ASTM D-1582) [X] PENETRATION TEST(ASTM D-1596)

DEPTH	SAMPLE	VISUAL DESCRIPTION - REMARKS	CONSISTENCY	FIELD MOIST %	LL%	PI %	PASS #200 %	UNIFIED CLASS	STD. PEN
30		TAN & GRAY HEAVY CLAY-YAZOO CLAY (30'-35')		48.0					
35		BLUEISH GRAY UNWEATHERED YAZOO CLAY (35'-38 1/2')		45.0					
	X	BLUE UNWEATHERED YAZOO CLAY (38 1/2'-40')	VERY STIFF	40.0					20
40									
45									
50									
55									
60									

WATER DEPTH 0 FT. AFTER 0 HRS. BORING ELEVATION 0 FT.

WATER DEPTH 0 FT. AFTER 0 HRS. BORING TERMINATED AT 40 FT.

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SAMPLES: [ ] AUGER(ASTM D-1452) [■] TUBE(ASTM D-1587) [X] PENETRATION TEST(ASTM D-1586)

DEPTH	SAMPLE	VISUAL DESCRIPTION - REMARKS	CONSISTENCY	FIELD MOIST %	LL%	PI %	PASS #200 %	UNIFIED CLASS	STD. PEN
0		TAN LEAN CLAY (0-2 1/2')		11.0	41.0	20.0	96.0	CL	
	X		STIFF						9
		TAN HEAVY CLAY (2 1/2'-3 1/2')		15.0	53.0	34.0	97.2	CH	
	X	TAN & GRAY HEAVY CLAY (3 1/2'-5')	MEDIUM	22.0	80.0	60.0	96.1	CH	6
5		TAN HEAVY CLAY-YAZOO CLAY (5'-10')		26.0					
		CALCAREOUS AT 8 1/2'							
10		TAN & GRAY HEAVY CLAY-YAZOO CLAY (10'-15')		38.0					
15									
20									
25									
30									

WATER DEPTH 0 **FT. AFTER** 0 **HRS.** **BORING ELEVATION** 0 **FT.**

WATER DEPTH 0 **FT. AFTER** 0 **HRS.** **BORING TERMINATED AT** 15 **FT.**

ladner testing laboratories, inc

2832 Utica Avenue/Post Office Box 10778/Jackson, Mississippi 39289-0778 / (601) 362-5421
2123 Glendale Avenue/ Hattiesburg, Mississippi 39402/ (601) 544-5782
P.O. Box 2363/ Gulfport, Mississippi 39505/ (228) 604-2527

PROJECT:	CLIENT:	
YOGI YOUTH CENTER BAPS, INC./GREENWAY DRIVE JACKSON MS	ROY PATEL, CHA 84 GRANDVIEW CIRCLE BRANDON MS 39047	DATE 7/18/2008 LAB NO. 204-08-A BORE NO. B-5 TECHNICIAN MILYN

SAMPLES: [ ] AUGER(ASTM D-1452) [■] TUBE(ASTM D-1587) [X] PENETRATION TEST(ASTM D-1586)

DEPTH	SAMPLE	VISUAL DESCRIPTION - REMARKS	CONSISTENCY	FIELD MOIST %	LL%	PI %	PASS #200 %	UNIFIED CLASS	STD. PEN
0		BROWN LEAN CLAY (0-5')		14.0	38.0	16.0	97.0	CL	
	X		STIFF						8
				19.0	42.0	19.0	96.6	CL	
	X		MEDIUM						6
5									
		TAN & GRAY HEAVY CLAY (5'-7')		22.0	54.0	30.0	96.8	CH	
		TAN HEAVY CLAY (7'-8 1/2')		25.0	70.0	45.0	87.4	CH	
	X	TAN & GRAY HEAVY C LAY-YAZOO CLAY (8 1/2'-15') W/CALCAREOUS	MEDIUM	42.0					7
10									
15									
20									
25									
30									

WATER DEPTH 0 **FT.** **AFTER** 0 **HRS.** **BORING ELEVATION** 0 **FT.**

WATER DEPTH 0 **FT.** **AFTER** 0 **HRS.** **BORING TERMINATED AT** 15 **FT.**

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PROJECT:	CLIENT:	
YOGI YOUTH CENTER BAPS, INC./GREENWAY DRIVE JACKSON MS	ROY PATEL, CHA 84 GRANDVIEW CIRCLE BRANDON MS 39047	**DATE** 7/18/2008 **LAB NO.** 204-08-A **BORE NO.** B-6 **TECHNICIAN** MILYN

SAMPLES: [ ] **AUGER(ASTM D-1452)** [■] **TUBE(ASTM D-1587)** [X] **PENETRATION TEST(ASTM D-1586)**

DEPTH	SAMPLE	VISUAL DESCRIPTION - REMARKS	CONSISTENCY	FIELD MOIST %	LL%	PI %	PASS #200 %	UNIFIED CLASS	STD. PEN
0		TAN LEAN CLAY (0-1')		14.9	33.0	12.0	96.0	CL	
		BROWN & TAN SILTY CLAY (1'-3')		22.2	33.0	11.0	97.8	CL	
		TAN LEAN CLAY (3'-5')		26.4	39.0	18.0	93.4	CL	
5									
10									
15									
20									
25									
30									

WATER DEPTH 0 **FT.** **AFTER** 0 **HRS.** **BORING ELEVATION** 0 **FT.**

WATER DEPTH 0 **FT.** **AFTER** 0 **HRS.** **BORING TERMINATED AT** 5 **FT.**

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PROJECT:	CLIENT:	
YOGI YOUTH CENTER BAPS, INC./GREENWAY DRIVE JACKSON MS	ROY PATEL, CHA 84 GRANDVIEW CIRCLE BRANDON MS 39047	**DATE** 7/18/2008 **LAB NO.** 204-08-A **BORE NO.** B-7 **TECHNICIAN** MILYN

SAMPLES: ☐ AUGER(ASTM D-1452) ■ TUBE(ASTM D-1587) X PENETRATION TEST(ASTM D-1586)

DEPTH	SAMPLE	VISUAL DESCRIPTION - REMARKS	CONSISTENCY	FIELD MOIST %	LL%	PI %	PASS #200 %	UNIFIED CLASS	STD. PEN
0		TAN LEAN CLAY (0-1')		11.5	34.0	12.0	90.0	CL	
		TAN LEAN CLAY (1'-3')		21.3	35.0	14.0	93.6	CL	
		TAN LEAN CLAY (3'-5')		26.2	47.0	26.0	96.0	CL	
5									
10									
15									
20									
25									
30									

WATER DEPTH 0 **FT.** **AFTER** 0 **HRS.** **BORING ELEVATION** 0 **FT.**

WATER DEPTH 0 **FT.** **AFTER** 0 **HRS.** **BORING TERMINATED AT** 5 **FT.**

LADNER TESTING LABORATORIES, INC.
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YOGI YOUTH CENTER
BAPS INC.