Job 1910

From: Pete Dammon (petedammon@yahoo.com)
To: CHUCK DAMMON
Date: Wednesday, November 28, 2007 5:41:03 PM
Subject: Re: Beulah church

Chuck
Single story
Min 50 piles @ 6 Tons ea, 49' length
Give driving instructions as in report.

CHUCK DAMMON <chuckdammon@yahoo.com> wrote:

> Pete, we need to get a piling count for this job. Total sq.ft. 2376 and we are going to use class b pilings. Here is a copy of the soil report and floor plan.
>
> Thanks
> Chuck
>
> ---
>
>

4500
-150
450

GORE ENGINEERING, INC.

SOIL AND FOUNDATION INVESTIGATIONS

LAWRENCE W. GILBERT, D. ENGR.
REG. C.E.

JAMES R. GORE
(1952 - 1991)

BORINGS
ANALYSES

TESTING
REPORTS

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27 November 2007

Beulah Land Baptist Church
P. O. Box 3218
Harvey, Louisiana 70059

Subsoil Investigation
Proposed Church
2436 St. Maurice Street
New Orleans, Louisiana
Our Project No. 9525

Gentlemen:

Herein is our report on the results a subsoil foundation investigation made for the subject project.

Yours very truly,

GORE ENGINEERING, INC.

Lawrence W. Gilbert

Total SQ FT.
2,376

PDF'S are:
Floor plan. pdf
Soil Report. pdf

sent Mr Pete email for piling count ⇒ 11-28-07

SUBSOIL INVESTIGATION

PROPOSED CHURCH

2436 ST. MAURICE STREET

NEW ORLEANS, LOUISIANA

PROJECT NO. 9525

FOR

BEULAH LAND BAPTIST CHURCH

HARVEY, LOUISIANA

DAMMON ENGINEERING, INC.

CONSULTING ENGINEERS

SLIDELL, LOUISIANA

GORE ENGINEERING, INC.

SOIL AND FOUNDATION INVESTIGATIONS

METAIRIE, LOUISIANA

TABLE OF CONTENTS

SUBSOIL INVESTIGATION
PROPOSED CHURCH
2436 ST. MAURICE STREET
NEW ORLEANS, LOUISIANA

INTRODUCTION

1. This report contains the results of a subsoil foundation investigation made at the subject site. Instructions to proceed with the investigation were received on November 4, 2007 from Pastor Michael Zacharie of Beulah Land Baptist Church. Dammon Engineering, Inc. are the Consulting Engineers for the project.

2. The study included the drilling of a soil test boring to determine subsurface conditions and stratification and the performance of soil mechanics laboratory tests on samples obtained from the boring to evaluate their physical characteristics. Engineering analyses were made, based on the boring and test data to develop criteria to be used in foundation design.

SOIL BORING

Field Exploration

3. One (1) undisturbed sample type soil test boring (B-1) was drilled to a depth of 60 ft. on November 7, 2007. The boring was made with a truck mounted drill rig at a designated location approximately as shown in plan on Figure 1. Undisturbed sampling was performed continuously in all cohesive or semi-cohesive materials with a three inch diameter

thin wall tube sampler. Representative samples were cut from the cores and placed in moisture proof containers for preservation until laboratory testing could be performed. A log of the boring showing the detailed stratification and sample depths is given on Figure 2.

LABORATORY TESTS

4. In order to develop the physical properties of the soils, soil mechanics laboratory tests were performed on samples obtained from the boring. This testing consisted primarily of Natural Moisture Content, Unit Weight and Unconfined Compression. Atterberg Limits were performed on selected cohesive samples. The results of all the laboratory tests are tabulated along side the boring log at the appropriate sample and depth on Figure 2.

5. The Unconfined Compression tests are give a measure of "skin friction" values used to estimate pile load capacities. The Atterberg Limits along with the Natural Moisture Content tests give an indication of the compressibility of the soils and are used empirically to estimate settlements.

SUBSOIL CONDITIONS

Subsoil Description

6. Reference to the log of boring B-1 shows that beginning at the ground surface there is 2½ ft. of soft gray clay with silt. This is followed by a highly compressible stratum of very soft to soft brown organic clay with humus that extends to the 17 ft. depth.

Below this there is very soft to soft gray clay to the 49 ft. depth and then soft gray clay that extends to at least the 60 ft. depth, the maximum depth penetrated by boring B-1.

7. **Groundwater** At the time of making the boring, groundwater was measured at a depth of 3.0 ft. below the existing ground surface elevation in boring B-1. Groundwater was measured shortly after making the boring and may not have become fully static at the time of measurement. In any event, groundwater could fluctuate due to seasonal precipitation, drainage, prolonged drought, etc. If groundwater is important to construction, it should be measured at that time.

FOUNDATION ANALYSIS

8. It is understood that the proposed construction will consist of a 2,700 square ft. Church in the area of boring B-1 and approximately as shown in plan on Figure 1. Design structural loads are not known at this time, but they are anticipated to be nominal and typical of this type structure. While not known with certainty, it was assumed that less than 2 ft. of fill will be needed to raise the site grade in the area of the proposed structure.

9. The near surface soils at the site are poor in bearing quality and are highly compressible in character. In view of this, piles are recommended for support of all structural loads that cannot tolerate settlements including the ground floor slab and any

sensitive pavements. Analyses were made in this regard and the results are given in the following section.

Pile Foundations

10. Analyses were made based on boring B-1 to estimate the load carrying capacities of several types and lengths of timber, or composite, piles (ASTM D-25). These include small timber piles having a 6 inch tip and an 8 inch butt and Class "B" timber piles. The piles will generally receive their support through "skin friction" along their embedded length, since no stratum was encountered that could be relied on to offer good additional "point" support.

11. **Estimated Pile Load Capacities** The results of analyses to estimate pile load capacities in compression are given in the following table. Pile lengths given are as measured from the existing ground surface elevation at the boring location, but a pile cutoff of 2 ft. should be of no consequence.

LENGTH OF PILE IN FEET	ESTIMATED SINGLE PILE LOAD CAPACITY IN TONS FACTOR OF SAFETY = 2.0	
	Small Timber 6" tip – 8" butt	Class "B" Timber
40	4	6
45	5	7
50	5½	8
55	6	9
60	7	10

Test piling 2 — No — over design — use Class "B" piling

The foregoing estimated pile load capacities contain a factor of safety of 2.0 against failure in compression which is recommended for design. They do not consider drag load, group effect or settlements, as will discussed.

12. **Drag Load** When fill is placed on the site, the underlying compressible soils consolidate, resulting in surface settlement. As the compressible soils consolidate, "negative skin friction" or downdrag may be imparted on piles. This could result in an extraneous load, additive to any structural load, on the piles and could increase settlements of the structure. It is our opinion that drag load is dependent on the thickness of fill, compressibility of the soils, time-rate of consolidation and pile length. If 2 ft. of new fill or less is required, drag load should be unimportant to design. However, it is recommended that this fill be placed as soon as practical prior to construction. If more than 2 ft. of new fill is required, further consideration should be given to the effects of drag load.

Install dirt pad — drive pile through dirt "pad" ASAP

13. **Group Effect** The effect of pile grouping on the single pile load capacities is dependent on pile spacing, pile lengths and soil characteristics throughout the pile length and below the pile tips. Assuming a minimum center to center spacing of 3 ft., group effect should be unimportant for pile clusters of less than 6 piles. Group effect could become important for larger clusters and should be evaluated when actual pile layouts are known as outlined in the local building code or in the criteria given in Appendix "A" following the text.

14. **Estimated Settlements** No detailed settlement analyses were made since the design structural loads, pile length, pile spacing, etc. are not known at the present time. However, settlement of pile supported footings used in single widely spaced rows or in clusters of up to 4 to 6 piles are estimated to be on the order of ¾ to 1 inch. Settlements would increase with the size of the pile cluster and, if larger clusters of closely spaced piles are needed for support, detailed settlement analyses should be made.

15. **Pile Driving** Some discussion with regard to pile driving appears warranted. In general, driving of small timber piles should be limited to the rate of 10 to 12 blows per foot using a Vulcan No. 2 hammer or a 2000 to 3000 lb. drop hammer falling 5 ft. Driving of Class "B" timber piles should be limited to the rate of 25 blows per foot using a Vulcan No. 1 hammer or equivalent. These recommendations are given in order to minimize possible damage to the piles.

16. Vibrations due to pile driving activities should be expected and they should be monitored during the driving of probe piles and job piles. In general, vibrations should be limited to about 0.25 inch/sec. (peak particle velocity) at all existing nearby sensitive structures. If this value is exceeded, further consideration should be given to the effects of vibrations.

- Use vibration monitoring - Recommend to Owner if adjacent buildings have any value

Gore - monitor driving's log

17. **Composite Piles** Capacities of small timber piles up to 55 ft. are given herein. Due to the unavailability of small timber piles in lengths over 40 ft., this may necessitate the use of a composite type pile. Due to uncertainties in the performance of "connectors" which can be experienced when driving composite piles, it is recommended that close field observations and detailed pile logging be maintained. These activities should be supervised by qualified personnel. Piles should be driven vertical and special care should be taken to assure that the splice connection is performing properly. If the upper section suddenly begins to drive out of vertical or if a decrease in pile driving resistance occurs, it is likely that the connection has parted. In this case, it would be necessary to uncover the pile to the connector and make a positive repair and/or redrive a replacement pile.

18. It is further recommended that the "setup" time or lapse between driving the lower section and upper section be kept to a minimum. The longer the "setup" time, the greater the regain of soil shear strength along the pile surface and the greater the resistance to driving. This increased resistance to driving could increase the possibility of slippage at the connection.

Areal Settlements

19. It should be recognized that relatively large areal settlements will occur due to the load imposed by the fill that will be used to raise the site grade. These areal settlements should be considered in design, particularly where unsupported appurtenances (driveways, walkways, paved areas, etc.) adjoin pile supported structures. At these vulnerable

locations, it may be desirable to structural tie such unsupported elements into the pile supported structures to minimize abrupt differential settlements. Also, the effect of areal settlements should be considered in design where utilities lines connect to, and underlie, pile supported structures. Flexibility should be incorporated into the lines to allow for settlement and "pulling" of the lines.

GORE ENGINEERING, INC.

Lawrence W. Gilbert

Minimum Pile Spacing

$SPAC = 0.05\,L_1 + 0.025\,L_2 + 0.0125\,L_3$ (Min.3.0 ft.)

SPAC = Center to center spacing of piles (ft.)

L_1 = Pile penetration in ft. up to 100 ft.

L_2 = Pile penetration in ft. from 101 to 200 ft.

L_3 = Pile penetration in ft. from 200 to 300 ft.

Allowable Group Capacity*

$$Q_a = \frac{P \times L \times c}{FSF} + \frac{2.6q_u\,(1 + 0.2\,\frac{w}{b})\,A}{FSB}$$

P = Perimeter distance of pile group (ft.)

L = Length of pile (ft.)

c = Average (weighted) shear strength ($\frac{1}{2}q_u$) of soil throughout pile length (lbs./sq.ft.)

q_u = Unconfined compressive strength of soils below pile tips (lbs./sq.ft.)

w = Width of base of pile group (ft.)

b = Length of base of pile group (ft.)

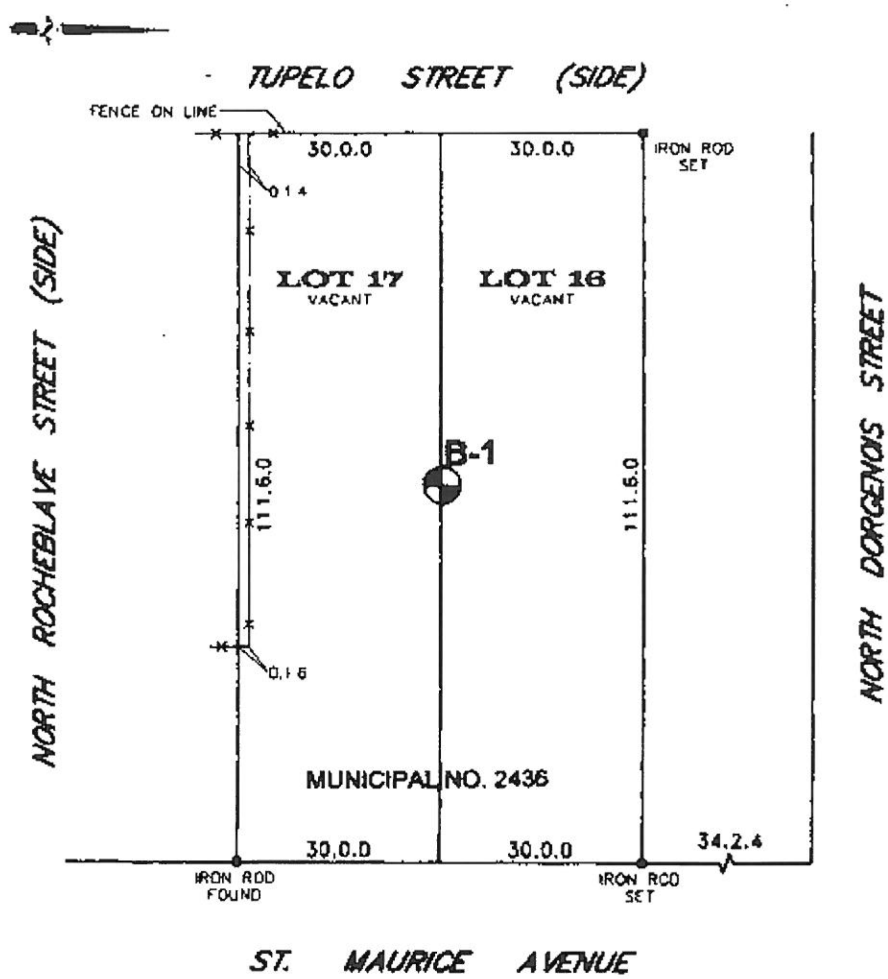
A = Base area of pile group (sq. ft.)

FSF = Factor of safety for friction area = 2

FSB = Factor of safety for base area = 3

*In no case should the recommended single pile load capacity be exceeded.

Appendix "A"



BORING LOCATION
Not to Scale

SUBSOIL INVESTIGATION
PROPOSED CHURCH
2436 ST. MAURICE STREET
NEW ORLEANS, LOUISIANA

FOR
BEULAH LAND BAPTIST CHURCH
HARVEY, LOUISIANA

DAMMON ENGINEERING, ING.
CONSULTING ENGINEERS
SLIDELL, LOUISIANA

J-9525

Fig. 1

GORE ENGINEERING, INC.
SOIL AND FOUNDATION INVESTIGATIONS

GORE ENGINEERING, INC.

Job No. 9525

Soil and Foundation Investigations
Metairie, Louisiana

Boring No. B-1

LOG OF BORING AND TEST RESULTS

Date Boring Drilled: 7 November 2007

Project: PROPOSED CHURCH - 2436 ST. MAURICE STREET - NEW ORLEANS, LOUISIANA
FOR: BEULAH LAND BAPTIST CHURCH - HARVEY, LOUISIANA
DAMMON ENGINEERING, INC. - CONSULTING ENGINEERS - SLIDELL, LOUISIANA

Recorded By: Curtis Lee

Sample No.	Sample Depth in Feet From	Sample Depth in Feet To	Stratum Depth in Feet	Visual Classification	*Blows per Foot	Symbol Log	Scale (feet)	Unconfined Compression (lbs/sq ft)	Water Content (percent)	Unit Weight (lbs/cu ft) Dry	Unit Weight (lbs/cu ft) Wet	Atterberg Limits L.L.	Atterberg Limits P.L.	Atterberg Limits P.I.
			.0				0							
1	.5	1.0		SOFT GRAY CLAY										
2	1.5	2.0		W/ WOOD				520	72.3	56.7	97.7			
			2.5											
3	3.5	4.0												
4	5.5	6.0					5		249.8					
5	7.5	8.0		VERY SOFT TO SOFT				490	224.1	23.6	76.6			
6	9.5	10.0		BROWN ORGANIC CLAY			10							
7	11.5	12.0		W/ HUMUS				385	336.5	15.9	69.4			
8	14.5	15.0					15		176.2					
			17.0											
9	19.5	20.0					20							
10	24.5	25.0					25	260	55.8	65.9	102.6			
11	29.5	30.0					30	185	78.2	53.7	95.7	89	20	69
12	34.5	35.0		VERY SOFT GRAY CLAY			35	195	69.2	58.7	99.4			
13	39.5	40.0					40	410	75.3	54.4	95.4			
14	44.5	45.0					45							
			49.0											
15	49.5	50.0					50	545	43.8	72.1	103.7	54	14	40
16	54.5	55.0		SOFT GRAY CLAY W/ SILT			55							
17	59.5	60.0	60.0				60	665	55.9	66.3	103.4			

Legend: CLAY, SILT, SAND, ORGANIC
Predominant Type Bold. Modifying Type Light.

*140 lb hammer dropped 30 inches on 2 inch splitspoon sampler after first being seated 6 inches

REMARKS: Water Table Depth – 3.0 ft (See Text)
Free Water Depth – 8.0 ft (See Text)

Fig. 2

Project Beulah Land Church HVAC Calculations

Thu Nov 29 12:31:19 CST 2007

The Btuh Gain for 72 SqFt of North and Shaded Double Pane Glass = 1440
There is no calculation for NorthEast and NorthWest Glass
There is no calculation for East and West Glass
There is no calculation for SouthEast and SouthWest Glass
The Btuh Gain for 90 SqFt of South Triple Pane Glass = 4950
There is no calculation for SkyLights
There is no calculation for Windows in Doors

The Btuh Gain for 760 SqFt of Wood R-11 & 1/2" Gypsum Wall Number 1 = 1976
There is no calculation for Wall Number 2
There is no calculation for Wall Number 3
There is no calculation for Wall Number 4

The Btuh Gain for 1444 SqFt of Roof Only 5.25" - 6.5" R-19; Ceiling Number 1 = 7508.8

There is no calculation for Ceiling Number 2

There is no calculation for Floor Number 1
There is no calculation for Floor Number 2

The Btuh Gain for 108 People = 1080

There is no calculation for Motor HP

There is no calculation for Ducts Out of Conditioned Spaces

The Btuh Gain for 1444 SqFt of Area Lighting in an Office = 4332

There is no calculation for Coffee Machines
There is no calculation for Electric Food Warmers
There is no calculation for Gas Food Warmers
There is no calculation for Electric Fry Kettle
There is no calculation for Gas Fry Kettle
There is no calculation for Electric Griddle
There is no calculation for Gas Griddle
There is no calculation for Hair Dryer Helmets
There is no calculation for 4-Slice Toaster
There is no calculation for other appliances of known wattages

There is no calculation for Outside Fresh Air #1
There is no calculation for Outside Fresh Air #2
There is no calculation for Outside Fresh Air #3
The Reception Area Outside Fresh Air #4 = 1620 cfm
The Btuh Gain for Outside Fresh Air #4 = 48600
There is no calculation for Outside Fresh Air #5
There is no calculation for Outside Fresh Air #6

The Total Outside Fresh Air CFM = 1620
This is in accordance with International Mechanical Code 2003

The Total BTUh Gain = 69886.8

The Total Tons of HVAC needed = 5.8239