EUSTIS ENGINEERING SERVICES, L.L.C.
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9 September 2010

REK Architects
Suite 5
21489 Koop Drive
Mandeville, Louisiana 70471

Attention Mr. Ron Kilkrease
PN 1-985-875-7534
Email ron@rekarchitects.com

Gentlemen:

Geotechnical Investigation
Bell Halter East Yard
Proposed Building and Bulkhead
New Orleans, Louisiana
Eustis Engineering Project No. 09249

In accordance with your request, Eustis Engineering Services, L.L.C., is transmitting an electronic copy (in .pdf format) of the geotechnical report performed for the referenced project. These services were performed in November 1985.

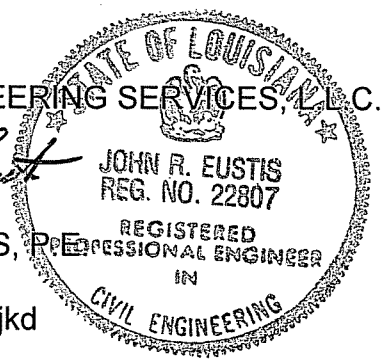
Our report was prepared in accordance with generally accepted geotechnical engineering practice at that time for specific application to the proposed structures. The recommendations and conclusions shown in that report were based on the conditions known or found to exist at the time of the geotechnical investigation and on the furnished proposed designs. Should you or anyone else rely on the data and recommendations of that report, Eustis Engineering should be consulted to determine if the recommendations contained in that report are still valid or should be modified. Further, Eustis Engineering should be contacted for interpretation of data and to secure any other information pertinent to this project.

REK Architects
9 September 2010

Should you have any questions concerning this report, please do not hesitate to contact us.

Yours very truly,

EUSTIS ENGINEERING SERVICES, L.L.C.



JOHN R. EUSTIS, P.E.

W. W. Gwyn:aln/jkd

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EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
BORINGS • TESTS • ANALYSES
3011 28TH STREET
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EUSTIS ENGINEERING CO., INC.
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VICE PRESIDENT AND
CHIEF ENGINEER
LLOYD A. HELD, JR.

12 November 1985

Waldemar S. Nelson and Company, Inc.
Engineers and Architects
1200 St. Charles Avenue
New Orleans, Louisiana 70130

Attention Mr. Thomas W. Wells
Assistant Vice President

Gentlemen:

Geotechnical Investigation
Bell Halter East Yard
Proposed Building and Bulkhead
New Orleans, Louisiana

Transmitted is our engineering report for a geotechnical investigation performed for the subject project.

Thank you for asking us to perform these services.

Yours very truly,

EUSTIS ENGINEERING COMPANY

By Lloyd A. Held, Jr.
Lloyd A. Held, Jr.

GEOTECHNICAL INVESTIGATION
BELL HALTER EAST YARD
PROPOSED BUILDING AND BULKHEAD
NEW ORLEANS, LOUISIANA

FOR
WALDEMAR S. NELSON & COMPANY, INC.
ENGINEERS AND ARCHITECTS
NEW ORLEANS, LOUISIANA

By
Eustis Engineering Company
Metairie, Louisiana

12 November 1985

TABLE OF CONTENTS

GEOTECHNICAL INVESTIGATION

BELL HALTER EAST YARD

PROPOSED BUILDING AND BULKHEAD

NEW ORLEANS, LOUISIANA

INTRODUCTION

1. This report contains the results of a geotechnical investigation performed for a proposed building and bulkhead to be located at the Bell Halter East Yard in New Orleans, Louisiana. The investigation was performed in accordance with Eustis Engineering Company's letter of proposal dated 20 September 1985. This proposal was accepted on 25 September 1985 by Mr. Thomas W. Wells, Assistant Vice President of Waldemar S. Nelson and Company, Inc., Engineers and Architects for the project.

2. This report has been prepared in accordance with generally accepted geotechnical engineering practice for the exclusive use Waldemar S. Nelson and Company, Inc., for specific application to the site of the proposed building and bulkhead located at the Bell Halter East Yard in New Orleans, Louisiana. In the event that any changes in the nature, design or location of the structures are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions of this report are modified or verified in writing.

3. The analyses and recommendations contained in this report are based in part on data obtained from the soil borings. The nature and extent of variations that may exist between and away from the boring locations may not become evident until construction. If variations then appear, it will be necessary to re-evaluate the recommendations contained in this report.

SCOPE

4. The scope of the investigation included the drilling of undisturbed soil borings at designated locations to determine subsoil conditions and stratification and to obtain samples of the various strata encountered. Soil mechanics laboratory tests were performed on samples from the borings to evaluate their physical properties. Engineering analyses were made to determine allowable pile load capacities, allowable soil bearing values and estimates of settlement.

SOIL BORINGS

5. A total of fourteen (14) undisturbed sample type soil test borings were drilled during the period 7-17 October 1985 at the locations shown on Figure 1. The borings were drilled with a truck mounted rotary type drill rig to depths of 75 to 100 feet below the existing ground surface. The results of the borings are shown graphically in the form of subsoil profiles on Figures 1 and 2, and detailed descriptive logs of the individual borings are shown in both tabular and graphical form on Figures 3 through 16.

6. Undisturbed samples of all cohesive or semi-cohesive soils were obtained at close intervals or at a change in stratum using a 3-in. diameter Shelby tube sampling barrel. The samples were extruded in the field, inspected and visually classified by Eustis Engineering Company's soil technician. Representative portions were placed in moisture proof containers for preservation prior to laboratory testing.

7. Cohesionless soils were sampled during the performance of in situ Standard Penetration Tests. This test consisting of driving a 2-in. diameter splitspoon sampler into the soil using blows of a 140-pound weight dropped 30 inches. The number of blows required to drive the sampler one foot after it is first seated six inches is shown on the individual boring logs

under the column headed "Standard Penetration Test," and is shown on the subsoil profile at the depths at which these tests were performed. Samples recovered from these tests were visually classified and placed in glass jars for preservation.

LABORATORY TESTS

8. Soil mechanics laboratory tests consisting of natural water content, unit weight, and either unconfined compression or unconsolidated undrained triaxial compression shear were performed on a majority of the undisturbed samples from the borings. In addition, Atterberg liquid and plastic limits were made on selected representative samples. The results of all these tests are summarized and shown in tabular form on Figures 17 through 25.

DESCRIPTION OF SUBSOIL CONDITIONS

9. Reference to the subsoil profiles and individual boring logs shows surface stratum fill materials consist of 1.5 to 15 feet of very loose to medium compact or dense white, tan, gray and black shells and sand. At some locations, this is overlain by and/or intermixed with 0.5 to 3 feet of miscellaneous fill and concrete. At Boring 7, medium compact to compact or loose to medium dense tan gypsum extends from the 0.5 to 14.5-ft depth. Where these fill materials are not more than 1.5 to 3 feet thick, they are underlain by soft to stiff gray and tan clay and silty clay and very loose to medium compact gray and tan clayey silt. At Boring 5, the fill is underlain by soft brown and gray organic clay and humus which extend to depths from 6 to 13 feet.

10. Following the surface stratum and beginning at depths of 5 to 15 feet are fine grained strata of extremely soft to medium stiff gray clay and silty clay and very loose to medium compact gray clayey silt which extend to the 52 to 58-ft depth.

A layer of very loose to compact gray sandy silt is interbedded at Borings 4 and 13. Below this and beginning at depths of 52 to 58 feet are coarser grained strata of very loose to very dense gray sand and silty sand that continue to the bottom of the borings. Discontinuous layers of loose to medium compact gray sandy silt are interbedded at Borings 3, 11 and 13 and a thin layer of stiff gray clay is present at Boring 2.

Ground Water

11. An auger hole was drilled without the use of water during the drilling process to determine the ground water conditions at the time of the field exploration. Water was first encountered at a depth of 3 feet below the existing ground surface, and subsequently rose to the 1-ft depth 24 hours after completion of drilling operations. It is pointed out that the depth to ground water may vary with climatic conditions and/or other factors. If important to construction, the depth to ground water should be verified immediately prior to initiation of construction operations by those responsible.

FOUNDATION ANALYSIS

Pile Foundations

12. Timber and Timber Composite Piles. Detailed foundation loads and layouts have not been furnished. However, it is understood that design plans anticipate the use of treated Class "B" timber or timber composite piles with a design load of 25 tons per pile. Treated Class "B" timber piles should have a minimum tip diameter of 7 inches and a minimum butt diameter of 12 inches for pile lengths of 55 feet or less and 13 inches for pile lengths of 60 feet or greater. Timber composite piles should consist of an untreated timber lower section and a 10 to 15-ft long, 12-in. diameter concrete filled metal can upper section.

13. Pile load capacities are based on a soil-pile relationship only. Therefore, the structural capacity of the piles and/or connections to transmit these loads must be determined by others. Timber composite piles should be used to support compression loads only and should not be used to resist tension or lateral loads.

14. Pile Embedment. Treated Class "B" and timber composite piles should be driven to a firm seat in the underlying sand stratum in order to develop an allowable single pile load capacity of 25 tons per pile in compression. An allowable single pile load capacity of 16 tons per pile is indicated when these piles are loaded in tension.

15. Pile embedments necessary to obtain a firm seat in the sand stratum may vary considerably due to the variation in depth and density of the sand. The following tabulation may be used as a guide to estimate the required pile penetration in the area of the proposed new GPR Facility.

Allowable Single Pile Load Capacity
25 Tons in Compresion and 16 Tons in Tension

Estimated Pile Tip Embedment Below Existing Ground Surface In Feet	Boring Locations
60 - 65	3, 4, 6, 7, 8, 9, 10, 13 and 14
65 - 70	1, 2, 5, 11 and 12

16. It should be noted that pile embedments at Boring 10 may be shortened depending on the continuity and thickness of denser layers near the surface of the sand stratum. In this event, pile embedments may vary from 55 to 70 feet. If a firm seat is not obtained in these layers, pile embedments probably will vary from 60 to 70 feet. In the event a firm seat is not obtained before a pile embedment of 70 feet is reached, pile driving may be terminated.

17. The allowable pile load capacity provides for a 2-ft pile cutoff and includes a factor of safety of approximately 2 against actual failure of the pile through the soil. However, no consideration is included for the effect of "drag" loads that may result from the placement of fill material or ground supported floor loads. In this event, foundation plans must be furnished in order that the allowable single pile load capacity can be re-evaluated.

18. Capacity and Spacing of Pile Groups. Timber piles firmly seated in the sand stratum and loaded in compression will derive a significant portion of their supporting capacity through end bearing. When these piles are driven in groups or clusters, a reduction of the single pile load capacity is not required. All piles loaded in tension will derive their entire supporting capacity through skin friction; therefore, the effect of group action must be considered when these piles are driven in groups or clusters. In this regard, the supporting value of tension piles driven in groups should be investigated on the basis of group perimeter shear by the expression shown on Figure 26.

19. The minimum center to center spacing of piles in a group (loaded in compression or tension) should be determined by the formula shown on Figure 26 but should not be less than three pile diameters. Greater spacing than the minimum value may be required to satisfy group perimeter shear.

20. Estimated Settlement. Generally, the settlement of foundations supported by piles firmly seated in the underlying sand should be small and should not exceed 0.5 to 0.75 of an inch. Foundation plans should be furnished in order to determine if detailed settlement analyses are required. Also, if fill heights are greater than 2 feet, additional analyses should be performed.

21. Pile Driving. Timber piles should be driven with a steam or air hammer delivering 15,000 ft-lb of energy per blow. In order to penetrate the surface fills, it may be necessary to

predrill or prepunch each pile location to a depth of 15 feet below the existing ground surface. A driving resistance of 25 to 30 blows per foot for two consecutive feet of penetration below the 50-ft depth is considered indicative of a firm seat in the sand stratum. Timber piles should not be driven harder than 25 to 30 blows per foot in order to minimize the possibility of damage to the pile.

22. Generally, piles should encounter a driving resistance of 25 to 30 blows per foot between the 60 and 70-ft depths but primarily between the 65 and 70-ft depths. Some piles in the vicinity of Boring 10 may encounter this resistance between the 50 and 60-ft depths depending on several factors including the size and spacing of the pile groups. At Boring 9, and possibly other locations, the resistance may not be encountered in which case pile driving may terminate at a pile tip embedment of 70 feet below the existing ground surface.

23. Past experience indicates that pile driving operations may transmit excessive vibrations to adjacent structures particularly when the piles are to be firmly seated in a sand stratum with a high driving resistance. Additionally, pile driving operations may further densify the sand stratum resulting in settlement of pile foundations supporting adjacent structures. If adjacent structures can be damaged by vibrations, a study should be made to determine the magnitude of vibrations transmitted to adjacent structures. Eustis Engineering Company can provide the equipment and personnel to monitor vibrations and can provide consultation regarding the effect of the vibrations on existing structures.

24. Test Piles and Pile Load Tests. It is recommended that a series of test piles of the type anticipated for final design be driven throughout the construction area to give a general indication of the expected driving resistances over the entire construction area. Test piles should be driven with the same type of equipment and techniques that will be used to drive the job piles. Test piles should provide valuable information

regarding exact pile lengths and the effects of vibrations on adjacent structures. At least one test pile should be located at Boring 9 and at Boring 12. At least one test pile and possibly more should be load tested to verify the estimated design load capacity. The pile or piles showing the least resistance to driving should be selected for performance of pile load tests. The pile or piles should be load tested to failure in accordance with the New Orleans Building Code, except that the load increments past the design load should be one-half the increments recommended by the Code. A minimum set period of seven days should be specified between the driving of the reaction piles and the performance of the load tests.

25. Eustis Engineering Company is available for discussions regarding the formulation of a test pile program and can provide personnel for the logging of the test piles, application of the loads, and evaluation of the results of the load test. We can also log the driving of the job piles, as well as evaluate the integrity of the job piles based on the driving logs.

Footing Foundations

26. Allowable Soil Bearing Value. In accordance with a specific request, computations were made to determine the estimated allowable soil bearing value for spread and continuous chainwall footings. The computations include a factor of safety of approximately 3 against actual failure of the subsoils due to shear. Except at Borings 5 and 7, the results of the computations indicate an allowable soil bearing value of 1000 psf for 4 to 7-ft square spread footings and 18-in. wide continuous chainwall footings.

27. Footings located in the area of Borings 1, 2, 3, 6 and 13 should be placed to bear on the shells or sand-shell fill material at a depth of 2 to 2.5 feet below the existing ground surface. Footings located in the area of Borings 4, 8, 9, 10, 11, 12 and 14 should be placed to bear on the medium stiff to

stiff clay soils at a depth of 2 to 2.5 feet, except at Boring 11. At Boring 11, it will be necessary to place footings at the 3 to 3.5-ft depth to reach the clay soils below the miscellaneous fill materials encountered at this location.

28. It is recommended that footing foundations not be utilized in the areas of Borings 5 and 7 due to the substantial thickness of humus and/or organic clay and gypsum at these locations. Humus and organic clays are typically weak and compressible materials unsuitable for support of shallow foundations. The shear strength and compressibility characteristics of the gypsum residue material are questionable and difficult to determine.

29. Estimated Settlement. Computations were made to determine estimates of settlement for footing foundations based on a dead load pressure intensity of 800 psf. Results of the computations are summarized in the following tabulation.

	Estimated Settlement - In Inches	
	Boring Locations	Boring Locations
Size of Footing	1, 2, 3, 6 and 13	4, 8, 9, 10, 11, 12 and 14
12" Wide Chainwall	0.25 to 0.5	0.25
4' and 5' Square	0.5 to 1.0	0.5 to 0.75
6' and 7' Square	1.0 to 1.5	0.75 to 1.0

30. The estimated settlements shown in the preceding tabulation consider only the load imposed at the base of the rigid isolated footing. The settlement of footings may be substantially greater than the values shown due to placement of fill material and/or adjacent ground supported floor loads. Foundation plans should be furnished in order to determine if additional settlement analyses are required.

Proposed New Bulkhead

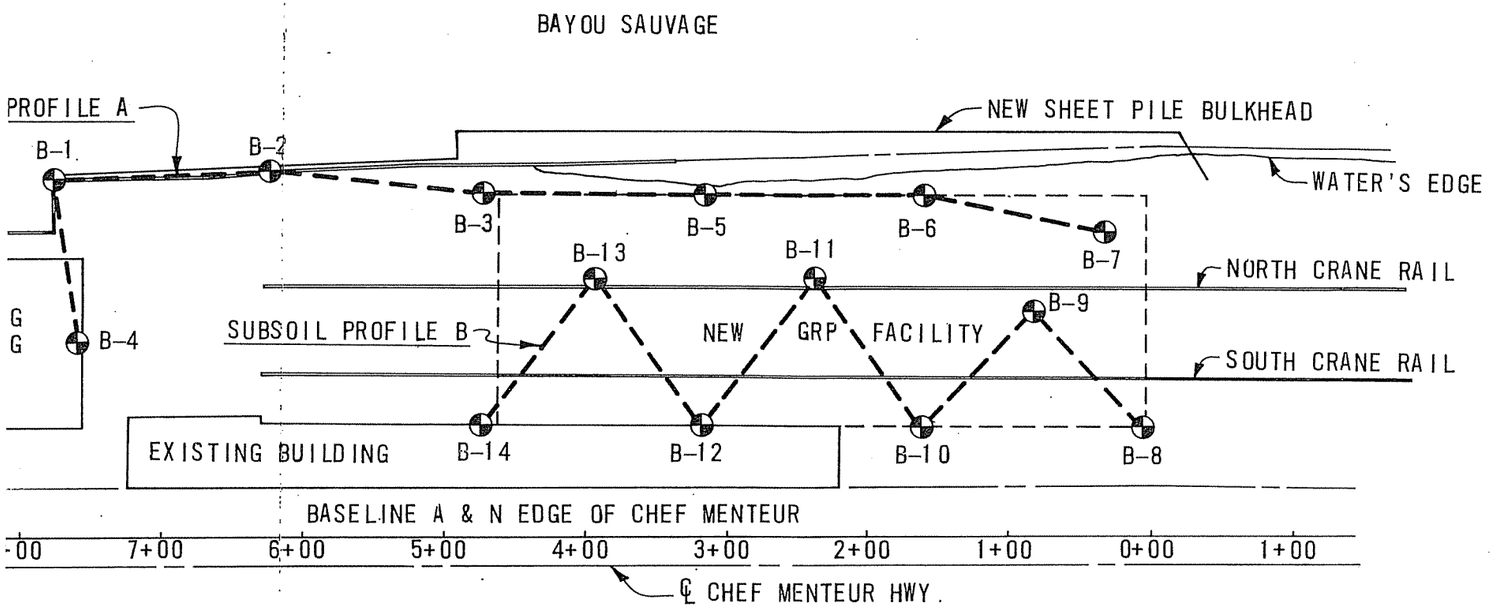
31. In accordance with instructions, analyses of the proposed new bulkhead will be performed at a future date when the location of the structure has been finalized. A cross-section of the existing and proposed configurations at several locations will be required to perform the necessary bulkhead analyses.

EUSTIS ENGINEERING COMPANY

By Lloyd A. Held, Jr.

L. J. Napolitano:bh

EEC No. 9249



LOCATION OF BORINGS

SCALE: 1"=100'

BORINGS DRILLED 7-17 OCTOBER 1985

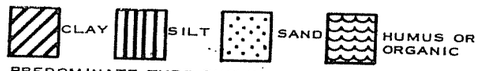
GENERAL NOTES

WHILE THE INDIVIDUAL LOGS OF BORINGS ARE CONSIDERED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT THEIR RESPECTIVE LOCATIONS ON THE DATES SHOWN, IT IS NOT WARRANTED THAT THEY ARE REPRESENTATIVE OF SUB-SURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES. THEREFORE, THE SUBSOIL STRATIFICATION SHOWN ON THIS PROFILE IS NOT WARRANTED BUT IS ESTIMATED BASED ON ACCEPTED SOIL ENGINEERING PRINCIPLES AND PRACTICES.

AT THE TIME THE BORINGS WERE MADE, GROUND WATER LEVELS WERE MEASURED BELOW EXISTING GROUND SURFACE. THESE OBSERVATIONS ARE SHOWN BELOW. HOWEVER, GROUND WATER LEVELS MAY VARY DUE TO SEASONAL AND OR OTHER FACTORS. IF IMPORTANT TO CONSTRUCTION, THE DEPTH TO GROUND WATER SHOULD BE DETERMINED BY THOSE PERSONS RESPONSIBLE FOR CONSTRUCTION, IMMEDIATELY PRIOR TO BEGINNING WORK.

WATER TABLE WAS 1.0' AFTER 24 HOURS.

LEGEND



PREDOMINATE TYPE SHOWN HEAVY.
MODIFYING TYPE SHOWN LIGHT.

FIGURES BESIDE BORINGS INDICATE NUMBER OF BLOWS OF 140-LB. HAMMER DROPPED 30-INCHES REQUIRED TO DRIVE A 2-INCH DIA. SPLIT-SPOON SAMPLER 1-FOOT AFTER FIRST BEING SEATED 6-INCHES (STANDARD PENETRATION TEST)

GEOTECHNICAL INVESTIGATION
BELL HALTER EAST YARD
PROPOSED BUILDING AND BULKHEAD
NEW ORLEANS, LOUISIANA

LOCATION OF BORINGS & SUBSOIL PROFILE A

FOR
WALDEMAR S. NELSON AND COMPANY, INC.
ENGINEERS AND ARCHITECTS
NEW ORLEANS, LOUISIANA

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
NOVEMBER 1985 METAIRIE, LA.

FIGURE 1

B-5 B-6 B-7

OR WHITE SHELL AND SAND

SOFT BROWN & GRAY HUMUS & ORGANIC CLAY LOOSE TO MEDIUM DENSE TAN GYPSUM

AND VERY LOOSE TO MEDIUM COMPACT GRAY CLAYEY SILT

SANDY SILT

GYPSUM

GYPSUM

GRAY SILTY SAND

MEDIUM DENSE TO DENSE GRAY SAND

DEPTH IN FEET

0 10 20 30 40 50 60 70 80 90 100

SUBSOIL PROFILE

B-1

TIMBER BULKHEAD

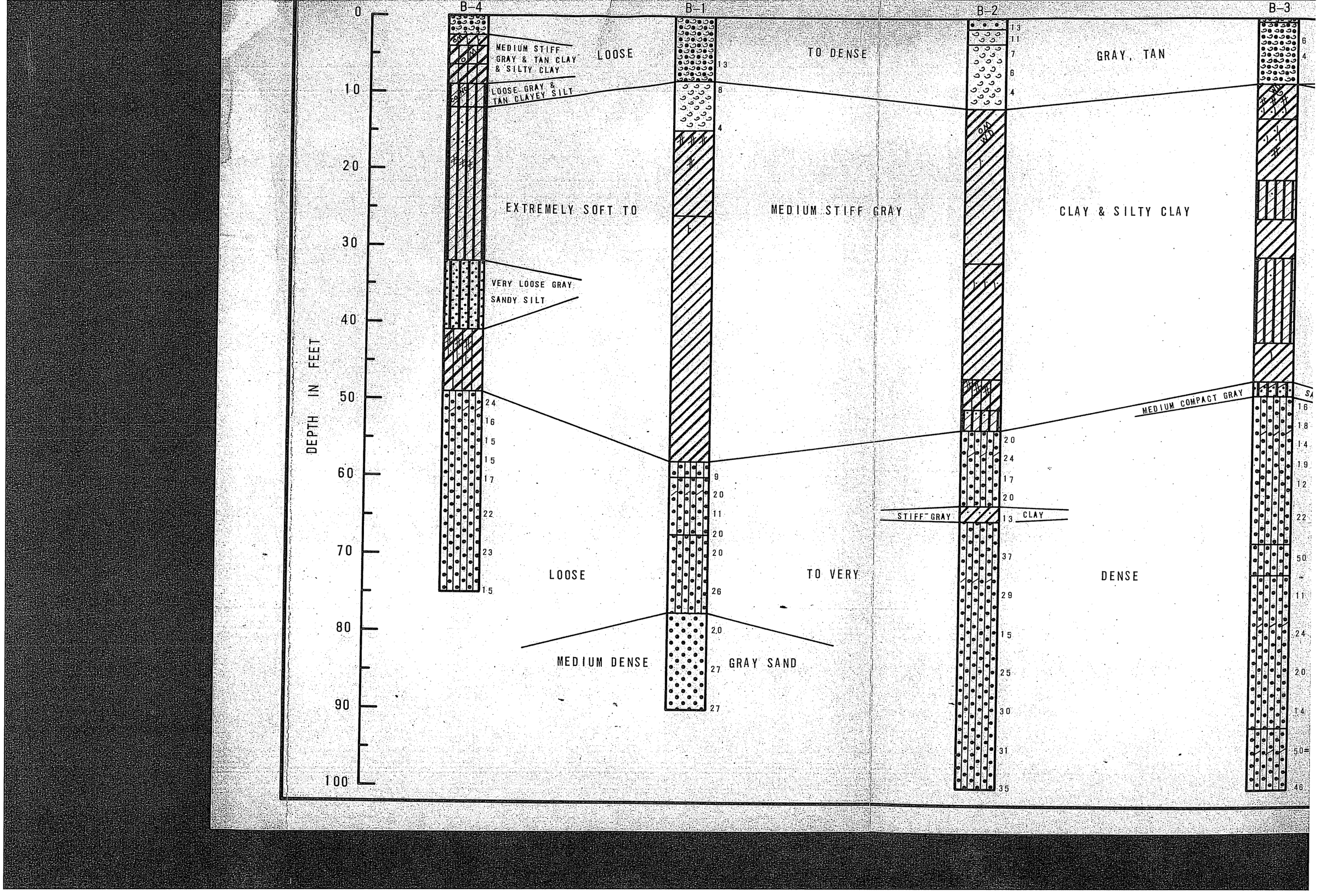
EXISTING BUILDING

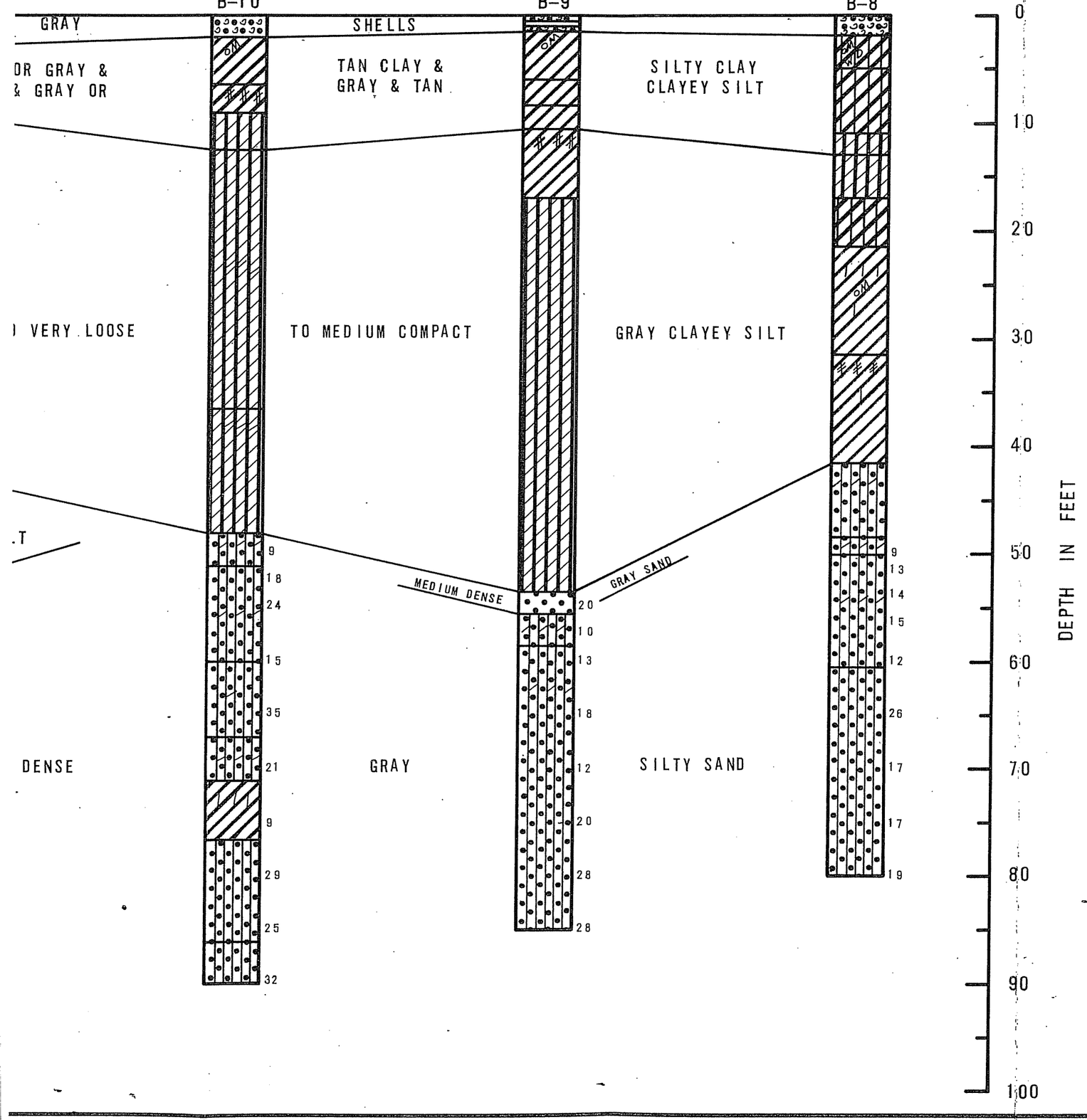
B-

9+00 8+00

SUBSOIL PROFILE A

SCALE: 1"=40'


B-4
B-1
B-2
B-3
DEPTH IN FEET
0
10
20
30
40
50
60
70
80
90
100
MEDIUM STIFF GRAY & TAN CLAY & SILTY CLAY
LOOSE GRAY & TAN CLAYEY SILT
LOOSE
TO DENSE
GRAY, TAN
EXTREMELY SOFT TO
MEDIUM STIFF GRAY
CLAY & SILTY CLAY
VERY LOOSE GRAY SANDY SILT
MEDIUM COMPACT GRAY
STIFF GRAY CLAY
LOOSE
TO VERY
DENSE
MEDIUM DENSE
GRAY SAND
24 16 15 15 17 22 23 15
13 8 4 9 20 11 20 20 26 20 27 27
13 11 7 6 4 20 24 17 20 13 37 29 15 25 30 31 35
6 4 16 18 14 19 12 22 50 11 24 20 14 50= 46



GENERAL NOTES

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AT THE TIME THE BORINGS WERE MADE, GROUND WATER LEVELS WERE MEASURED BELOW EXISTING GROUND SURFACE. THESE OBSERVATIONS ARE SHOWN BELOW. HOWEVER, GROUND WATER LEVELS MAY VARY DUE TO SEASONAL AND OR OTHER FACTORS. IF IMPORTANT TO CONSTRUCTION, THE DEPTH TO GROUND WATER SHOULD BE DETERMINED BY THOSE PERSONS RESPONSIBLE FOR CONSTRUCTION, IMMEDIATELY PRIOR TO BEGINNING WORK.

WATER TABLE WAS 1.0 AFTER 24 HOURS

LEGEND

CLAY SILT SAND HUMUS OR ORGANIC

PREDOMINATE TYPE SHOWN HEAVY.
MODIFYING TYPE SHOWN LIGHT.

FIGURES BESIDE BORINGS INDICATE NUMBER OF BLOWS OF 140-LB. HAMMER DROPPED 30-INCHES REQUIRED TO DRIVE A 2-INCH DIA. SPLIT-SPOON SAMPLER 1-FOOT AFTER FIRST BEING SEATED 6-INCHES (STANDARD PENETRATION TEST)

SUBSOIL PROFILE B

SCALE: 1"=40'

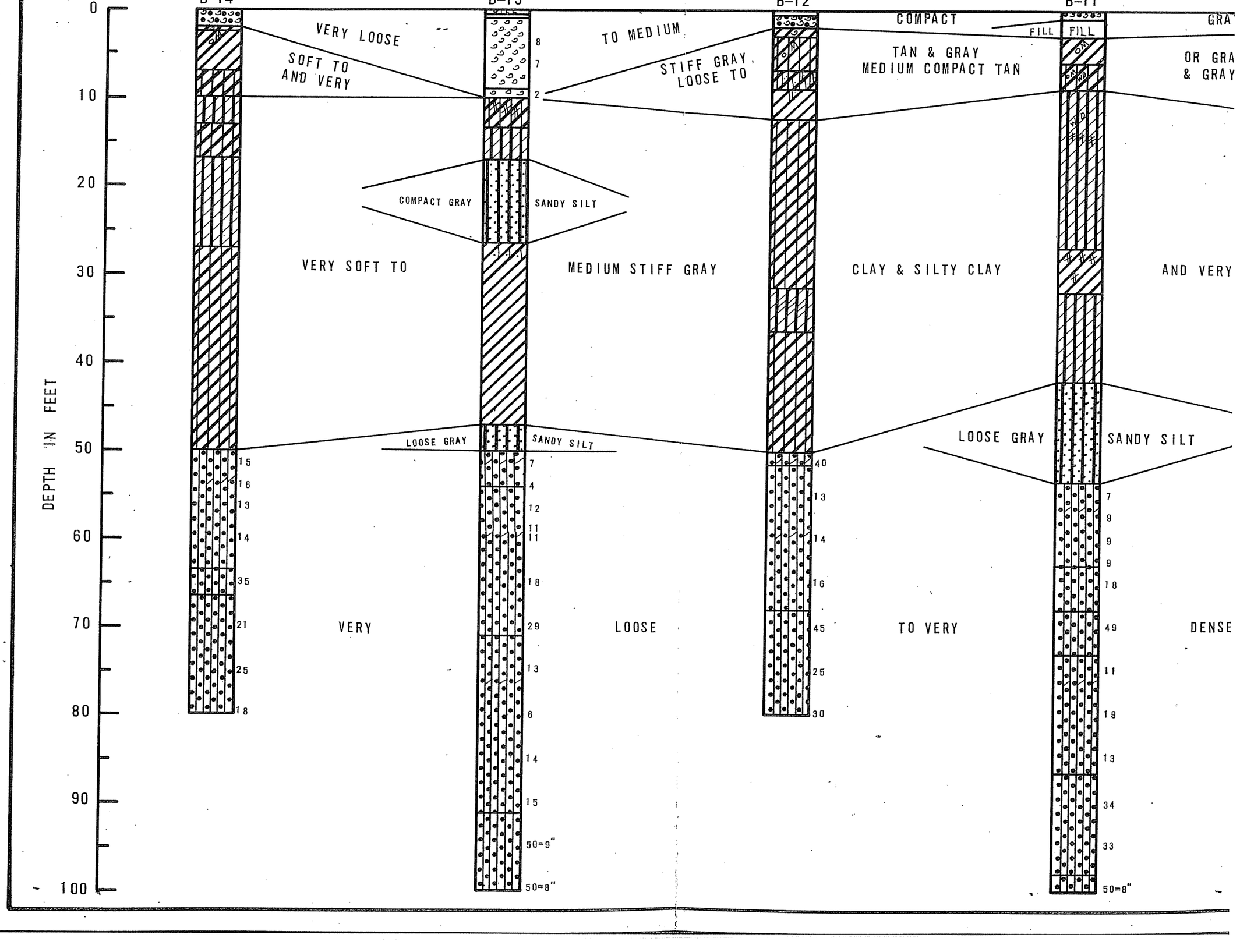
GEOTECHNICAL INVESTIGATION
BELL HALTER EAST YARD
PROPOSED BUILDING AND BULKHEAD
NEW ORLEANS, LOUISIANA

SUBSOIL PROFILE B

FOR
WALDEMAR S. NELSON AND COMPANY, INC.
ENGINEERS AND ARCHITECTS
NEW ORLEANS, LOUISIANA

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
NOVEMBER 1985 METAIRIE, LA.

FIGURE 2


B-14
B-13
B-12
B-11
DEPTH IN FEET
0
10
20
30
40
50
60
70
80
90
100
VERY LOOSE
SOFT TO
AND VERY
COMPACT GRAY
SANDY SILT
VERY SOFT TO
LOOSE GRAY
SANDY SILT
TO MEDIUM
STIFF GRAY,
LOOSE TO
MEDIUM STIFF GRAY
COMPACT
FILL
TAN & GRAY
MEDIUM COMPACT TAN
CLAY & SILTY CLAY
FILL
GRA
OR GRA
& GRAY
AND VERY
LOOSE GRAY
SANDY SILT
VERY
LOOSE
TO VERY
DENSE
8
7
2
15
18
13
14
35
21
25
18
7
4
12
11
11
18
29
13
8
14
15
50=9"
50=8"
40
13
14
16
45
25
30
7
9
9
9
18
49
11
19
13
34
33
50=8"

LOG OF BORING

EUSTIS ENGINEERING COMPANY

SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: Bell Halter East Yard

Proposed Building and Bulkhead, New Orleans, Louisiana

For: Waldemar S. Nelson and Company, Inc., Engineers and Architects

New Orleans, Louisiana

Boring No. 1 **Soil Technician** A. J. Mayeux **Date** 7 October 1985

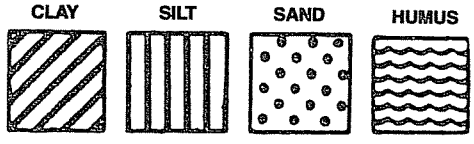
Ground Elev. _____ **Datum** _____ **Gr. Water Depth** See Text

Sample No.	SAMPLE Depth — Feet From	SAMPLE Depth — Feet To	DEPTH STRATUM Feet From	DEPTH STRATUM Feet To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
1	3.0	3.5	0.0		Medium compact tan shells & sand		
2	5.0	6.5		8.5	Ditto	4	13
3	8.5	10.0	8.5		Loose gray shells	3	8
4	13.5	15.0		15.0	Ditto	3	4
5	19.0	19.5	15.0		Very soft gray clay w/clayey silt		
					layers & lenses		
6	24.0	24.5		26.0	Ditto		
7	29.0	29.5	26.0		Very soft to soft gray clay w/silty		
					sand lenses		
8	34.0	34.5			Ditto		
9	39.0	39.5			Ditto		
10	44.0	44.5			Ditto		
11	49.0	49.5			Ditto		
12	54.0	54.5		58.0	Ditto		
13	58.5	60.0	58.0	60.0	Loose gray silty sand	3	9
14	61.0	62.5	60.0		Medium dense gray silty sand w/clay	6	20
					layers		
15	63.5	65.0			Ditto	2	11
16	66.0	67.5		67.5	Ditto	4	20
17	68.5	70.0	67.5		Medium dense gray silty sand	4	20
18	73.5	75.0		77.5	Ditto	15	26
19	78.5	80.0	77.5		Medium dense gray fine sand	7	20
20	83.5	85.0			Ditto	5	27
21	88.5	90.0		90.0	Ditto	6	27

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

WHILE THIS LOG OF BORING IS CONSIDERED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT ITS RESPECTIVE LOCATION ON THE DATE SHOWN, IT IS NOT WARRANTED THAT IT IS REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

Remarks: _____



Predominant type shown heavy. Modifying type shown light.

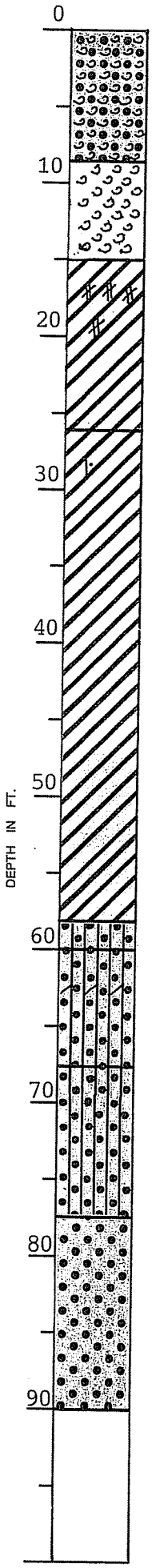


Fig. 3

LOG OF BORING

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: Bell Halter East Yard

Proposed Building and Bulkhead, New Orleans, Louisiana

For: Waldemar S. Nelson and Company, Inc., Engineers and Architects

New Orleans, Louisiana

Boring No. 2 **Soil Technician** A. J. Mayeux **Date** 7-8 October 1985

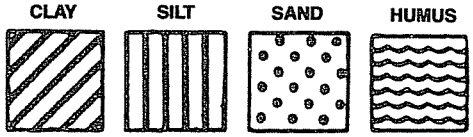
Ground Elev. _____ **Datum** _____ **Gr. Water Depth** See Text

Sample No.	SAMPLE Depth — Feet From	SAMPLE Depth — Feet To	DEPTH STRATUM Feet From	DEPTH STRATUM Feet To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
1	0.0	1.5	0.0	1.5	Medium dense tan sand w/cinders & slag	5	13
2	1.5	3.0	1.5	3.5	Medium dense gray shells	4	11
3	3.5	5.0	3.5		Loose gray shells	2	7
4	6.0	7.5			Ditto	2	6
5	8.5	10.0		12.0	Ditto	1	4
6	14.0	14.5	12.0		Extremely soft to very soft gray clay		
					w/trace of organic matter		
7	19.0	19.5			Ditto		
8	24.0	24.5			Extremely soft to very soft gray clay		
					w/some wood		
9	29.0	29.5		32.0	Extremely soft to very soft gray clay		
					w/silty sand lenses		
10	34.0	34.5	32.0		Very soft to soft gray clay		
11	39.0	39.5			Very soft to soft gray clay w/silty		
					sand layers		
12	44.0	44.5		47.0	Ditto		
13	49.0	49.5	47.0	51.0	Medium stiff gray silty clay w/clayey		
					silty layers		
14	53.0	53.5	51.0	53.5	Loose gray clayey silt w/sand layers		
15	53.5	55.0	53.5		Medium dense gray silty sand w/clay	6	20
					layers		
16	56.0	57.5			Medium dense gray silty sand	6	24
17	58.5	60.0			Medium dense gray silty sand w/clay	4	17
					layers		
18	61.0	62.5		63.5	Ditto	7	20
					(Continued)		

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

WHILE THIS LOG OF BORING IS CONSIDERED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT ITS RESPECTIVE LOCATION ON THE DATE SHOWN, IT IS NOT WARRANTED THAT IT IS REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

Remarks: _____



Predominant type shown heavy. Modifying type shown light.

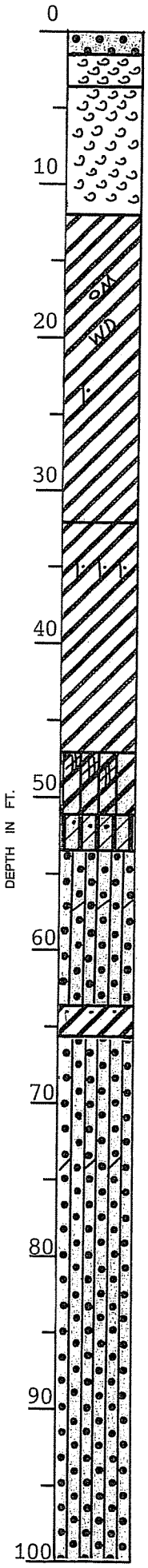


Fig. 4

LOG OF BORING

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: Bell Halter East Yard

Proposed Building and Bulkhead, New Orleans, Louisiana

For: Waldemar S. Nelson and Company, Inc., Engineers and Architects

New Orleans, Louisiana

Boring No. 2 (Cont'd) **Soil Technician** A. J. Mayeux **Date** 7-8 October 1985

Ground Elev. _____ **Datum** _____ **Gr. Water Depth** See Text

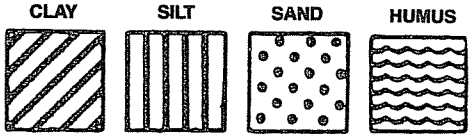
Sample No.	SAMPLE Depth — Feet From	SAMPLE Depth — Feet To	DEPTH STRATUM Feet From	DEPTH STRATUM Feet To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
19	63.5	65.0	63.5	65.5	Stiff gray clay w/sand layers	6	13
20	68.5	70.0	65.5		Medium dense to dense gray silty sand	13	37
					w/clay layers		
21	73.5	75.0			Ditto	3	29
22	78.5	80.0			Ditto	4	15
23	84.5	85.0			Ditto	8	25
24	88.5	90.0			Ditto	6	30
25	93.5	95.0			Ditto	7	31
26	98.5	100.0		100.0	Ditto	8	35

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

WHILE THIS LOG OF BORING IS CONSIDERED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT ITS RESPECTIVE LOCATION ON THE DATE SHOWN, IT IS NOT WARRANTED THAT IT IS REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

Remarks: _____

CLAY SILT SAND HUMUS



Predominant type shown heavy. Modifying type shown light.

DEPTH IN FT.

Fig. 4
(Sheet 2)

LOG OF BORING

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: Bell Halter East Yard

Proposed Building and Bulkhead, New Orleans, Louisiana

For: Waldemar S. Nelson and Company, Inc., Engineers and Architects

New Orleans, Louisiana

Boring No. 3 **Soil Technician** S. Porta **Date** 8 October 1985

Ground Elev. _____ **Datum** _____ **Gr. Water Depth** See Text

Sample No.	SAMPLE Depth — Feet From	SAMPLE Depth — Feet To	DEPTH STRATUM Feet From	DEPTH STRATUM Feet To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
1	0.0	0.5	0.0	0.5	Loose black & gray sand & shells		
2	1.5	3.0	0.5		Loose white & gray shells & sand	1	6
3	3.5	5.0		8.5	Ditto	2	4
4	8.5	9.0	8.5		Very soft gray clay w/wood, shells & clayey silt layers		
5	11.5	12.0		13.0	Very soft gray clay w/sandy silt layers		
6	14.5	15.0	13.0		Soft gray clay w/sandy silt lenses & pockets		
7	19.5	20.0		21.0	Soft gray clay w/clayey silt lenses		
8	24.5	25.0	21.0	26.0	Very loose gray clayey silt w/sand		
9	29.5	30.0	26.0	31.0	Soft gray clay		
10	34.5	35.0	31.0		Loose to medium compact gray clayey silt w/fine sand		
11	39.5	40.0		42.0	Ditto		
12	44.5	45.0	42.0	47.0	Soft gray clay w/silt lenses		
13	48.5	49.0	47.0	49.0	Medium compact gray sandy silt w/clay layers		
14	49.0	50.5	49.0		Loose to medium dense gray silty sand w/clay layers	3	16
15	51.5	53.0			Ditto	4	18
16	54.0	55.5			Ditto	2	14
17	56.5	58.0			Ditto	5	19
18	59.0	60.5			Ditto	1	12
19	63.5	65.0		68.0	Ditto	9	22
20	68.5	70.0	68.0	72.0	Very dense gray silty sand	14	50

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

WHILE THIS LOG OF BORING IS CONSIDERED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT ITS RESPECTIVE LOCATION ON THE DATE SHOWN, IT IS NOT WARRANTED THAT IT IS REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

Remarks: _____

CLAY SILT SAND HUMUS

Predominant type shown heavy. Modifying type shown light.

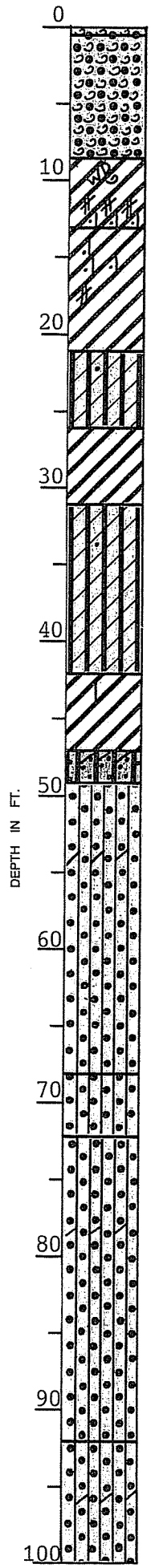


Fig. 5
(Sheet 1)

LOG OF BORING

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: Bell Halter East Yard

Proposed Building and Bulkhead, New Orleans, Louisiana

For: Waldemar S. Nelson and Company, Inc., Engineers and Architects

New Orleans, Louisiana

Boring No. 3 (Cont'd) **Soil Technician** S. Porta **Date** 8 October 1985

Ground Elev. _____ **Datum** _____ **Gr. Water Depth** See Text

Sample No.	SAMPLE Depth — Feet From	To	DEPTH STRATUM Feet From	To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
21	73.5	75.0	72.0		Loose to medium dense gray silty sand	2	11
					w/clay layers		
22	78.5	80.0			Ditto	6	24
23	83.5	85.0			Ditto	9	20
24	88.5	90.0		92.0	Ditto	4	14
25	93.5	95.0	92.0		Very dense gray silty sand w/clay	14	50=10"
					layers		
26	98.5	100.0		100.0	Ditto	9	46

DEPTH IN FT.

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

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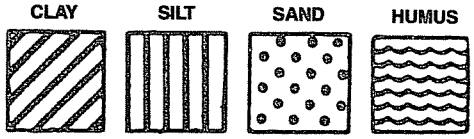
Remarks: _____



Predominant type shown heavy. Modifying type shown light.

Fig. 5
(Sheet 2)

LOG OF BORING

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: Bell Halter East Yard

Proposed Building and Bulkhead, New Orleans, Louisiana

For: Waldemar S. Nelson and Company, Inc., Engineers and Architects

New Orleans, Louisiana

Boring No. 4 **Soil Technician** S. Porta **Date** 9 October 1985

Ground Elev. _____ **Datum** _____ **Gr. Water Depth** See Text

Sample No.	SAMPLE Depth — Feet From	To	DEPTH STRATUM Feet From	To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
1	0.0	0.5	0.0	2.5	White shells & sand & concrete		
2	2.5	3.0	2.5	4.0	Medium stiff gray clay w/organic matter		
					& silty sand pockets		
3	5.5	6.0	4.0	6.5	Medium stiff gray silty clay w/organic		
					matter		
4	7.5	8.0	6.5	9.0	Medium stiff gray & tan silty clay		
5	9.5	10.0	9.0	12.0	Loose gray & tan clayey silt with		
					concretions		
6	12.0	12.5	12.0		Very loose to loose gray clayey silt		
					w/sand		
7	14.5	15.0			Ditto		
8	19.5	20.0			Ditto		
9	24.5	25.0			Very loose to loose gray clayey silt		
					w/sand & silty clay layers		
10	29.5	30.0		32.0	Very loose to loose gray clayey silt		
					w/silty clay layers		
11	34.5	35.0	32.0		Very loose gray sandy silt		
12	39.5	40.0		41.0	Ditto		
13	44.5	45.0	41.0		Medium stiff gray silty clay w/clayey		
					silt layers		
14	48.5	49.0		49.0	Medium stiff gray silty clay w/silty		
					sand layers		
15	49.0	50.5	49.0		Medium dense gray silty sand w/clay	6	24
					layers		
16	51.5	53.0			Ditto	3	16
17	54.0	55.5			Ditto	5	15

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

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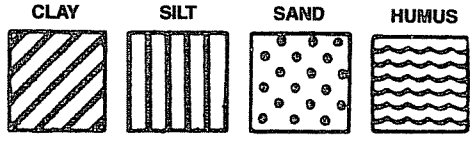
Remarks: _____



Predominant type shown heavy. Modifying type shown light.

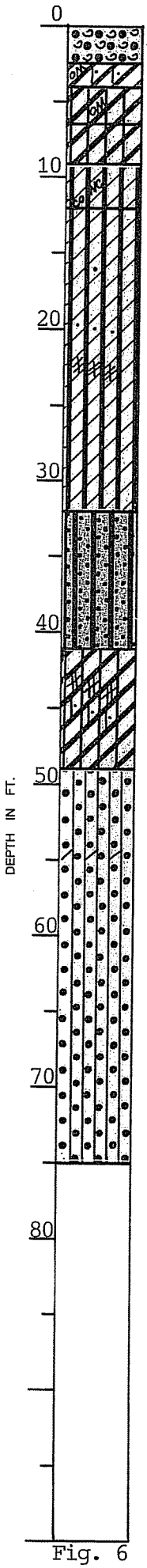


Fig. 6
(Sheet 1)

LOG OF BORING

EUSTIS ENGINEERING COMPANY

SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: Bell Halter East Yard

Proposed Building and Bulkhead, New Orleans, Louisiana

For: Waldemar S. Nelson and Company, Inc., Engineers and Architects

New Orleans, Louisiana

Boring No. 4 Soil Technician S. Porta Date 9 October 1985

Ground Elev. (Cont'd) Datum Gr. Water Depth See Text

Sample No.	SAMPLE Depth — Feet From	To	DEPTH STRATUM Feet From	To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
18	56.5	58.0			Medium dense gray silty sand w/clay	2	15
					layers		
19	59.0	60.5			Ditto	4	17
20	63.5	65.0			Ditto	10	22
21	68.5	70.0			Ditto	2	23
22	73.5	75.0		75.0	Ditto	4	15

DEPTH IN FT.

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

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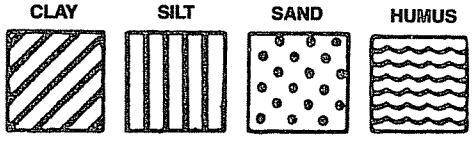
Remarks:



Predominant type shown heavy. Modifying type shown light.

Fig. 6
(Sheet 2)

LOG OF BORING

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: Bell Halter East Yard

Proposed Building and Bulkhead, New Orleans, Louisiana

For: Waldemar S. Nelson and Company, Inc., Engineers and Architects

New Orleans, Louisiana

Boring No. 5 **Soil Technician** S. Porta **Date** 9 October 1985

Ground Elev. _____ **Datum** _____ **Gr. Water Depth** See Text

Sample No.	SAMPLE Depth — Feet From	SAMPLE Depth — Feet To	DEPTH STRATUM Feet From	DEPTH STRATUM Feet To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
1	0.0	0.5	0.0	1.0	Loose tan shells & sand		
2	2.5	4.0	1.0		Medium dense to dense white shells	11	32
					w/gravel		
3	4.0	5.5		6.0	Ditto	3	16
4	6.0	7.5	6.0	10.0	Soft brown humus w/roots	1	4
5	11.5	12.0	10.0	13.0	Soft brown & gray organic clay w/roots		
6	14.5	15.0	13.0	16.0	Soft gray clay w/silt lenses		
7	19.5	20.0	16.0		Very soft gray clay w/sand lenses &		
					layers		
8	24.5	25.0		27.0	Ditto		
9	29.5	30.0	27.0		Soft gray clay w/silt lenses		
10	34.5	35.0			Ditto		
11	39.5	40.0			Soft gray clay w/silt lenses & sand		
					layers		
12	44.5	45.0		47.0	Ditto		
13	49.5	50.0	47.0	52.0	Medium compact gray clayey silt w/sand		
14	54.5	55.0	52.0	56.0	Stiff gray silty clay w/clayey silt		
					layers		
15	56.0	57.5	56.0	58.0	Medium dense gray silty sand	6	25
16	58.5	60.0	58.0		Loose gray silty sand	6	10
17	61.0	62.5			Ditto	4	7
18	63.5	65.0		68.0	Ditto	5	14
19	68.5	70.0	68.0	72.0	Very dense gray silty sand	15	50
20	73.5	75.0	72.0		Medium dense to dense gray silty sand	3	19
					w/clay layers		
21	78.5	80.0			Ditto	6	19

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

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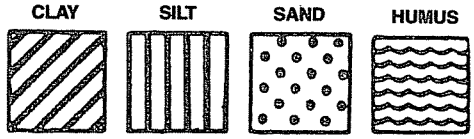
Remarks: _____



Predominant type shown heavy. Modifying type shown light.

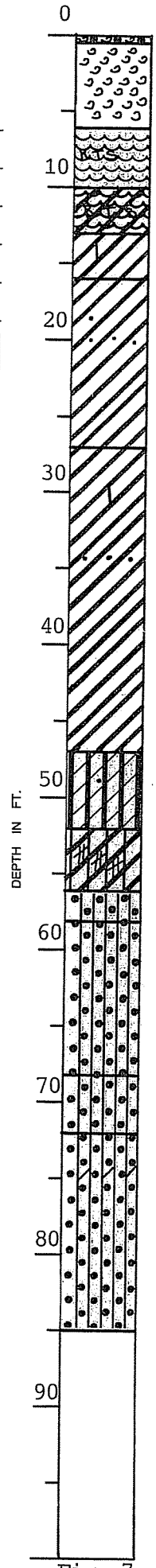


Fig. 7
(Sheet 1)

LOG OF BORING

EUSTIS ENGINEERING COMPANY

SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: Bell Halter East Yard

Proposed Building and Bulkhead, New Orleans, Louisiana

For: Waldemar S. Nelson and Company, Inc., Engineers and Architects

New Orleans, Louisiana

Boring No. 5 (Cont'd) Soil Technician S. Porta Date 9 October 1985

Ground Elev. _____ Datum _____ Gr. Water Depth See Text

Sample No.	SAMPLE Depth — Feet From	SAMPLE Depth — Feet To	DEPTH STRATUM Feet From	DEPTH STRATUM Feet To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
22	83.5	85.0		85.0	Medium dense to dense gray silty sand	8	32
					w/clay layers		

DEPTH IN FT.

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

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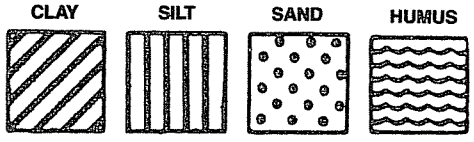
Remarks: _____



Predominant type shown heavy. Modifying type shown light.

Fig. 7

LOG OF BORING

EUSTIS ENGINEERING COMPANY

SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: Bell Halter East Yard

Proposed Building and Bulkhead, New Orleans, Louisiana

For: Waldemar S. Nelson and Company, Inc., Engineers and Architects

New Orleans, Louisiana

Boring No. 6 **Soil Technician** A. J. Mayeux **Date** 10 October 1985

Ground Elev. _____ **Datum** _____ **Gr. Water Depth** See Text

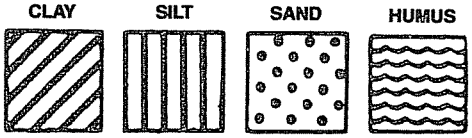
Sample No.	SAMPLE Depth — Feet From	To	DEPTH STRATUM Feet From	To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
			0.0	0.5	Miscellaneous fill (slag, shells, metal,		
					wood, etc.)		
1	0.5	2.0	0.5		Loose gray shells	1	7
2	3.5	5.0		5.0	Ditto	2	8
3	8.0	8.5	5.0		Soft gray silty clay w/organic matter		
					& clayey silt lenses		
4	14.0	14.5		17.0	Soft gray silty clay w/clayey silt		
					layers		
5	19.0	19.5	17.0		Very soft gray clay w/clayey silt		
					layers		
6	24.0	24.5		27.0	Very soft gray clay w/silt lenses		
7	29.0	29.5	27.0		Soft gray clay w/clayey silt layers		
8	34.0	34.5		37.5	Ditto		
9	39.0	39.5	37.5		Loose gray clayey silt		
10	44.0	44.5		50.0	Ditto		
11	50.0	51.5	50.0		Loose gray silty sand w/clay layers	3	10
12	52.5	54.0			Ditto	3	9
13	55.0	56.5			Ditto	3	9
14	58.5	60.0		63.5	Ditto	3	8
15	63.5	65.0	63.5	68.0	Medium dense gray silty sand	6	22
16	68.5	70.0	68.0	72.5	Dense gray silty sand	10	35
17	73.5	75.0	72.5		Medium dense gray silty sand	7	25
18	78.5	80.0		80.0	Ditto	5	25

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

WHILE THIS LOG OF BORING IS CONSIDERED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT ITS RESPECTIVE LOCATION ON THE DATE SHOWN, IT IS NOT WARRANTED THAT IT IS REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

Remarks: _____

CLAY SILT SAND HUMUS



Predominant type shown heavy. Modifying type shown light.

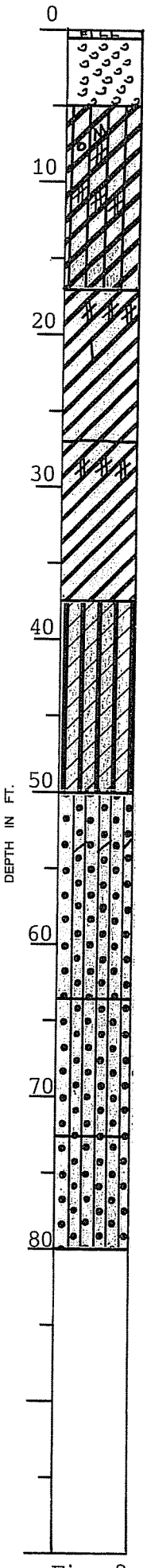


Fig. 8

LOG OF BORING

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: Bell Halter East Yard

Proposed Building and Bulkhead, New Orleans, Louisiana

For: Waldemar S. Nelson and Company, Inc., Engineers and Architects

New Orleans, Louisiana

Boring No. 7 **Soil Technician** A. J. Mayeux **Date** 15-16 October 1985

Ground Elev. _____ **Datum** _____ **Gr. Water Depth** See Text

Sample No.	SAMPLE Depth — Feet From	To	DEPTH STRATUM Feet From	To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
			0.0	0.5	Miscellaneous fill		
1	1.0	2.5	0.5		Medium compact to compact tan gypsum	5	18
2	3.0	4.5			Ditto	3	11
3	7.0	7.5		9.0	Medium compact to compact tan gypsum		
					w/6" layer of hard cement concretion		
4	10.0	11.5	9.0	14.5	Loose to medium dense tan gypsum &	3	9
					shells		
5	19.0	19.5	14.5	26.0	Medium compact gray clayey silt w/roots		
6	29.0	29.5	26.0		Very soft gray silty clay		
7	34.0	34.5		37.0	Ditto		
8	39.0	39.5	37.0	42.0	Loose gray clayey silt		
9	44.0	44.5	42.0	47.0	Soft gray silty clay w/clayey silt		
					layers		
10	49.0	49.5	47.0	51.0	Medium stiff gray silty clay		
11	52.5	53.0	51.0	53.5	Medium stiff gray clay		
12	53.5	55.0	53.5	56.5	Loose gray silty sand w/clay layers	2	8
13	56.0	57.5	56.5		Medium dense gray silty sand w/clay	3	13
					layers		
14	58.5	60.0		61.0	Ditto	4	12
15	61.0	62.5	61.0		Medium dense to dense gray fine sand	6	28
					w/shell fragments		
16	63.5	65.0		66.0	Ditto	6	30
17	68.5	70.0	66.0	71.0	Medium dense gray silty sand w/clay	6	12
					layers		
18	73.5	75.0	71.0		Medium dense to dense gray silty sand	8	27
19	78.5	80.0			Ditto	7	27

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

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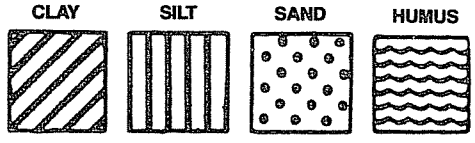
Remarks: _____



Predominant type shown heavy. Modifying type shown light.

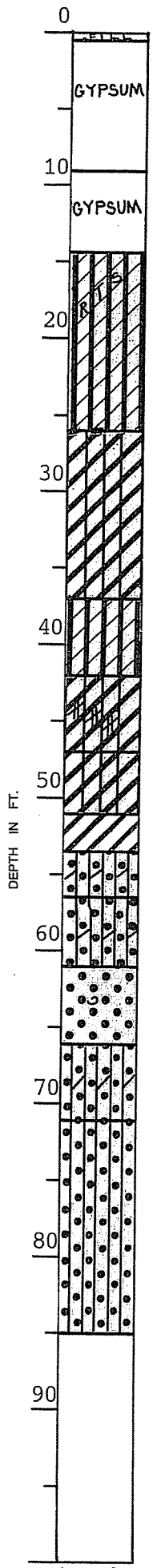


Fig. 9
(Sheet 1)

LOG OF BORING

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: Bell Halter East Yard

Proposed Building and Bulkhead, New Orleans, Louisiana

For: Waldemar S. Nelson and Company, Inc., Engineers and Architects

New Orleans, Louisiana

Boring No. 7 (Cont'd) Soil Technician A. J. Mayeux Date 15-16 October 1985

Ground Elev. _____ Datum _____ Gr. Water Depth See Text

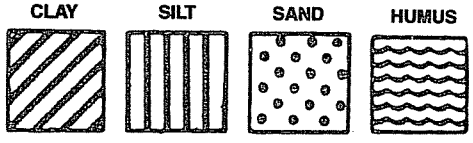
Sample No.	SAMPLE Depth — Feet From	To	DEPTH STRATUM Feet From	To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
20	83.5	85.0		85.0	Medium dense to dense gray silty sand	10	30

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

WHILE THIS LOG OF BORING IS CONSIDERED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT ITS RESPECTIVE LOCATION ON THE DATE SHOWN, IT IS NOT WARRANTED THAT IT IS REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

Remarks: _____

CLAY SILT SAND HUMUS



Predominant type shown heavy. Modifying type shown light.

DEPTH IN FT.

Fig. 9 (Sheet 2)

LOG OF BORING

EUSTIS ENGINEERING COMPANY

SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: Bell Halter East Yard

Proposed Building and Bulkhead, New Orleans, Louisiana

For: Waldemar S. Nelson and Company, Inc., Engineers and Architects

New Orleans, Louisiana

Boring No. 8 **Soil Technician** A. J. Mayeux **Date** 10-11 October 1985

Ground Elev. _____ **Datum** _____ **Gr. Water Depth** See Text

Sample No.	SAMPLE Depth — Feet From	SAMPLE Depth — Feet To	DEPTH STRATUM Feet From	DEPTH STRATUM Feet To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
			0.0	2.0	Medium compact shells & sand		
1	3.5	4.0	2.0	5.0	Very stiff gray silty clay w/some		
					organic matter & wood		
2	9.0	9.5	5.0	11.0	Soft tan & gray silty clay		
3	12.0	12.5	11.0	13.0	Medium compact gray & tan clayey silt		
4	14.0	14.5	13.0	17.0	Loose gray clayey silt		
5	19.0	19.5	17.0	21.5	Very soft gray silty clay		
6	24.0	24.5	21.5		Medium stiff gray clay w/silt layers &		
					some organic matter		
7	29.0	29.5		31.5	Medium stiff gray clay w/silt lenses		
8	34.0	34.5	31.5		Soft gray clay w/silty clay layers		
9	39.0	39.5		41.5	Soft gray clay w/silt lenses		
10	44.0	44.5	41.5	48.5	Very loose gray silty sand w/clay		
					layers		
11	48.5	50.0	48.5	50.0	Loose gray silty sand w/clay layers	3	9
12	50.0	51.5	50.0		Medium dense gray silty sand w/clay	4	13
					layers		
13	52.5	54.0			Ditto	4	14
14	55.0	56.5			Ditto	4	15
15	58.5	60.0		60.5	Ditto	3	12
16	63.5	65.0	60.5		Medium dense gray silty sand	4	26
17	68.5	70.0			Ditto	4	17
18	73.5	75.0			Ditto	6	17
19	78.5	80.0		80.0	Ditto	6	19

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

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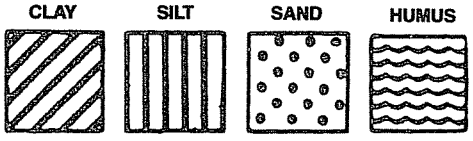
Remarks: _____



Predominant type shown heavy. Modifying type shown light.

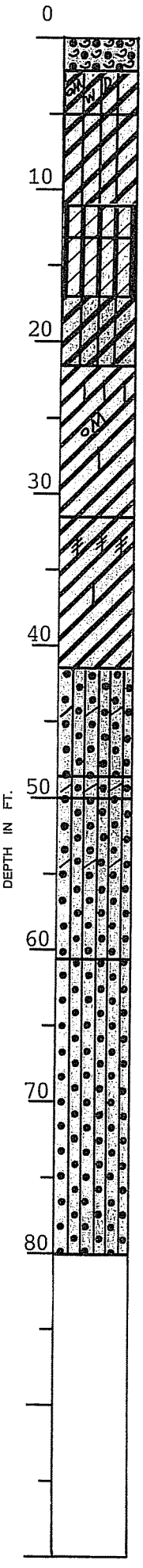


Fig. 10

LOG OF BORING

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: Bell Halter East Yard

Proposed Building and Bulkhead, New Orleans, Louisiana

For: Waldemar S. Nelson and Company, Inc., Engineers and Architects

New Orleans, Louisiana

Boring No. 9 **Soil Technician** A. J. Mayeux **Date** 11 October 1985

Ground Elev. _____ **Datum** _____ **Gr. Water Depth** See Text

Sample No.	SAMPLE Depth — Feet From	To	DEPTH STRATUM Feet From	To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
			0.0	0.5	Medium compact gray shells & sand		
			0.5	1.0	Concrete		
			1.0	1.5	Shells & sand		
1	4.0	4.5	1.5	6.0	Medium stiff gray clay w/some organic		
					matter		
2	7.0	7.5	6.0	8.5	Stiff tan & gray clay		
3	9.5	10.0	8.5	10.5	Soft gray & tan clay		
4	12.0	12.5	10.5		Very soft gray clay w/clayey silt layers		
5	14.5	15.0		17.0	Ditto		
6	19.0	19.5	17.0		Loose to medium compact gray clayey		
					silt		
7	24.0	24.5			Ditto		
8	29.0	29.5			Ditto		
9	34.0	34.5			Ditto		
10	39.0	39.5			Ditto		
11	44.0	44.5			Ditto		
12	49.0	49.5		53.5	Ditto		
13	53.5	55.0	53.5	55.5	Medium dense gray fine sand	3	20
14	56.0	57.5	55.5	58.5	Loose gray silty sand w/clay layers	3	10
15	58.5	60.0	58.5		Medium dense gray silty sand w/clay	3	13
					layers		
16	63.5	65.0			Medium dense gray silty sand	4	18
17	68.5	70.0			Medium dense gray silty sand w/clay	2	12
					layers		
18	73.5	75.0			Medium dense gray silty sand	5	20
19	78.5	80.0			Ditto	8	28

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

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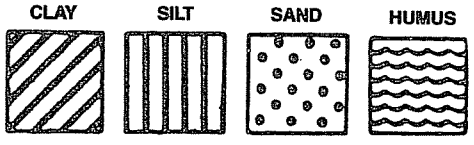
Remarks: _____



Predominant type shown heavy. Modifying type shown light.

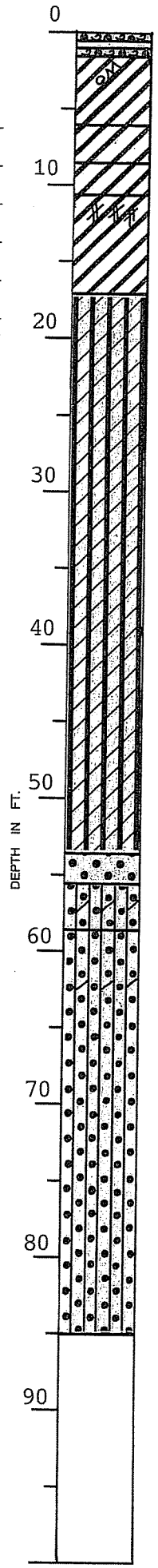


Fig. 11

LOG OF BORING

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: Bell Halter East Yard
Proposed Building and Bulkhead, New Orleans, Louisiana
For: Waldemar S. Nelson and Company, Inc., Engineers and Architects
New Orleans, Louisiana

Boring No. 9 (Cont'd) Soil Technician A. J. Mayeux Date 11 October 1985
Ground Elev. Datum Gr. Water Depth See Text

Sample No.	SAMPLE Depth — Feet From	To	DEPTH STRATUM Feet From	To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
20	83.5	85.0		85.0	Medium dense gray silty sand	8	28

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

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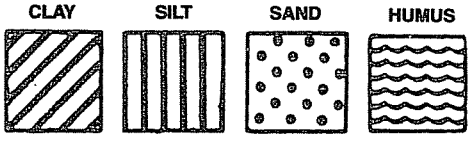
Remarks:

CLAY SILT SAND HUMUS



Predominant type shown heavy. Modifying type shown light.

DEPTH IN FT.

Fig. 11 (Sheet 2)

LOG OF BORING

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: Bell Halter East Yard

Proposed Building and Bulkhead, New Orleans, Louisiana

For: Waldemar S. Nelson and Company, Inc., Engineers and Architects

New Orleans, Louisiana

Boring No. 10 **Soil Technician** A. J. Mayeux **Date** 11 & 14 October 1985

Ground Elev. _____ **Datum** _____ **Gr. Water Depth** See Text

Sample No.	SAMPLE Depth — Feet From	To	DEPTH STRATUM Feet From	To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
			0.0	2.0	Medium compact gray shells & sand		
1	4.0	4.5	2.0	6.5	Stiff gray clay w/some organic matter		
2	7.0	7.5	6.5	9.0	Medium stiff tan & gray clay w/clayey		
					silt layers		
3	9.5	10.0	9.0		Very loose to loose tan & gray clayey		
					silt		
4	12.0	12.5		12.5	Ditto		
5	14.5	15.0	12.5		Loose gray clayey silt		
6	19.0	19.5			Ditto		
7	24.0	24.5			Ditto		
8	29.0	29.5			Ditto		
9	34.0	34.5		36.5	Loose gray clayey silt w/clay layers		
10	39.0	39.5	36.5		Loose to medium compact gray clayey		
					silt w/clay layers		
11	44.0	44.5		48.0	Ditto		
12	48.5	50.0	48.0	51.0	Loose gray silty sand w/clay layers	3	9
13	51.0	52.5	51.0		Medium dense gray silty sand	4	18
14	53.5	55.0			Ditto	5	24
15	58.5	60.0		60.0	Medium dense gray silty sand w/clay	2	15
					layers		
16	63.5	65.0	60.0	67.0	Dense gray silty sand w/trace of clay	5	35
17	68.5	70.0	67.0	71.0	Medium dense gray silty sand w/clay	5	21
					layers		
18	73.5	75.0	71.0	76.5	Medium stiff gray clay w/silt layers	3	9
19	78.5	80.0	76.5		Medium dense gray silty sand	5	29
20	83.5	85.0		86.0	Ditto	5	25

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

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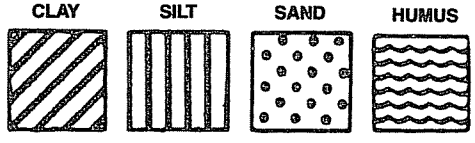
Remarks: _____



Predominant type shown heavy. Modifying type shown light.

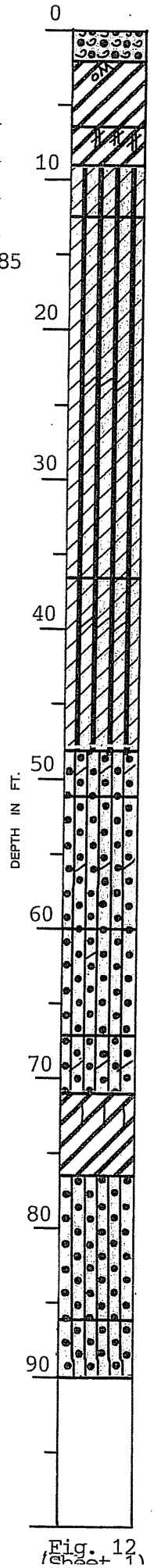


Fig. 12 (Sheet 1)

LOG OF BORING

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: Bell Halter East Yard

Proposed Building and Bulkhead, New Orleans, Louisiana

For: Waldemar S. Nelson and Company, Inc., Engineers and Architects

New Orleans, Louisiana

Boring No. 10 (Cont'd) Soil Technician A. J. Mayeux Date 11 & 14 October 1985

Ground Elev. _____ Datum _____ Gr. Water Depth See Text

Sample No.	SAMPLE Depth — Feet From	To	DEPTH STRATUM Feet From	To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
21	88.5	90.0	86.0	90.0	Dense gray silty sand	7	32

DEPTH IN FT.

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

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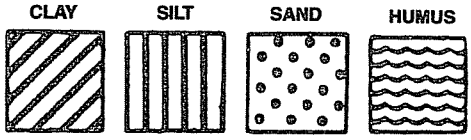
Remarks: _____



Predominant type shown heavy. Modifying type shown light.

Fig. 12
(Sheet 2)

LOG OF BORING

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: Bell Halter East Yard
Proposed Building and Bulkhead, New Orleans, Louisiana
For: Waldemar S. Nelson and Company, Inc., Engineers and Architects
New Orleans, Louisiana

Boring No. 11 **Soil Technician** A. J. Mayeux **Date** 16-17 October 1985

Ground Elev. _____ **Datum** _____ **Gr. Water Depth** See Text

Sample No.	SAMPLE Depth — Feet From	SAMPLE Depth — Feet To	DEPTH STRATUM Feet From	DEPTH STRATUM Feet To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
			0.0	1.0	Medium compact gray shells & sand		
			1.0	3.0	Miscellaneous fill		
1	4.0	4.5	3.0	6.0	Medium stiff gray clay w/some organic		
					matter		
2	7.0	7.5	6.0	9.0	Medium stiff gray & tan silty clay		
					w/some organic matter & wood		
3	9.5	10.0	9.0		Loose gray clayey silt		
4	12.0	12.5			Ditto		
5	14.0	14.5			Loose gray clayey silt w/wood		
6	19.0	19.5			Loose gray clayey silt w/silty clay		
					layers		
7	24.0	24.5		27.0	Ditto		
8	29.0	29.5	27.0	32.0	Soft gray clay w/clayey silt layers &		
					lenses		
9	34.0	34.5	32.0		Loose gray clayey silt		
10	39.0	39.5		42.0	Ditto		
11	44.0	44.5	42.0		Loose gray sandy silt		
12	49.0	49.5		53.5	Ditto		
13	53.5	55.0	53.5		Loose gray silty sand w/clay layers	3	7
14	56.0	57.5			Ditto	3	9
15	58.5	60.0			Ditto	3	9
16	61.0	62.5		63.0	Ditto	3	9
17	63.5	65.0	63.0	68.0	Medium dense gray silty sand	6	18
18	68.5	70.0	68.0	73.0	Dense gray silty sand	10	49
19	73.5	75.0	73.0		Medium dense gray silty sand w/large	2	11
					clay layers		

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

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Remarks: _____

CLAY SILT SAND HUMUS

Predominant type shown heavy. Modifying type shown light.

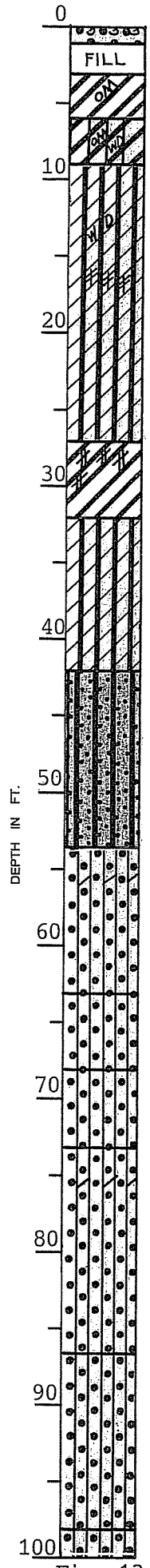


Fig. 13
(Sheet 1)

LOG OF BORING

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: Bell Halter East Yard
Proposed Building and Bulkhead, New Orleans, Louisiana
For: Waldemar S. Nelson and Company, Inc., Engineers and Architects
New Orleans, Louisiana

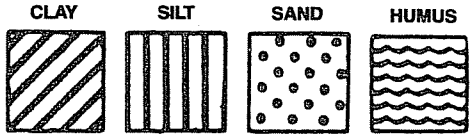
Boring No. 11 (Cont'd) **Soil Technician** A. J. Mayeux **Date** 16-17 October 1985
Ground Elev. _____ **Datum** _____ **Gr. Water Depth** See Text

Sample No.	SAMPLE Depth — Feet From	SAMPLE Depth — Feet To	DEPTH STRATUM Feet From	DEPTH STRATUM Feet To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
20	78.5	80.0			Medium dense gray silty sand	5	19
21	83.5	85.0		86.5	Medium dense gray silty sand w/large	3	13
					clay layers		
22	88.5	90.0	86.5		Dense gray silty sand	10	34
23	93.5	95.0		98.0	Ditto	5	33
24	98.5	100.0	98.0	100.0	Very dense gray silty sand	23	50=8"

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

WHILE THIS LOG OF BORING IS CONSIDERED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT ITS RESPECTIVE LOCATION ON THE DATE SHOWN, IT IS NOT WARRANTED THAT IT IS REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

Remarks: _____



Predominant type shown heavy. Modifying type shown light.

DEPTH IN FT.

Fig. 13

LOG OF BORING

EUSTIS ENGINEERING COMPANY

SOIL AND FOUNDATION CONSULTANTS

METAIRIE, LA.

Name of Project: Bell Halter East Yard

Proposed Building and Bulkhead, New Orleans, Louisiana

For: Waldemar S. Nelson and Company, Inc., Engineers and Architects

New Orleans, Louisiana

Boring No. 12 **Soil Technician** A. J. Mayeux **Date** 14-15 October 1985

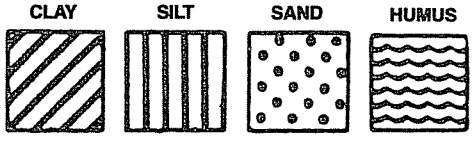
Ground Elev. _____ **Datum** _____ **Gr. Water Depth** See Text

Sample No.	SAMPLE Depth — Feet From	SAMPLE Depth — Feet To	DEPTH STRATUM Feet From	DEPTH STRATUM Feet To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
			0.0	0.5	Concrete		
			0.5	2.0	Medium compact gray shells & sand		
			2.0	3.0	Medium stiff to stiff gray clay w/shells		
1	5.0	5.5	3.0	7.0	Stiff dark gray silty clay w/some		
					organic matter		
2	8.0	8.5	7.0	9.0	Medium stiff tan & gray silty clay		
					w/silty sand pockets & layers		
3	11.0	11.5	9.0	12.5	Medium stiff gray & tan clay w/silt		
					pockets		
4	14.0	14.5	12.5		Soft to medium stiff gray silty clay		
5	19.0	19.5			Ditto		
6	24.0	24.5			Ditto		
7	29.0	29.5		31.5	Ditto		
8	34.0	34.5	31.5	36.5	Medium compact gray clayey silt		
					w/clay layers		
9	39.0	39.5	36.5		Soft to medium stiff gray silty clay		
10	44.0	44.5			Ditto		
11	49.0	49.5		50.0	Ditto		
12	50.0	51.5	50.0	51.5	Dense gray silty sand	10	40
13	53.5	55.0	51.5		Medium dense gray silty sand w/clay	5	13
					layers		
14	58.5	60.0			Ditto	4	14
15	63.5	65.0		68.0	Ditto	5	16
16	68.5	70.0	68.0		Medium dense to dense gray silty sand	10	45
17	73.5	75.0			Ditto	6	25
18	78.5	80.0		80.0	Ditto	7	30

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

WHILE THIS LOG OF BORING IS CONSIDERED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT ITS RESPECTIVE LOCATION ON THE DATE SHOWN, IT IS NOT WARRANTED THAT IT IS REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

Remarks: _____



Predominant type shown heavy. Modifying type shown light.

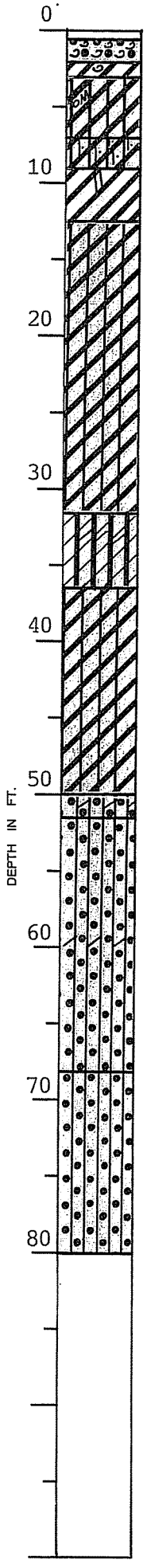


Fig. 14

LOG OF BORING

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: Bell Halter East Yard
Proposed Building and Bulkhead, New Orleans, Louisiana
For: Waldemar S. Nelson and Company, Inc., Engineers and Architects
New Orleans, Louisiana

Boring No. 13 **Soil Technician** A. J. Mayeux **Date** 17 October 1985

Ground Elev. _____ **Datum** _____ **Gr. Water Depth** See Text

Sample No.	SAMPLE Depth — Feet From	SAMPLE Depth — Feet To	DEPTH STRATUM Feet From	DEPTH STRATUM Feet To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
			0.0	0.5	Miscellaneous fill		
			0.5	1.0	Concrete		
1	2.5	4.0	1.0		Loose gray shells	2	8
2	5.0	6.5		9.0	Ditto	2	7
3	8.5	10.0	9.0	10.0	Very loose gray shells	2	2
4	12.0	12.5	10.0	13.5	Very soft gray silty clay w/clayey silt		
					layers		
5	14.5	15.0	13.5	17.0	Loose gray clayey silt		
6	19.0	19.5	17.0		Compact gray sandy silt		
7	24.0	24.5		26.5	Ditto		
8	29.0	29.5	26.5		Very soft gray clay w/sandy silt layers		
9	34.0	34.5			Ditto		
10	39.0	39.5			Ditto		
11	44.0	44.5		47.0	Ditto		
12	49.0	49.5	47.0	50.0	Loose gray sandy silt		
13	50.0	51.5	50.0		Loose gray silty sand w/clay layers	2	7
14	52.5	54.0		54.0	Ditto	1	4
15	55.0	56.5	54.0		Medium dense gray silty sand w/clay	4	12
					layers		
16	57.5	59.0			Ditto	3	11
17	58.5	60.0			Ditto	4	11
18	63.5	65.0			Medium dense gray silty sand	5	18
19	68.5	70.0		71.0	Ditto	4	29
20	73.5	75.0	71.0		Medium dense gray silty sand w/clay	7	13
					layers		
21	78.5	80.0			Ditto	5	8

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

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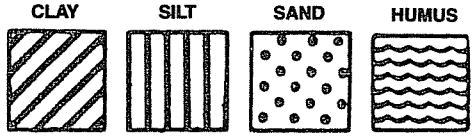
Remarks: _____



Predominant type shown heavy. Modifying type shown light.

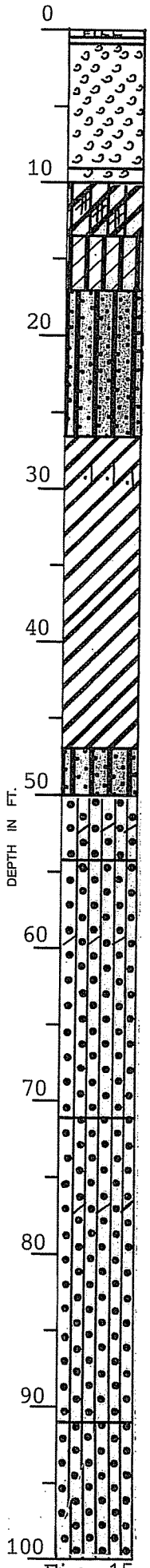


Fig. 15
(Sheet 1)

LOG OF BORING

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: Bell Halter East Yard
Proposed Building and Bulkhead, New Orleans, Louisiana
For: Waldemar S. Nelson and Company, Inc., Engineers and Architects
New Orleans, Louisiana

Boring No. 13 (Cont'd) Soil Technician A. J. Mayeux Date 17 October 1985
Ground Elev. _____ Datum _____ Gr. Water Depth See Text

Sample No.	SAMPLE Depth — Feet From	To	DEPTH STRATUM Feet From	To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
22	83.5	85.0			Medium dense gray silty sand w/clay	5	14
					layers		
23	88.5	90.0		91.0	Ditto	3	15
24	93.5	95.0	91.0		Very dense gray silty sand	15	50=9"
25	98.5	100.0		100.0	Ditto	15	50=8"

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

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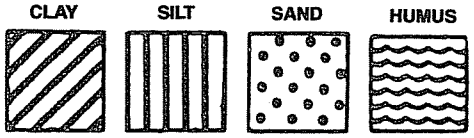
Remarks: _____

CLAY SILT SAND HUMUS



Predominant type shown heavy. Modifying type shown light.

DEPTH IN FT.

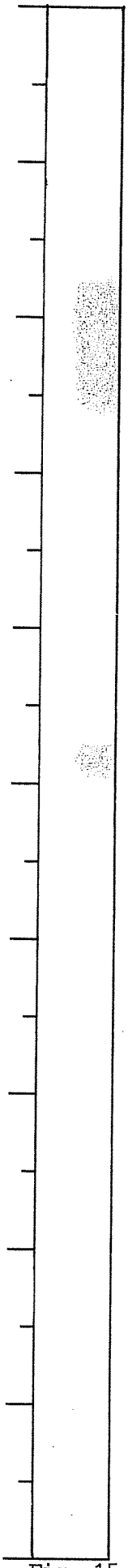


Fig. 15
(Sheet 2)

LOG OF BORING

EUSTIS ENGINEERING COMPANY

SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: Bell Halter East Yard

Proposed Building and Bulkhead, New Orleans, Louisiana

For: Waldemar S. Nelson and Company, Inc., Engineers and Architects

New Orleans, Louisiana

Boring No. 14 **Soil Technician** A. J. Mayeux **Date** 15 October 1985

Ground Elev. _____ **Datum** _____ **Gr. Water Depth** See Text

Sample No.	SAMPLE Depth — Feet From	SAMPLE Depth — Feet To	DEPTH STRATUM Feet From	DEPTH STRATUM Feet To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
			0.0	2.0	Medium compact gray shells & sand		
			2.0	2.5	Medium stiff gray clay w/shells		
1	5.0	5.5	2.5	7.0	Stiff gray clay w/some organic matter		
2	8.0	8.5	7.0	10.0	Medium stiff gray & tan silty clay		
3	11.0	11.5	10.0	13.0	Loose gray clayey silt		
4	14.0	14.5	13.0	17.0	Soft gray silty clay		
5	19.0	19.5	17.0		Very loose gray clayey silt		
6	24.0	24.5		27.0	Ditto		
7	29.0	29.5	27.0		Soft to medium stiff gray silty clay		
8	34.0	34.5			Ditto		
9	39.0	39.5			Ditto		
10	44.0	44.5			Soft to medium stiff gray silty clay		
11	49.0	49.5		50.0	Ditto		
12	50.0	51.5	50.0		Medium dense gray silty sand w/clay	3	15
					layers		
13	52.5	54.0			Ditto	2	18
14	55.0	56.5			Ditto	3	13
15	58.5	60.0		63.5	Ditto	3	14
16	63.5	65.0	63.5	66.5	Dense gray silty sand	8	35
17	68.5	70.0	66.5		Medium dense gray silty sand	6	21
18	73.5	75.0			Ditto	6	25
19	78.5	80.0		80.0	Ditto	6	18

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

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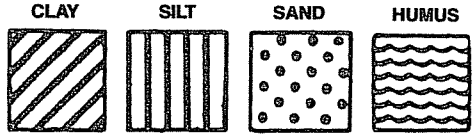
Remarks: _____



Predominant type shown heavy. Modifying type shown light.

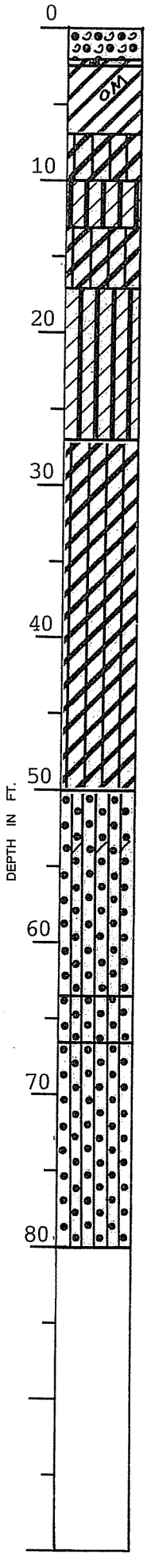


Fig. 16

Geotechnical Investigation
Bell Halter East Yard
Proposed Building and Bulkhead
New Orleans, Louisiana

For: Waldemar S. Nelson and Company, Inc., Engineers and Architects
New Orleans, Louisiana

SUMMARY OF LABORATORY TEST RESULTS

BORING 1

Sample No.	Depth in Feet	Classification	Water Content Percent	Density PCF Dry	Density PCF Wet	Unconfined Compressive Strength PSF
5	19.0	Very soft gray clay w/clayey silt lenses	55.7	66.5	103.5	275
6	24.0	Very soft gray clay w/clayey silt layers	63.3	62.6	102.2	370
7	29.0	Soft gray clay w/roots	73.4	55.9	96.9	525
8	34.0	Very soft gray clay	79.6	52.7	94.7	405
9	39.0	Soft gray clay	71.9	56.4	96.9	730
10	44.0	Ditto	73.0	55.7	96.3	830
11	49.0	Ditto	65.6	59.9	99.1	880
12	54.0	Soft gray clay w/clayey silt lenses	77.2	54.5	96.6	985

Fig. 17

Geotechnical Investigation
Bell Halter East Yard
Proposed Building and Bulkhead
New Orleans, Louisiana

For: Waldemar S. Nelson and Company, Inc., Engineers and Architects
New Orleans, Louisiana

SUMMARY OF LABORATORY TEST RESULTS

BORING 2

Sample No.	Depth in Feet	Classification	Water Content Percent	Density PCF Dry	Density PCF Wet	Unconfined Compressive Strength PSF	Atterberg Limits LL	Atterberg Limits PL	Atterberg Limits PI
6	14.0	Extremely soft gray clay w/trace of organic matter	91.6	48.0	92.0	220	86	21	65
8	24.0	Very soft gray clay	96.3	46.0	90.3	355			
9	29.0	Extremely soft gray clay w/sandy silt lenses	85.8	49.2	91.5	245			
10	34.0	Very soft gray clay	81.7	51.3	93.1	440	98	25	73
11	39.0	Ditto	82.1	51.3	93.4	495			
12	44.0	Soft gray clay	72.1	56.5	97.2	685			
13	49.0	Medium stiff gray silty clay w/clayey silt layers	32.4	88.4	117.0	1000			

Fig. 18

Geotechnical Investigation
Bell Halter East Yard
Proposed Building and Bulkhead
New Orleans, Louisiana

For: Waldemar S. Nelson and Company, Inc., Engineers and Architects
New Orleans, Louisiana

SUMMARY OF LABORATORY TEST RESULTS

BORING 3

Sample No.	Depth in Feet	Classification	Water Content Percent	Density PCF Dry	Density PCF Wet	Unconfined Compressive Strength PSF
4	8.5	Very soft gray clay w/clayey silt layers, organic matter & roots	44.1	79.8	115.0	290
5	11.5	Very soft gray clay w/sandy silt layers	53.7	66.9	102.8	365
6	14.5	Soft gray clay w/sandy silt pockets & lenses	46.1	74.3	108.6	510
7	19.5	Soft gray clay w/clayey silt lenses	37.7	82.1	113.1	560
8	24.5	Very loose gray clayey silt	35.6	85.7	116.2	360*
9	29.5	Soft gray clay	75.3	55.3	97.0	780
10	34.5	Medium compact gray clayey silt w/fine sand	30.8	89.4	116.9	1850*
12	44.5	Soft gray clay	64.4	61.2	100.5	850

BORING 4

2	2.5	Medium stiff gray clay w/silty sand pockets & organic matter	44.1	75.3	108.5	1380
3	5.5	Medium stiff gray silty clay	31.2	88.7	116.4	1615
4	7.5	Medium stiff gray & tan silty clay	32.4	87.8	116.2	1035
5	9.5	Loose gray & tan clayey silt w/concretions	30.6	90.9	118.7	645*
7	14.5	Loose gray clayey silt w/decayed wood	39.6	80.1	111.9	330*
9	24.5	Very loose gray clayey silt with clay lenses & layers	39.2	82.8	115.3	455*
11	34.5	Loose gray sandy silt	31.0	89.5	117.2	805*
13	44.5	Medium stiff gray silty clay w/clayey silt layers & lenses	33.0	85.9	114.2	1440

*Unconsolidated Undrained Triaxial Compression Test - One Specimen; Confined at the approximate overburden pressure.

Fig. 19

Geotechnical Investigation
Bell Halter East Yard
Proposed Building and Bulkhead
New Orleans, Louisiana

For: Waldemar S. Nelson and Company, Inc., Engineers and Architects
New Orleans, Louisiana

SUMMARY OF LABORATORY TEST RESULTS

BORING 5

Sample No.	Depth in Feet	Classification	Water Content Percent	Density PCF Dry	Density PCF Wet	Unconfined Compressive Strength PSF
5	11.5	Soft brown & gray organic clay w/decayed wood	159.7	29.2	75.7	685
6	14.5	Soft gray clay w/silty clay layers	53.8	66.2	101.9	565
8	24.5	Very soft gray clay w/clayey silt lenses	78.2	53.4	95.2	360
10	34.5	Soft gray clay w/clayey silt lenses	65.4	59.7	98.7	770
12	44.5	Soft gray clay w/silty sand lenses	62.8	61.3	99.8	675
14	54.5	Medium compact gray clayey silt	29.4	90.1	116.6	1215*

BORING 6

3	8.0	Soft gray silty clay w/clayey silt lenses & layers	30.9	90.4	118.3	805
4	14.0	Ditto	34.0	88.3	118.3	665
5	19.0	Very soft gray clay w/many clayey silt lenses & layers	39.1	82.2	114.3	380
6	24.0	Very soft gray clay w/clayey silt lenses	71.6	57.2	98.2	495
7	29.0	Soft gray clay w/clayey silt lenses	73.5	55.3	96.0	620
8	34.0	Soft gray clay w/clayey silt layers & decayed wood	35.5	82.9	112.3	730*
9	39.0	Loose gray clayey silt	31.6	90.5	119.1	530*
10	44.0	Ditto	30.1	90.8	118.1	755*

*Unconsolidated Undrained Triaxial Compression Test - One Specimen; Confined at the approximate overburden pressure.

Fig. 20

Geotechnical Investigation
Bell Halter East Yard
Proposed Building and Bulkhead
New Orleans, Louisiana

For: Waldemar S. Nelson and Company, Inc., Engineers and Architects
New Orleans, Louisiana

SUMMARY OF LABORATORY TEST RESULTS

BORING 7

Sample No.	Depth in Feet	Classification	Water Content Percent	Density PCF Dry	Density PCF Wet	Unconfined Compressive Strength PSF
3	7.0	Compact tan gypsum w/shells & concretions	49.1	----	-----	----
5	19.0	Medium compact gray clayey silt	31.2	91.6	120.2	1035*
6	29.0	Very soft gray silty clay w/fine sand	36.0	85.9	116.8	345
7	34.0	Very soft gray silty clay w/clay layers	45.8	75.1	109.5	365
8	39.0	Loose gray clayey silt	35.5	85.2	115.4	510*
9	44.0	Soft gray silty clay w/clayey silt lenses & layers	33.9	85.2	114.0	950
10	49.0	Medium stiff gray silty clay w/alternating clayey silt lenses	34.9	84.7	114.3	1720
11	52.5	Medium stiff gray clay	51.1	70.8	107.0	1505

BORING 8

1	3.5	Very stiff dark gray silty clay w/decayed wood	26.8	91.6	116.2	4380*
2	9.0	Soft gray & tan silty clay	31.0	92.0	120.5	960
3	12.0	Medium compact gray clayey silt	33.0	88.2	117.4	1335*
4	14.0	Loose gray clayey silt w/clay lenses & layers	35.0	86.8	117.2	695*
5	19.0	Very soft gray silty clay with clayey silt layers	43.2	76.5	109.5	435
6	24.0	Medium stiff gray clay w/clayey silt lenses, layers & trace of organic matter	37.5	81.8	112.5	1125
7	29.0	Medium stiff gray clay w/clayey silt & silty clay layers & lenses	37.0	82.1	112.5	1010
8	34.0	Soft gray clay w/silty clay layers	38.6	80.6	111.7	795
9	39.0	Soft gray clay w/silt lenses	52.3	69.3	105.6	605

*Unconsolidated Undrained Triaxial Compression Test - One Specimen; Confined at the approximate overburden pressure.

Fig. 21

Geotechnical Investigation
Bell Halter East Yard
Proposed Building and Bulkhead
New Orleans, Louisiana

For: Waldemar S. Nelson and Company, Inc., Engineers and Architects
New Orleans, Louisiana

SUMMARY OF LABORATORY TEST RESULTS

BORING 9

Sample No.	Depth in Feet	Classification	Water Content Percent	Density PCF Dry	Density PCF Wet	Unconfined Compressive Strength PSF	Atterberg Limits LL	Atterberg Limits PL	Atterberg Limits PI
1	4.0	Medium stiff gray clay w/organic matter & gravel	46.5	71.3	104.5	1115			
2	7.0	Stiff gray & tan clay w/clayey silt pockets	30.5	91.3	119.2	2650	57	21	36
3	9.5	Soft gray & tan clay w/clayey silt pockets	46.3	74.1	108.4	890			
4	12.0	Very soft gray clay w/clayey silt layers & pockets	59.9	64.4	103.0	480	79	24	55
6	19.0	Loose gray clayey silt	36.5	83.6	114.1	600			
8	29.0	Loose gray clayey silt w/large clay pockets	32.9	87.9	116.8	740*			
10	39.0	Loose gray clayey silt w/clay lenses	30.5	91.8	119.8	715	30	24	6
12	49.0	Medium compact gray clayey silt	31.2	90.5	118.8	1005*			

*Unconsolidated Undrained Triaxial Compression Test - One Specimen; Confined at the approximate overburden pressure.

Fig. 22

Geotechnical Investigation
Bell Halter East Yard
Proposed Building and Bulkhead
New Orleans, Louisiana

For: Waldemar S. Nelson and Company, Inc., Engineers and Architects
New Orleans, Louisiana

SUMMARY OF LABORATORY TEST RESULTS

BORING 10

Sample No.	Depth in Feet	Classification	Water Content Percent	Density PCF Dry	Density PCF Wet	Unconfined Compressive Strength PSF
1	4.0	Stiff gray clay w/clayey silt pockets & trace of organic matter	31.5	88.9	116.9	2380
2	7.0	Medium stiff tan & gray clay w/clayey silt pockets	29.2	92.6	119.6	1765
3	9.5	Very loose gray & tan clayey silt w/silty clay layers	32.3	91.2	120.7	460
4	12.0	Loose gray & tan clayey silt	35.6	84.4	114.5	855
5	14.5	Loose gray clayey silt w/silty clay layers	33.9	88.5	118.5	585*
7	24.0	Loose gray clayey silt w/roots	37.0	84.4	115.6	765
9	34.0	Loose gray clayey silt	34.5	85.1	114.5	910
10	39.0	Ditto	31.8	88.5	116.6	745
11	44.0	Medium compact gray clayey silt w/clay lenses	28.3	94.3	121.0	1295*

BORING 11

4	12.0	Loose gray clayey silt	35.7	86.2	117.0	740
5	14.0	Loose gray clayey silt w/decayed wood	31.3	----	------	----
6	19.0	Loose gray clayey silt w/silty clay layers	33.3	89.2	118.9	960*
7	24.0	Soft gray silty clay w/clayey silt layers & lenses	35.3	85.0	115.0	875
8	29.0	Soft gray clay w/clayey silt lenses & layers	42.3	76.5	108.8	620*
9	34.0	Loose gray clayey silt	31.5	----	------	----
11	44.0	Loose gray sandy silt	27.2	94.9	120.9	855*

*Unconsolidated Undrained Triaxial Compression Test - One Specimen; Confined at the approximate overburden pressure.

Fig. 23

Geotechnical Investigation
Bell Halter East Yard
Proposed Building and Bulkhead
New Orleans, Louisiana

For: Waldemar S. Nelson and Company, Inc., Engineers and Architects
New Orleans, Louisiana

SUMMARY OF LABORATORY TEST RESULTS

BORING 12

Sample No.	Depth in Feet	Classification	Water Content Percent	Density PCF Dry	Density PCF Wet	Unconfined Compressive Strength PSF
1	5.0	Stiff dark gray silty clay w/roots	30.8	84.6	110.6	3050
2	8.0	Medium stiff gray & tan silty clay w/silty sand pockets, layers & concretions	31.7	90.0	118.6	1150
3	11.0	Medium stiff gray & tan clay with silt pockets & concretions	39.4	80.1	111.7	1185
4	14.0	Soft gray silty clay w/sandy silt lenses & layers	35.8	84.9	115.3	730
5	19.0	Medium stiff gray silty clay w/clayey silt layers & lenses	34.5	85.0	114.3	1045
6	24.0	Soft gray silty clay w/roots	37.5	80.7	111.0	660
8	34.0	Medium compact gray clayey silt w/clay lenses & concretions	32.8	89.0	118.2	1035*
10	44.0	Medium stiff gray silty clay	30.7	88.0	115.1	1165

BORING 13

4	12.0	Very soft gray silty clay w/clayey silt layers	34.2	88.1	118.3	480
5	14.5	Loose gray clayey silt	31.9	91.6	120.9	655*
6	19.0	Compact gray sandy silt	30.8	92.1	120.4	2135*
8	29.0	Very soft gray clay w/sandy silt layers	45.9	73.0	106.5	355
10	39.0	Very soft gray clay w/clayey silt layers & fine sand	44.0	76.5	110.2	325
12	49.0	Loose gray sandy silt w/clayey silt layers	29.2	92.2	119.2	930*

*Unconsolidated Undrained Triaxial Compression Test - One Specimen; Confined at the approximate overburden pressure.

Fig. 24

Geotechnical Investigation
Bell Halter East Yard
Proposed Building and Bulkhead
New Orleans, Louisiana

For: Waldemar S. Nelson and Company, Inc., Engineers and Architects
New Orleans, Louisiana

SUMMARY OF LABORATORY TEST RESULTS

BORING 14

Sample No.	Depth in Feet	Classification	Water Content Percent	Density PCF Dry	Density PCF Wet	Unconfined Compressive Strength PSF
1	5.0	Stiff gray clay w/some silt & roots	30.2	91.1	118.6	2970
2	8.0	Medium stiff gray & tan silty clay w/fine sand & concretions	33.7	86.5	115.7	1105
3	11.0	Loose gray clayey silt	32.7	90.5	120.0	690*
4	14.0	Soft gray silty clay	37.7	82.6	113.7	520
5	19.0	Very loose gray clayey silt	33.7	86.9	116.2	185*
7	29.0	Medium stiff gray silty clay w/clayey silt lenses & layers	36.6	82.8	113.1	1395
8	34.0	Soft gray silty clay w/fine sand	33.9	87.8	117.6	610
9	39.0	Soft gray silty clay w/clayey silt lenses & layers	33.8	88.6	118.5	650
10	44.0	Medium stiff gray silty clay w/clayey silt lenses & layers	31.5	89.3	117.4	1140

*Unconsolidated Undrained Triaxial Compression Test - One Specimen; Confined at the approximate overburden pressure.

Fig. 25

CAPACITY OF PILE GROUPS

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

In Which:

Q_a = Allowable load carrying capacity of pile group, lb

P = Perimeter distance of pile group, ft

L = Length of pile, ft

c = Average (weighted) cohesion or shear strength of material between surface and depth of pile tip, psf (c = one-half the unconfined compressive strength)

q_u = Average unconfined compressive strength of material in the zone immediately below pile tips, psf

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 the friction area = 2

(FSB) = Factor of safety for the base area = 3

The values of c and q_u used in this formula should be based on applicable soil data shown on the Summary of Laboratory Test Results tabulations and logs of soil borings for this report. In the application of this formula, the weight of the piles, pile caps and mats, considering the effect of buoyancy, should be included.

SPACING OF PILE GROUPS

$$SPAC = 0.05\ (L_1) + 0.025\ (L_2) + 0.0125\ (L_3)$$

In Which:

SPAC = Center to center of piles, ft

L_1 = Pile penetration up to 100 feet

L_2 = Pile penetration from 101 to 200 feet

L_3 = Pile penetration beyond 200 feet

Note: Minimum pile spacing = 3 pile diameters (center to center)

Fig. 26