

**REPORT OF
GEOTECHNICAL INVESTIGATION
McKINLEY MIDDLE MAGNET SCHOOL
BATON ROUGE, LOUISIANA**

FOR

**CSRS/THE FACILITY GROUP
BATON ROUGE, LOUISIANA**



SOILS AND FOUNDATION ENGINEERS, INC.

GEOTECHNICAL CONSULTANTS

BATON ROUGE, LOUISIANA



**SOILS AND FOUNDATION ENGINEERS, INC.
GEOTECHNICAL CONSULTANTS**

BILLY R. PROCHASKA, P.E.

July 14, 2004

CSRS/The Facility Group
2875 Michelli Drive
Baton Rouge, Louisiana 70805

Attn: Mr. Jim Smith

Re: Geotechnical Investigation
McKinley Middle Magnet School
Baton Rouge, Louisiana
SFE Job No. 04-143

Gentlemen:

We have completed the work authorized on June 9, 2004. Contained herein are the findings of this investigation and our recommendations for foundation construction.

SITE CONDITIONS

The site is presently occupied by a two story school building in the process of being demolished.

The site slopes toward the east from McCalop Street to Eddie Robinson Sr. Street. The overall elevation differential across the site is approximately 12 feet.

SUBSOILS

Six (6) borings were drilled for the building and six (6) shallow holes drilled in the paving and roadway areas. The borings were made at the approximate locations shown on Figure 1 as requested by Coleman and Partners.

The borings at the highest elevation, B-4, 5 and 6, encountered eight to ten feet of medium to stiff silty clays overlying stiff to very stiff clays.

Borings B-1 and B-3 were made on the slope. Boring B-1 encountered approximately eight feet of very stiff silty clay overlying approximately five feet of soft to very soft silty clay. Below 13 feet the stiff to very stiff clay was sampled. Boring B-3 encountered approximately three feet of silty clay with gravel (fill) over five feet of very stiff silty clay and approximately four feet of medium clay before the very stiff clay was found.

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At the base of the slope, Borings B-1, P-3 and P-4, much of the area is paved drives, basketball and tennis courts. The predominate shallow soils are gray silty clays or silty clay with gravel (fill) over medium to stiff brown clay and silty clay.

The area has settled and the tennis court surface is cracked. At Boring B-2, as located by the architect, four attempts were made to penetrate the two layers of paving separated by a leveling layer of fill. The boring was then located 25 feet to the south, near the fence, where only one paving slab was encountered. This boring penetrated the concrete paving and entered a soft silty clay underlain by two feet of stiff clay and then medium to stiff clay to a depth of 14 feet. Below that depth (approximate elevation +26) stiff to very stiff clays were sampled to a total depth of 60 feet.

An Idealized Subsoil Profile is presented on Figure 2 to assist in visualizing the stratigraphy. Detailed boring logs are presented in Appendix A.

GROUND WATER

The borings were augered in the upper reaches to determine the depth to free water and evaluate its affect on construction. The results of the ground water measurements are as shown on the boring logs in Appendix A.

These ground water levels can vary with rainfall or other conditions and should be verified prior to drilling foundations or conducting major earth moving tasks. The stratification at this site is conducive to the development of a perched water table.

ENGINEERING ANALYSIS

All foundations must meet two basic criteria for satisfactory performance. They must be safe with respect to shear failure of the soils or excessive movements caused by shearing strains induced by the loads. Secondly, the consolidation settlements must not be of such magnitude that the differential settlements will cause unsightly cracking of the structure or affect operations.

FURNISHED INFORMATION

The proposed structure will have two stories with the first floor slab on grade. The maximum column loads have been furnished as 150 *Kips* and perimeter gradebeams will be loaded to approximately 7 *Kips* per lineal foot. The major portion of the building will have finished floor at elevation 49.0 feet. The area of the building over the present cafeteria will have finished slab at elevation 46.67 feet.

Your structural engineers have expressed a desire to use drilled shafts. Driven pile capacities have also been developed to support the structure, as these have proven more economical on some recent projects.

SHALLOW FOUNDATIONS

The use of shallow foundations is limited by the variable shallow soil conditions.

Bearing. Square footings bearing at two feet below grade should be limited to sizes of two foot minimum to five foot maximum and the bearing pressure limited to 1,850 *PSF*. Similarly placed strip/wall footings should be limited to 18 inch wide minimum and 36 inch wide maximum size and a bearing pressure of 1,500 *PSF*.

In the area of Boring B-2, the paving and underlying weak soils should be removed and replaced with select compacted fill before either shallow or deep foundation are constructed.

Settlements. Settlements of footing of these sizes bearing at the above pressures should be $\frac{1}{2}$ to $\frac{3}{4}$ inch plus any recurring settlement caused by fill placement.

DRILLED FOUNDATIONS

Drilled cast-in-place straight sided shafts are commonly used in this area to support loads too heavy for shallow foundations. At this site the stratigraphy effectively rules out the use of bell bottoms as the stiff clay stratum is slickensided.

Straight Sided Shaft Capacities. The capacities for drilled cast-in-place straight sided shafts are presented on Figure 3.

These capacities assume a cutoff at elevation +45 and are based on a limited adhesion at the shaft/soil interface. If drilling fluids are required for installation, the capacities should be reduced by 30%.

The maximum recommended compression values cited above may be increased by 30% for temporary wind loads. For tension loads, 60% of the above values should be used.

Settlement of Drilled Shafts. Based on the furnished loadings, it appears that shafts will be utilized in small groups. Settlements of these shafts should be on the order of $\frac{1}{2}$ inch for groups of four, with diameters of up to 24 inches. Larger groups will experience higher settlements.

Group Efficiency. When these shafts are used in groups or clusters containing more than 4 shafts, consideration should be given to a reduction in the maximum recommended single shaft capacities (both in compression and tension) due to the effect of group action.

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Inspection and Installation. Installation of drilled foundations may require the use of temporary casing to approximately elevation 30, particularly if construction is attempted in the wet season. Concrete should be placed immediately after the excavation has been completed and inspected. In no event should any excavation be allowed to remain open for more than one hour. Should there be seepage in excess of one inch in the bottom of the excavation, the holes should be pumped dry or else the concrete tremied or pumped into place. The soils excavated from these deep foundations should not be used as a structural fill.

Probe and Test Shafts. It is recommended that at least four probe shafts be drilled within the proposed building area to determine whether casing will be required and the depth needed for installation as well as investigate possible ground water problems. At least one of the probe shafts should be load tested. The shaft should be load tested to at least twice the design load in accordance with ASTM D-1143, but preferably to failure. A period of at least 14 days should be allowed between installation and load testing.

DRIVEN PILING

The following sections outline factors to be considered in the design and installation of a driven pile foundation.

Pile Capacities. Analyses have been made to determine the allowable single pile capacities in compression for 12, 14 and 16 inch square prestressed concrete piles and ASTM D-25 treated timber piles with 7 inch diameter tips. The calculated capacities are presented on Figure 4. In all calculations, cutoff was assumed at elevation +45. The timber piles will reach a 25 ton capacity at a penetration of 40 feet, approximate tip elevation +5.

For piles subject to uplift forces, it is recommended that the tension capacities be 60% of the recommended compression capacity at a given depth. The recommended compression capacities may be increased by 30% for temporary wind or impact load.

Settlements. For the anticipated loads, settlements of small pile groups required to support the relatively light columns in this structure, up to 3 piles, should be on the order of $\frac{1}{4}$ to $\frac{1}{2}$ inch.

Group Efficiency. For these small pile groups, no group efficiency reductions are required. Piles deriving their capacities from skin friction in the upper clays should be checked for group efficiency if the group exceeds from piles.

Heave. When groups of piles are driven through stiff to very stiff Pleistocene clays such as are found here, some of the previously driven piles can heave or be displaced due to adjacent piles driven later. It is therefore recommended that the butt elevations of each pile be determined immediately after it is driven and again when the group is completed. If any pile is noted to have heaved more than $\frac{1}{4}$ inch, it should be re-driven to at least its original final resistance.

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If heave becomes a problem, it can be alleviated by pre-boring an undersized hole. The pre-bored hole should be no larger in diameter than 80% of the pile diameter and should terminate 15 or more feet above the planned pile tip depth.

Pile Driving. To minimize settlements, the piles should penetrate 40 feet or more. Hard driving conditions are not generally anticipated until the dense sand is encountered. Pre-drilling as described above will reduce hard driving and pile damage. The minimum recommended pile spacing is 3 feet center to center or 5% of length, whichever is greater.

Should high driving resistance develop, the pre-drilling is recommended to ease installation. Timber piles should not be driven more than 35 blows per foot with a 15,000 foot pound hammer.

Probe and Test Piles. We recommend that prior to ordering the job piles at least four probe piles be installed at locations near the four corners. These can be installed at locations where they can be utilized as job piles. The same type of piles and installation equipment that will be used for the job piles should be specified for the probe piles. The piles should be driven in open excavations or oversized cased holes to the depth of any planned excavations for pile caps or elevation pits.

We recommend that the piles be allowed to set for at least 7, but preferably 14, days after which the pile with the lowest driving resistance should be load tested. The pile should be tested to twice the design load and three times the design load or to failure as specified in ASTM D-1143. Logging and documentation of the installation of the probe piles and the load tests, as should all pile driving operations, be accomplished by technicians experienced in these operations and working under the supervision of a geotechnical engineer.

After the load test has been performed, **SOILS AND FOUNDATION ENGINEERS, INC.** will be happy to analyze the records and assist in determining the required production pile lengths.

Vibration Monitoring and Damage Survey. The installation of driven piles will cause vibrations (shock waves) to travel to existing structures in an area within 200 feet of the driving. These vibrations can be reduced by the previously described pre-drilling. The actual vibrations should be monitored at the nearest structure, at least through the probe pile program with a portable seismograph. **SOILS AND FOUNDATION ENGINEERS, INC.** can provide these services. Prior to the initiation of construction, all buildings within 200 feet of the building foot print should be carefully inspected, cracks measured and photographed, and the condition of the structures thoroughly documented.

FLOOR SLAB

The building floor slab should be placed separate from the deep foundation supported gradebeams or the slab gradebeam connections heavily reinforced. Beneath the building slabs, a layer of coarse sand or pea gravel, covered with plastic film or mopped asphalt membrane, should be placed to reduce slab sweating.

LATERAL EARTH PRESSURES

For any elevator pits and the low height retaining structure around the lower finished slab elevation, the following earth pressures are recommended for design. Any surcharge due to adjacent traffic or storage of materials should be added to the following pressures.

Clay Backfill. The walls subjected to pressures from a compacted clay backfill should be designed for a pressure of 100 *PSF* at the surface of the backfill with an increase of 120 *PSF* per foot of wall height.

Sand Backfill. If a drained sand backfill is used against a wall, the wall should be designed for an equivalent fluid pressure of 60 *PCF*. This equivalent fluid density should be increased to 90 *PCF* if drainage is not provided.

EXCAVATIONS

Shallow excavations four feet or less in depth can be excavated with vertical side slopes. Deeper excavations should be cut on 1(V):1(H) slopes.

SITE PREPARATION AND FILL PLACEMENT

Where necessary to raise the site above existing grade, the following procedures are recommended. It should be noted that the area presently covered by the building may be wet and require chemical or mechanical drying before borings used as fill or as base for compacting fill.

Stripping. Prior to fill placement, all vegetation, topsoil (8 to 10 inches deep), and other undesirable materials should be removed as should the double concrete slabs in the area of Boring B-2. The exposed surface should then be traversed with a loaded dump truck to locate any soft spots. Soft spots or pumping areas and stump holes should be excavated and replaced as described below.

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Fill Materials and Placement. Any cohesive soil used for fill should be a clean select material free of excess silt with a Plasticity Index of 15 to 20. This material should be placed in loose 6 to 8 inch thick lifts at a moisture content within $\pm 2\%$ of optimum as determined in the Modified Proctor Compaction Test (ASTM D-1557). Each lift should be compacted to 90% of the maximum density determined in the above test, tested and approved prior to placing the next lift. The upper silty clays found on the high side of the site are suitable for use as fill if placed under proper moisture control.

FLOOR SLAB

The floor slabs should be placed over a vapor proofing membrane and a free draining granular capillary breaker. The ground material should meet LADOTD 1003.7 of ASTM C-33 size 8 gradation.

FILL INDUCED SETTLEMENTS

The placement of 7 to 8 feet of fill in some areas of the site will cause consolidation settlements of 2 to 3 inches.

Settlements of this magnitude would cause downdrag on the shafts or piles and cracking of the slabs.

If the completed fill is in place 90+ days before installation of the foundations, the remaining settlements should be $\frac{1}{2}$ inch or less.

The rate of settlement should be monitored using settlement plates under the fill or survey hub driven in the surface of the fill. From periodic surveys the rate of settlement can be determined and the residual settlements calculated. At such a time as the remaining settlements are tolerable, foundation construction can begin.

PAVING

All paving materials and workmanship should conform to "*Louisiana Standard Specifications for Roads and Bridges, 2000.*"

Traffic. The campus will have truck traffic only in delivery and garbage pickup areas. One area is dedicated for school buses only. Traffic volumes were not available. The majority of the paving will experience only automobile traffic.

Subgrade. The success of any paving system will require the development of a good drainage system. The subgrade soils are moisture sensitive due to the high silt content. At the time of this investigation, the CBR values to three feet are 2 or less. However, with saturation these values will be reduced.

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GeoGrid Reinforcement. If a crushed stone base or crushed Portland Cement Concrete (LADOTD 1003.03) is used under the paving, the service life will be greatly extended if a geogrid is placed between the crushed aggregate and the subgrade. The geogrid should be Tensar BX-1100 or equal.

Base. The base should consist of cement stabilized imported select material LADOTD 301.07(a) or an aggregate base consisting of crushed stone or crushed Portland Cement Concrete as specified above.

Soil cement made of the in situ soils will be very brittle and experience shrinkage cracks during hydration. These cracks will reflect through the asphaltic concrete and provide a passage for fines to pump through the cracks and through the joints of a rigid paving. Therefore, the imported select fill is recommended if soil cement is used.

Surface. Both rigid and flexible paving surfaces have been analyzed. The rigid section should consist of a mix developing a 500 PSI modulus of rupture at 28 days. If used, the asphaltic concrete should be a high stability Type 8 or Super Pave mix.

Rigid paving should be placed in panels of 12 to 15 feet square and the joints doveled and/or keyed as recommended by the Portland Cement Association.

HEAVY PAVING ALTERNATES BUS AND TRUCK TRAFFIC					
THICKNESS - INCHES				ALLOWABLE ESAL'S	
TREATED SUBGRADE	AGGREGATE BASE	ASPHALTIC BINDER	CONCRETE SURFACE	WITH OUT	WITH GRID¹
0	8	2	2	13,380	40,140
8	8	2	1	21,000	63,060
8	8	2	2	52,280	156,850
8	10	2	2	88,990	266,980
		PORTLAND CEMENT SURFACE²			
0	4		7.5		123,250
0	6		7.5		277,012
0	8		7.5		464,190
0	10		7.0		130,190

1. TENSAR BX 1100 OR EQUAL
2. 500 PSI AT 28 DAYS TIPPING

TIPPING AREA FOR GARBAGE TRUCKS USE 10" CONCRETE WITH TOP AND BOTTOM TIED STEEL.

Asphaltic concrete is not recommended for the truck areas subject to constantly turning vehicles.

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Automobile Paving. Automobile paving can consist of 2.5 inches of asphaltic concrete over 6 inches of stone base placed on a compacted native soil subbase. If soil cement is used a thickness of 8 inches is recommended.

For rigid paving, a surface of 5 inches placed over 6 inches of aggregate base is recommended. All rigid paving joints should be provided with a 24 inch wide geotextile to prevent pumping.

CONSTRUCTION DESIGN CONSIDERATIONS

Several problems common to this area must be considered in the design and construction at this site.

1. The upper silty soils may tend to pump under construction traffic, particularly compaction equipment. Past experience has shown that the addition of lime or flyash will stabilize these soils sufficiently to provide a base for compacting fill.
2. These soils also tend to lose strength when wetted and subjected to traffic. To minimize this problem, drainage should be provided away from the foundations. If construction is attempted during the wet season, lean concrete mud mats may be required to protect the bottoms of footing and gradebeam excavations.
3. The existing soils will consolidate under the weight of the new fill. Based on past experience, these settlements should be substantially complete within 90 to 120 days after fill placement is completed.
4. If a driven pile foundation is selected, vibration monitoring should be performed to determine if vibrations are causing distress in nearby structures.
5. Temporary casing may be required to install drilled foundations. Contract provisions should be provided for these costs.
6. Proper drainage and water proofing must be provided for the retaining wall in the south east corner of the building between the floor slabs.

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LIMITATIONS

These interpretations, analyses and recommendations are based on site conditions, surface and subsurface, as they existed at the time of the drilling of the exploratory borings. The exploratory borings are assumed to be representative of subsurface conditions throughout the project area in relation to the area of the project site and depth of borings.

The recommendations presented in this report are dependent on construction methods and procedures. Sound engineering judgement must be followed when applying the recommendations to designs, plans and also at the time of construction monitoring.

If during construction subsurface conditions are found to vary considerably from those reported herein, **SOILS AND FOUNDATION ENGINEERS, INC.** should be notified immediately. Review and/or revision as necessary of pertinent interpretations, analyses and recommendations will then be undertaken.

We have enjoyed serving you on this project and we look forward to working with you again in the near future. Should any questions arise concerning this report, please contact the undersigned.

Very truly yours,

SOILS AND FOUNDATION ENGINEERS, INC.



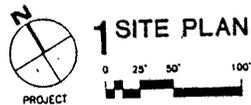
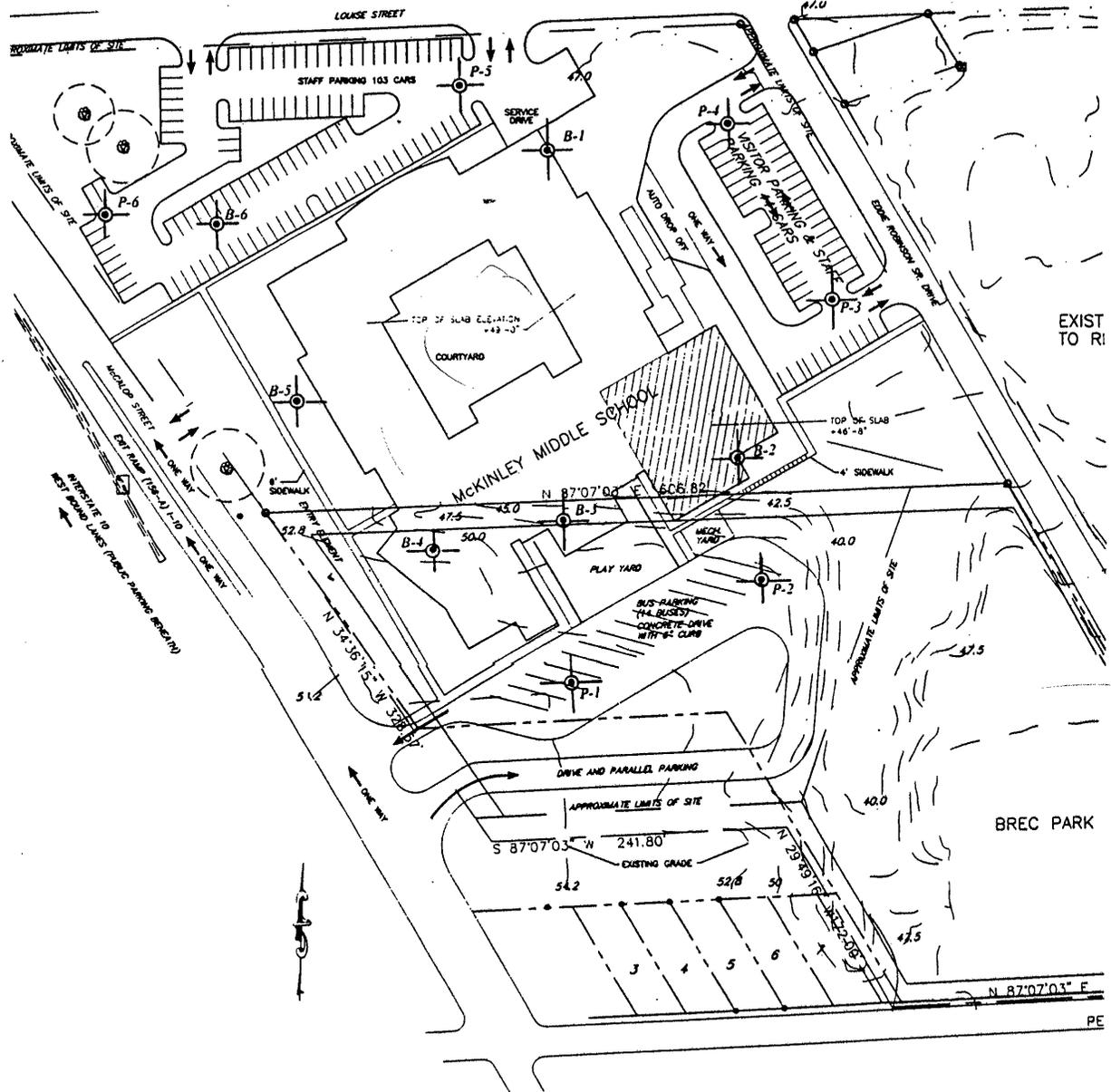
Billy R. Prochaska, P.E.
President

BRP/cdo

3 copies submitted

1 copy Coleman & Partners
1 copy McKee & Deville

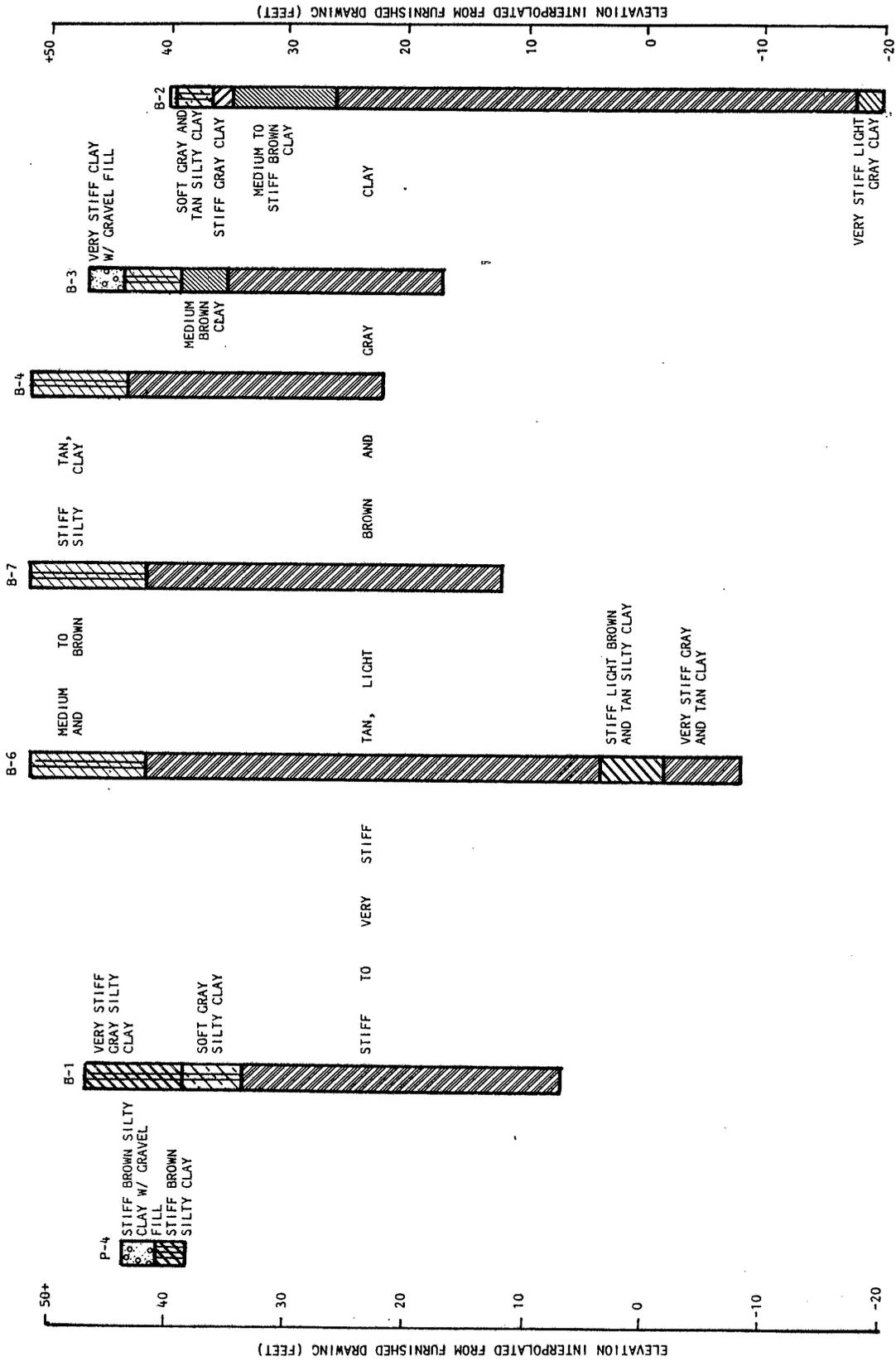




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McKINLEY MIDDLE MAGNET SCHOOL
BATON ROUGE, LOUISIANA

BY	BRP
DATE	7-14-04
JOB	04-143
FIGURE	1



IDEALIZED SUBSOIL PROFILE
VERT. EXAGG. = 10X

BY: BRP

DATE: 7-14-04

MCKINLEY MIDDLE MAGNET SCHOOL
BATON ROUGE, LOUISIANA

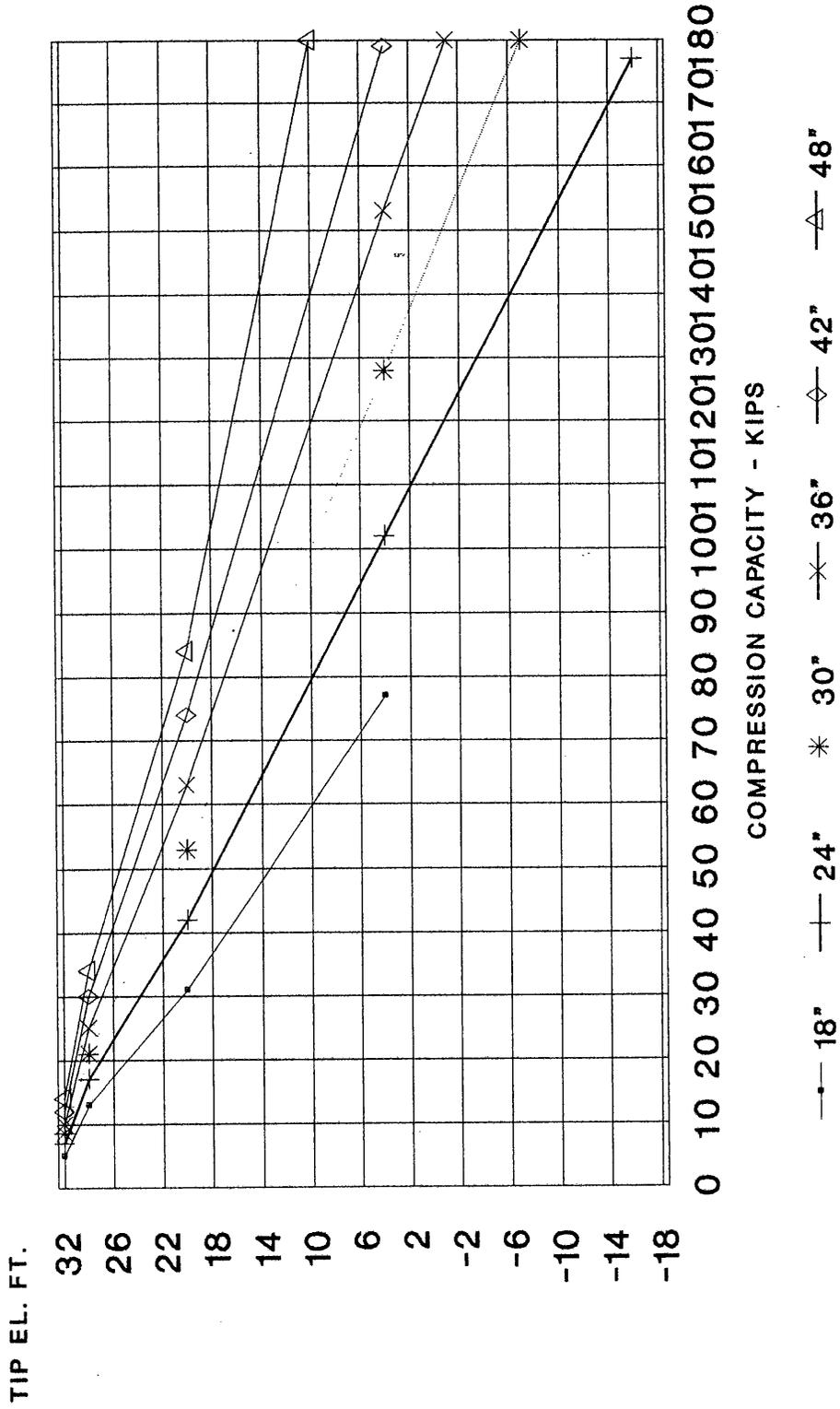
SOILS AND FOUNDATION ENGINEERS, INC.
BATON ROUGE, LOUISIANA

JOB NO. 04-143

FIGURE: 2

RECOMMENDED SINGLE SHAFT CAPACITIES

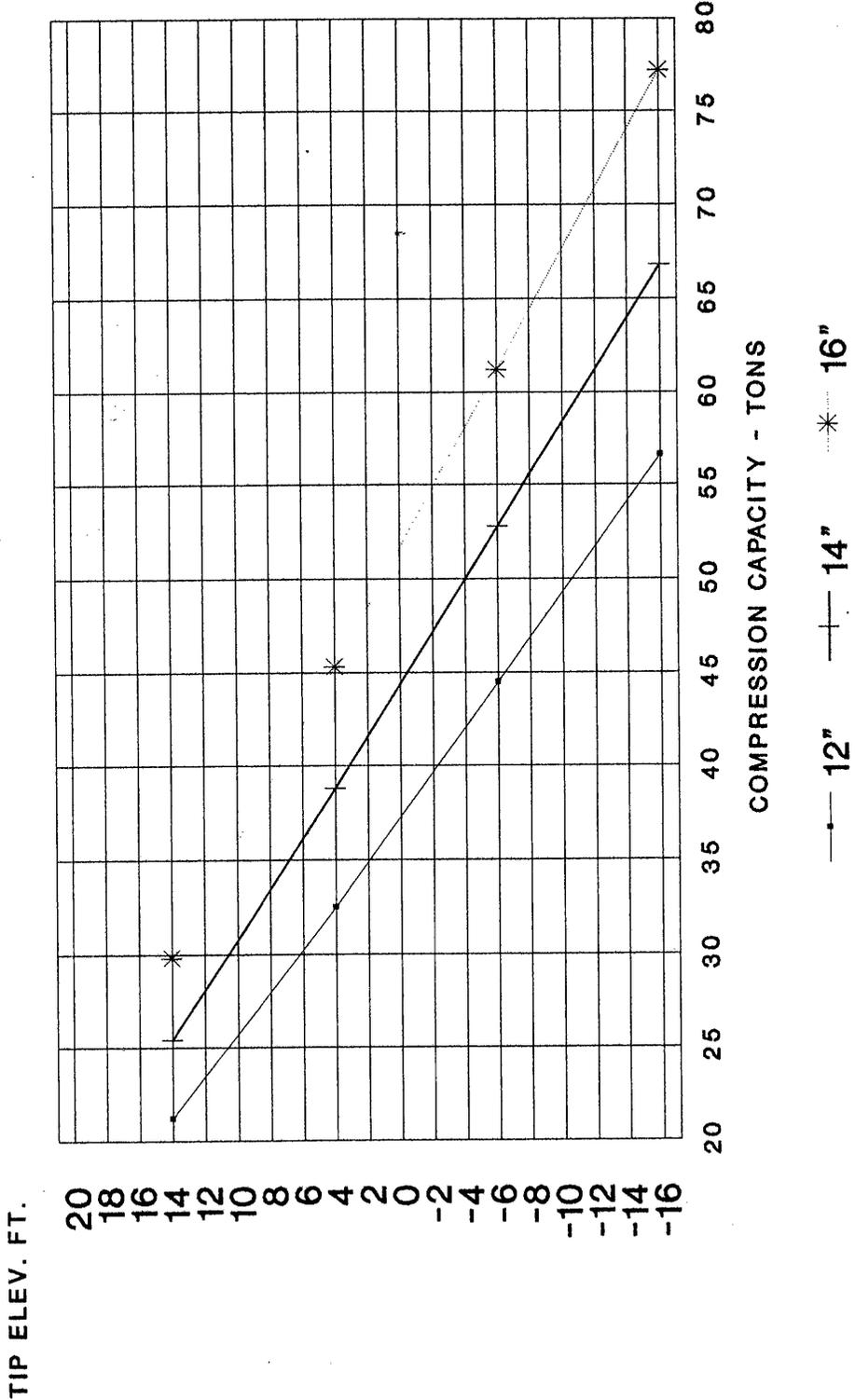
(KIPS)
FINISHED GRADE • 48



SOILS AND FOUNDATION ENGINEERS, INC.
04-143 MCKINLEY MIDDLE MAGNET SCHOOL

FIGURE 3

RECOMMENDED SINGLE PILE CAPACITIES
SQUARE PRESTRESSED CONCRETE PILES
 BUTT ELEVATION AT EL. 48



SOILS AND FOUNDATION ENGINEERS, INC.
 04-143 MCKINLEY MIDDLE MAGNET SCHOOL

FIGURE 4

APPENDIX A

APPENDIX A

SUBSURFACE EXPLORATION AND LABORATORY TESTING PROGRAM

SUBSURFACE EXPLORATION

General. Twelve (12) exploratory undisturbed sample borings were drilled on the site between June 17th and 30th, 2004. The approximate locations of the borings are shown on Figure 1.

Sampling. Samples were obtained continuously in the upper reaches and then on 3 to 5 foot centers using conventional drilling methods. The total footage drilled was two hundred and ninety lineal feet. Detailed logs of the borings are attached.

Undisturbed samples were recovered from the various cohesive materials with a 3 inch diameter thin walled Shelby tube (ASTM D-1587). The samples were extruded in the field where they were visually classified by the field technician. Penetrometer readings were made as a relative measure of the soil's strength. Representative portions of the samples were then wrapped and sealed to preserve their natural characteristics during transportation to the laboratory for physical testing.

Upon completion, the borings were plugged as required by state regulations.

LABORATORY TESTING PROGRAM

Soil mechanics laboratory tests were performed on selected samples representative of the various strata to define their physical characteristics.

Undrained Strength Tests. Compressive strength determinations were made on samples from the various strata to determine the undrained strength of the soils.

Unconfined Compression. Eighty (80) unconfined compression tests (ASTM D-2166) were conducted on the clay soils.

Unconsolidated-Undrained Triaxial Compression. One (1) unconsolidated-undrained triaxial compression (ASTM D-2850) tests were conducted to determine the strength under in situ confining pressures.

Classification Tests. These tests are performed to classify the subsoils more accurately than attained by field methods.

Atterberg Limits Determination. Twenty-one (21) Atterberg Liquid and Plastic Limit determinations (ASTM D-4318) were made.

Sand-Silt-Clay Percentage. Two (2) hydrometer tests (LADOTD TR-407) were conducted to determine the percentages of sand, silt, and clay in the soil matrix.

Individual Dry Density Test. Three (3) individual dry density determinations (applicable portions of ASTM D-2166) were made.

Individual Moisture Content. One (1) individual moisture content determinations (ASTM D-2216) were made.

Consolidation Test. Three (3) consolidation tests (ASTM D-2435) were conducted to determine the compressibility characteristics of the soils. The test results are shown on Figures A-1 through A-3.

The results of all laboratory tests are presented in the appropriate columns of the Boring Logs.

BORING LOG



PROJECT
FOR

BORING _____
JOB NO. _____
DATE _____
TECHNICIAN _____

DEPTH (FEET)	SAMPLE	Standard Penetration (Blows/Ft.) or Penetrometer (TSF)	Drill Method:					DRILLER _____	
			Initial Water Level:					RIG _____	
			Compressive Strength (TSF)	Moisture Content (%)	Dry Unit Weight (PCF)	Atterberg		Symbol	MATERIAL CLASSIFICATION
						LL	PI		

Description of strata as follows:
Strength (or Consistency), Color, Minor Constituent,
Major Constituent, additional observations.

Field evaluation of shear strength/relative density:
Standard Penetration Test (ASTM D-1586) in Blows/Ft.
Pocket penetrometer readings in Tons/Sq. Ft.

Graphical presentation of material type:

Clay	Silt	Sand	Gravel or Shell
------	------	------	-----------------

LABORATORY INFORMATION

As determined by Unconfined Compression (ASTM D-2166 or Undrained Triaxial (ASTM D-2850), if noted.

Determined using applicable portions of ASTM D-2166 and ASTM D-2216.

Determined using ASTM D-2216 or D-4959.

Determined using ASTM D-4318. Provides data for application of Unified Classification System (UCS).

- COMMENTS:**
- Shelby Tube Sample
 - Split-spoon Sample
 - Auger Sample
 - Sealed in Tube
 - No Recovery

Sample recovery method.

BORING LOG



PROJECT MCKINLEY MIDDLE MAGNET SCHOOL
 BATON ROUGE, LOUISIANA
FOR CSRS/THE FACILITY GROUP
 BATON ROUGE, LOUISIANA

BORING B-1
JOB NO. 04-143
DATE 06-17-04
TECHNICIAN O.L.

DRILLER WRP
RIG 550

Drill Method: AUGER 0' TO 16', WET ROTARY 16' TO 40'
 Initial Water Level: 14'

DEPTH (FEET)	SAMPLE	Standard Penetration (Blows/Ft.) or Penetrometer (TSF)	Compressive Strength (TSF)	Moisture Content (%)	Dry Unit Weight (PCF)	Atterberg		Symbol	MATERIAL CLASSIFICATION
						LL	PI		
0		4.00	3.97	20	100				VERY STIFF GRAY SILTY CLAY
2.5		3.50	2.25	20	101	37	15		
5		4.50+	1.95	23	101				
7.5		4.50+	SHORT	20	104				(CL)
10		1.50	0.43	29	91				SOFT TO VERY SOFT GRAY SILTY CLAY
12.5		0.00	0.15 (B)	33	89	33	9		(CL)
15		2.00	1.16	22	101				STIFF TAN AND LIGHT GRAY CLAY
20		1.50	1.36	37	83				--slickensided below 18'
25		3.00	1.37	32	89				
30		3.00	1.77	40	82				
35		3.00	0.99	34	86				
40		3.50	2.27	28	92				--very stiff (CH)
40									BOTTOM @ 40' BOREHOLE GROUTED
45									()=CONFINING PRESSURE IN UU TRIAXIAL TEST

COMMENTS:

- Shelby Tube Sample
- Split-spoon Sample
- Auger Sample
- Sealed in Tube
- No Recovery



PROJECT
FOR

MCKINLEY MIDDLE MAGNET SCHOOL
BATON ROUGE, LOUISIANA
CSRS/THE FACILITY GROUP
BATON ROUGE, LOUISIANA

BORING LOG

BORING B-2
JOB NO. 04-143
DATE 06-30-04
TECHNICIAN TJP

DEPTH (FEET)	SAMPLE	Standard Penetration (Blows/Ft.) or Penetrometer (TSF)	Drill Method: AUGER 0' TO 10', WET ROTARY 10' TO 60'					DRILLER WRP	
			Initial Water Level: NONE ENCOUNTERED TO 10'					RIG 550	
			Compressive Strength (TSF)	Moisture Content (%)	Dry Unit Weight (PCF)	Atterberg		Symbol	MATERIAL CLASSIFICATION
			LL	PI					
0	BAG								CONCRETE PAVING
0.25	SHORT SAMPLE	1.01	31	82	30	11			SOFT GRAY AND TAN SILTY CLAY (CL)
1.25		1.13	27	97	50	30			STIFF GRAY CLAY (CH)
2.00		0.77	33	90	58	37			MEDIUM TO STIFF BROWN AND TAN CLAY
2.25		1.27	32	90	73	45			(CH)
3.00		1.44	31	87					STIFF TAN AND BROWN CLAY - slickensided
2.75		1.33	35	87	79	52			
3.00		0.63 ^s	36	86					--slickensided
2.25		1.94	26	98					(CH)
3.50		1.65	25	99					STIFF LIGHT BROWN TO TAN AND GRAY CLAY
3.25		1.81	30	92					--slickensided
3.25		0.79	37	82					--slickensided
4.00		1.78	41	81	63	29			
4.00		1.77	31	89					--slickensided
4.00		2.46	21	105					VERY STIFF LIGHT GRAY CLAY (CH)

COMMENTS:
 Shelby Tube Sample Sealed in Tube
 Split-spoon Sample No Recovery
 Auger Sample

BOTTOM @ 60'

BOREHOLE GROUTED FULL DEPTH

BORING LOG



PROJECT

MCKINLEY MIDDLE MAGNET SCHOOL
BATON ROUGE, LOUISIANA

FOR

CSRS/THE FACILITY GROUP
BATON ROUGE, LOUISIANA

BORING B-4

JOB NO. 04-143

DATE 06-17-04

TECHNICIAN O.L.

DRILLER WRP

RIG 550

Drill Method: AUGER 0' TO 14', WET ROTARY 14' TO 30'

Initial Water Level: NONE ENCOUNTERED TO 14'

DEPTH (FEET)	SAMPLE	Standard Penetration (Blows/Ft.) or Penetrometer (TSF)	Drill Method: AUGER 0' TO 14', WET ROTARY 14' TO 30'	Compressive Strength (TSF)	Moisture Content (%)	Dry Unit Weight (PCF)	Atterberg		Symbol	MATERIAL CLASSIFICATION
							LL	PI		
0 - 5	Shelby Tube Sample	3.00	SHORT							MEDIUM TO STIFF TAN SILTY CLAY
5 - 6	Shelby Tube Sample	2.50	1.65	22	102	37	15			
6 - 7	Shelby Tube Sample	3.00	0.97	24	103					(CL)
7 - 8	Shelby Tube Sample	1.50	0.74	27	97	32	10			
8 - 10	Shelby Tube Sample	3.50	2.08	20	108					STIFF TO VERY STIFF TAN CLAY
10 - 12	Shelby Tube Sample	4.00	3.16	20	108					
12 - 14	Shelby Tube Sample	3.00	1.62	28	95					
14 - 18	Shelby Tube Sample	3.50	1.04	35	86					--slickensided
18 - 22	Shelby Tube Sample	2.50	1.63	31	92					--slickensided
22 - 28	Shelby Tube Sample	3.00	1.70	35	90					(CH)
28 - 30	Shelby Tube Sample									
30 - 31										BOTTOM @ 30'
31 - 32										BOREHOLE PLUGGED
32 - 50										

COMMENTS:

- Shelby Tube Sample
- Split-spoon Sample
- Auger Sample
- Sealed in Tube
- No Recovery



PROJECT
FOR

MCKINLEY MIDDLE MAGNET SCHOOL
BATON ROUGE, LOUISIANA
CSRS/THE FACILITY GROUP
BATON ROUGE, LOUISIANA

BORING LOG

BORING B-5
JOB NO. 04-143
DATE 06-18-04
TECHNICIAN TJP

DEPTH (FEET)	SAMPLE	Standard Penetration (Blows/Ft.) or Penetrometer (TSF)	Drill Method: AUGER 0' TO 10', WET ROTARY 10' TO 40'					DRILLER WRP		Symbol	MATERIAL CLASSIFICATION
			Initial Water Level: NONE ENCOUNTERED TO 10'					RIG 550			
			Compressive Strength (TSF)	Moisture Content (%)	Dry Unit Weight (PCF)	Atterberg		LL	PI		
4.00										MEDIUM TO STIFF BROWN AND TAN SILTY CLAY	
3.50		2.04	22	100							
5		0.25	24	100	39	19					
		0.77	26	98	33	9					
		1.25	22	104	38	20				--Gray and Tan (CL)	
10										STIFF TO VERY STIFF TAN CLAY	
		3.75	2.24	21	106						
15		3.50	1.12	32	90					--slicksided below 14'	
		3.50	1.50	33	89					--Gray and Tan	
20											
		3.00	2.18	28	94						
25											
		3.25	1.80	35	87						
30											
		2.75	2.03	39	83						
35											
		4.25	2.07	35	89					(CH)	
40										BOTTOM @ 40'	
										BOREHOLE GROUTED	
45											
50											

COMMENTS:

- Shelby Tube Sample
- Split-spoon Sample
- Auger Sample
- Sealed in Tube
- No Recovery

BORING LOG



PROJECT MCKINLEY MIDDLE MAGNET SCHOOL
 BATON ROUGE, LOUISIANA
FOR CSRS/THE FACILITY GROUP
 BATON ROUGE, LOUISIANA

BORING B-6
JOB NO. 04-143
DATE 06-18-04
TECHNICIAN TJP

DEPTH (FEET)	SAMPLE	Standard Penetration (Blows/Ft.) or Penetrometer (TSF)	Drill Method: AUGER 0' TO 10', WET ROTARY 10' TO 60'				DRILLER WRP		MATERIAL CLASSIFICATION
			Initial Water Level: NONE ENCOUNTERED TO 10'				RIG 550		
			Compressive Strength (TSF)	Moisture Content (%)	Dry Unit Weight (PCF)	Atterberg		Symbol	
			LL	PI					
0-2.75	Shelby Tube Sample	2.75						MEDIUM TO STIFF TAN AND BROWN SILTY CLAY	
2.75-2.25	Shelby Tube Sample	2.25	1.70	23	102				
2.25-2.50	Shelby Tube Sample	2.50	1.29	25	99			--Gray and Tan	
2.50-0.50	Shelby Tube Sample	0.50	0.90	25	100				
0.50-1.75	Shelby Tube Sample	1.75	1.96	26	106			(CL)	
1.75-4.00	Shelby Tube Sample	4.00	2.74	20	103			STIFF TO VERY STIFF TAN AND GRAY CLAY	
4.00-2.75	Shelby Tube Sample	2.75	2.16	31	95			--slickensided below 14'	
2.75-2.25	Shelby Tube Sample	2.25	0.79	38	85				
2.25-3.00	Shelby Tube Sample	3.00	1.57	31	93				
3.00-3.25	Shelby Tube Sample	3.25	1.42	38	82				
3.25-3.25	Shelby Tube Sample	3.25	2.13	35	91				
3.25-4.00	Shelby Tube Sample	4.00	1.85	24	101			--jointed	
4.00-3.75	Shelby Tube Sample	3.75	1.56	24	96				
3.75-3.00	Shelby Tube Sample	3.00	1.26	27	96			(CH)	
3.00-3.25	Shelby Tube Sample	3.25	3.43	26	99			STIFF LIGHT BROWN AND TAN SILTY CLAY	
3.25-3.75	Shelby Tube Sample	3.75	2.53	34	89			(CL)	
3.75-3.75	Shelby Tube Sample	3.75	2.53	34	89			VERY STIFF GARY AND TAN CLAY	
3.75-80	Shelby Tube Sample	3.75	2.53	34	89			--slickensided (CH)	

COMMENTS:

- Shelby Tube Sample
- Split-spoon Sample
- Auger Sample
- Sealed in Tube
- No Recovery

BOREHOLE GROUTED FULL DEPTH

BOTTOM @ 60'

BORING LOG



PROJECT MCKINLEY MIDDLE MAGNET SCHOOL
 BATON ROUGE, LOUISIANA
FOR CSRS/THE FACILITY GROUP
 BATON ROUGE, LOUISIANA

BORING P-1
JOB NO. 04-143
DATE 06-17-04
TECHNICIAN O.L.

DEPTH (FEET)	SAMPLE	Standard Penetration (Blows/Ft.) or Penetrometer (TSF)	Drill Method: AUGER FULL DEPTH					DRILLER WRP	
			Initial Water Level: NONE ENCOUNTERED					RIG 550	
			Compressive Strength (TSF)	Moisture Content (%)	Dry Unit Weight (PCF)	Atterberg		Symbol	MATERIAL CLASSIFICATION
			LL	PI					
3.00									MEDIUM TO STIFF BROWN SILTY CLAY
4.00		0.88	16	105					(CL)
2.50		1.26	26	94					STIFF TAN SILTY CLAY
2.00		1.52	26	97					(CH)
5									BOTTOM @ 5' BOREHOLE PLUGGED
									* 2% SAND 76% SILT 22% CLAY
10									
15									
20									

COMMENTS:

- Shelby Tube Sample Sealed in Tube
- Split-spoon Sample No Recovery
- Auger Sample

BORING LOG



PROJECT MCKINLEY MIDDLE MAGNET SCHOOL
 BATON ROUGE, LOUISIANA
FOR CSRS/THE FACILITY GROUP
 BATON ROUGE, LOUISIANA

BORING P-2
JOB NO. 04-143
DATE 06-17-04
TECHNICIAN O.L.

DEPTH (FEET)	SAMPLE	Standard Penetration (Blows/Ft.) or Penetrometer (TSF)	Drill Method: AUGER FULL DEPTH				DRILLER WRP		Symbol	MATERIAL CLASSIFICATION
			Initial Water Level: NONE ENCOUNTERED				RIG 550			
			Compressive Strength (TSF)	Moisture Content (%)	Dry Unit Weight (PCF)	Atterberg				
			LL	PI						
4.50+									STIFF BROWN AND LIGHT BROWN SILTY CLAY (CL)	
4.50+		1.35	22	99	37	14				
4.50+										
4.00		SHORT	28	76						
5									BOTTOM @ 5' BOREHOLE PLUGGED	
10										
15										
20										

COMMENTS:

- Shelby Tube Sample
- Sealed in Tube
- Spill-spoon Sample
- No Recovery
- Auger Sample

BORING LOG



PROJECT MCKINLEY MIDDLE MAGNET SCHOOL
 BATON ROUGE, LOUISIANA
FOR CSRS/THE FACILITY GROUP
 BATON ROUGE, LOUISIANA

BORING P-3
JOB NO. 04-143
DATE 06-30-04
TECHNICIAN TJP

DRILLER WRP
RIG 550

DEPTH (FEET)	SAMPLE	Standard Penetration (Blows/Ft.) or Penetrometer (TSF)	Drill Method: AUGER FULL DEPTH				Initial Water Level: NONE ENCOUNTERED		Symbol	MATERIAL CLASSIFICATION
			Compressive Strength (TSF)	Moisture Content (%)	Dry Unit Weight (PCF)	Atterberg				
						LL	PI			
0 - 1.75		2.25	1.95	20	100	36	17		STIFF GRAY SILTY CLAY (CL)	
1.75 - 2.0		1.75	1.57	23	104					
2.0 - 2.25		0.25	0.71	24	101				MEDIUM BROWN AND GRAY VERY SILTY CLAY (CL)	
2.25 - 2.5		0.25	0.64	28	95	32	10			
2.5 - 5.0									BOTTOM @ 5' BOREHOLE PLUGGED	

COMMENTS:

- Shelby Tube Sample
- Split-spoon Sample
- Auger Sample
- Sealed in Tube
- No Recovery

BORING LOG



PROJECT MCKINLEY MIDDLE MAGNET SCHOOL
 BATON ROUGE, LOUISIANA
FOR CSRS/THE FACILITY GROUP
 BATON ROUGE, LOUISIANA

BORING P-4
JOB NO. 04-143
DATE 06-17-04
TECHNICIAN O.L.

DEPTH (FEET)	SAMPLE	Standard Penetration (Blows/Ft.) or Penetrometer (TSF)	Drill Method: AUGER FULL DEPTH					DRILLER WRP	
			Initial Water Level: NONE ENCOUNTERED					RIG 550	
			Compressive Strength (TSF)	Moisture Content (%)	Dry Unit Weight (PCF)	Atterberg		Symbol	MATERIAL CLASSIFICATION
			LL	PI					
4.50+		4.50+							STIFF TO VERY STIFF BROWN AND TAN SILTY CLAY WITH GRAVEL
4.00		2.25	17	110	33	12	△△△△ △▽△△		
4.50+		1.09	18	107			△△△△ △▽△△		FILL
2.50		1.18	24	102			▨▨▨▨		STIFF BROWN AND TAN SILTY CLAY (CL)
5									BOTTOM @ 5' BOREHOLE PLUGGED

COMMENTS:

- Shelby Tube Sample
- Split-spoon Sample
- Auger Sample
- Sealed in Tube
- No Recovery

BORING LOG



PROJECT
FOR

MCKINLEY MIDDLE MAGNET SCHOOL
BATON ROUGE, LOUISIANA
CSRS/THE FACILITY GROUP
BATON ROUGE, LOUISIANA

BORING P-5
JOB NO. 04-143
DATE 06-14-04
TECHNICIAN O.L.

DEPTH (FEET)	SAMPLE	Standard Penetration (Blows/Ft.) or Penetrometer (TSF)	Drill Method: AUGER FULL DEPTH					DRILLER WRP		SYMBOL	MATERIAL CLASSIFICATION
			Initial Water Level: NONE ENCOUNTERED					RIG 550			
			Compressive Strength (TSF)	Moisture Content (%)	Dry Unit Weight (PCF)	Atterberg		LL	PI		
4.50+									△△△△	VERY STIFF LIGHT BROWN SILTY CLAY	
4.00		3.12	16	108	43	21			△△△△	FILL	
4.00		2.45	20	104					△△△△	STIFF TO VERY STIFF BROWN SILTY CLAY WITH GRAVEL	
2.50									△△△△	FILL	
5										BOTTOM @ 5' BOREHOLE PLUGGED	
10											
15											
20											

COMMENTS:

- Shelby Tube Sample
- Spill-spoon Sample
- Auger Sample
- Sealed in Tube
- No Recovery

BORING LOG



PROJECT MCKINLEY MIDDLE MAGNET SCHOOL
 BATON ROUGE, LOUISIANA
FOR CSRS/THE FACILITY GROUP
 BATON ROUGE, LOUISIANA

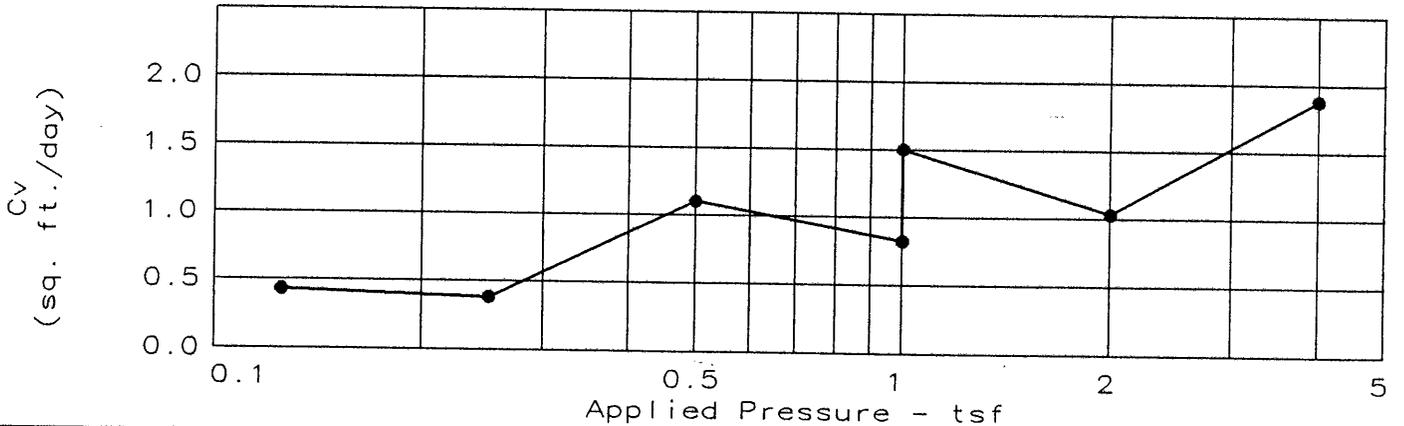
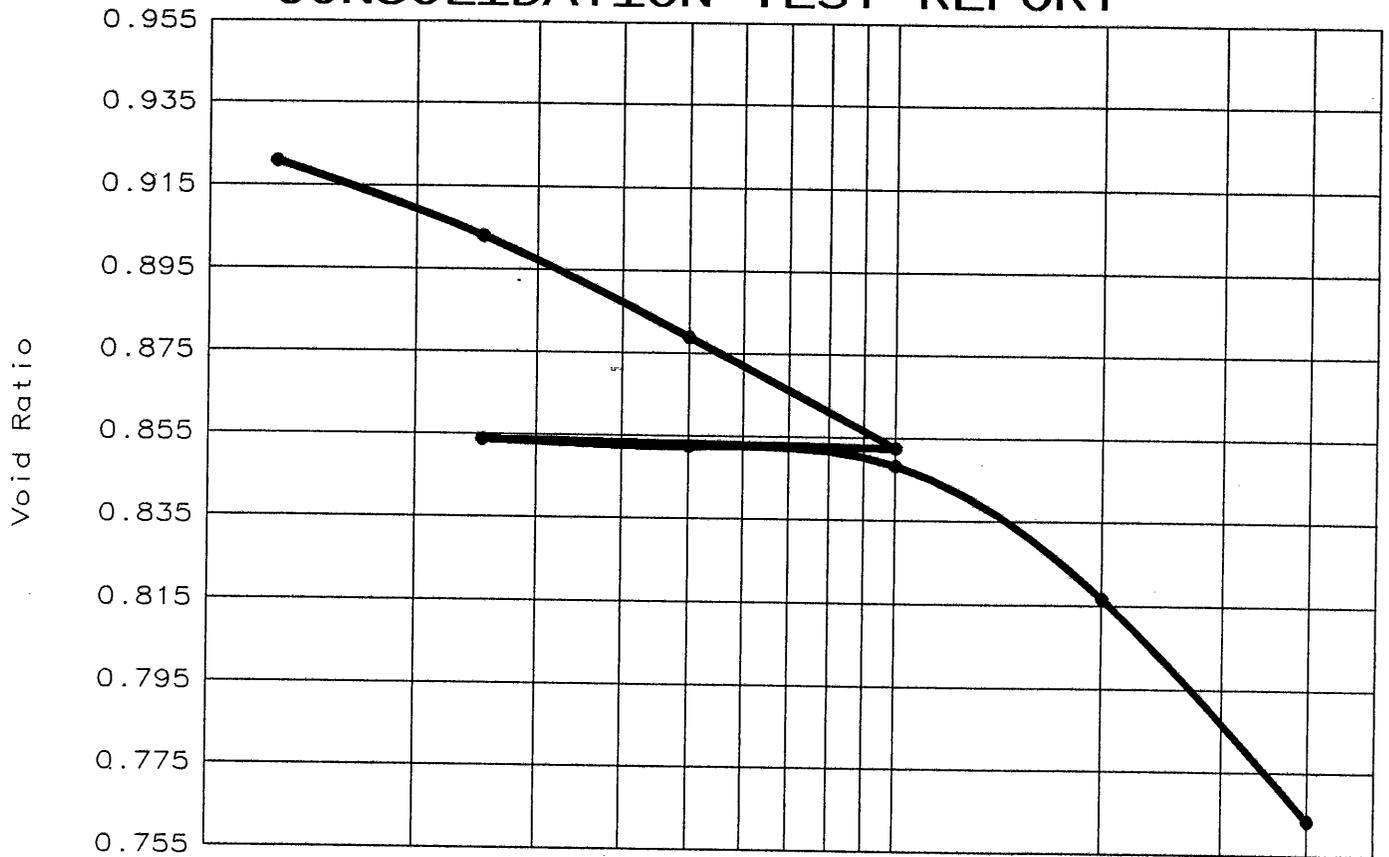
BORING P-6
JOB NO. 04-143
DATE 06-18-04
TECHNICIAN TJP

DEPTH (FEET)	SAMPLE	Standard Penetration (Blows/Ft.) or Penetrometer (TSF)	Drill Method: AUGER FULL DEPTH					DRILLER WRP	
			Initial Water Level: NONE ENCOUNTERED					RIG 550	
			Compressive Strength (TSF)	Moisture Content (%)	Dry Unit Weight (PCF)	Atterberg		Symbol	MATERIAL CLASSIFICATION
LL	PI								
5	BAG								VERY STIFF BROWN SILTY CLAY
	4.50	3.32	14	96	49	23*			
	4.50		15						(CL)
									BOTTOM @ 5' BOREHOLE PLUGGED
									* 4% SAND 70% SILT 26% CLAY

COMMENTS:

- Shelby Tube Sample
- Split-spoon Sample
- Auger Sample
- Sealed in Tube
- No Recovery

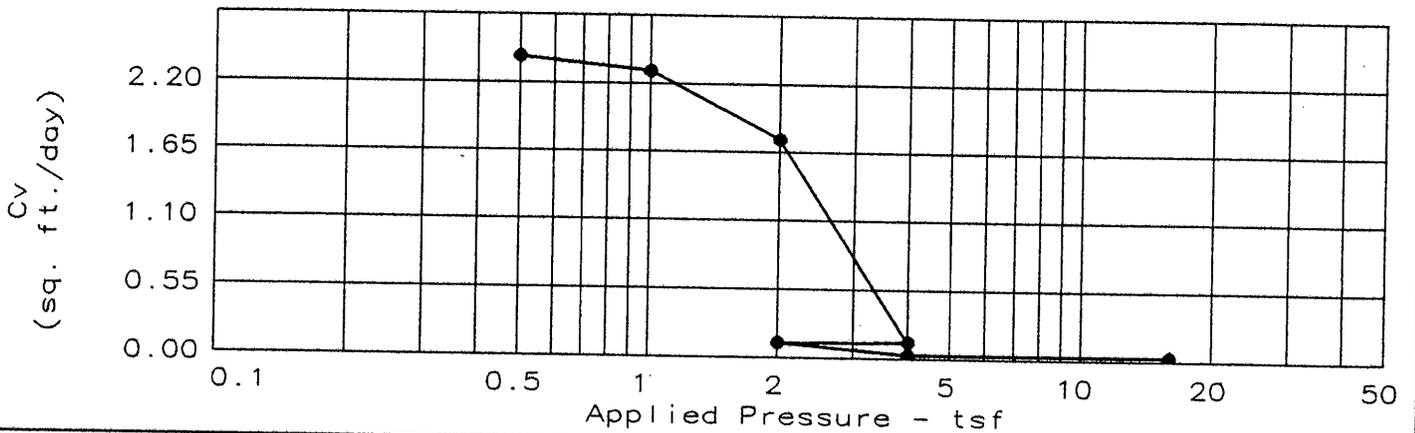
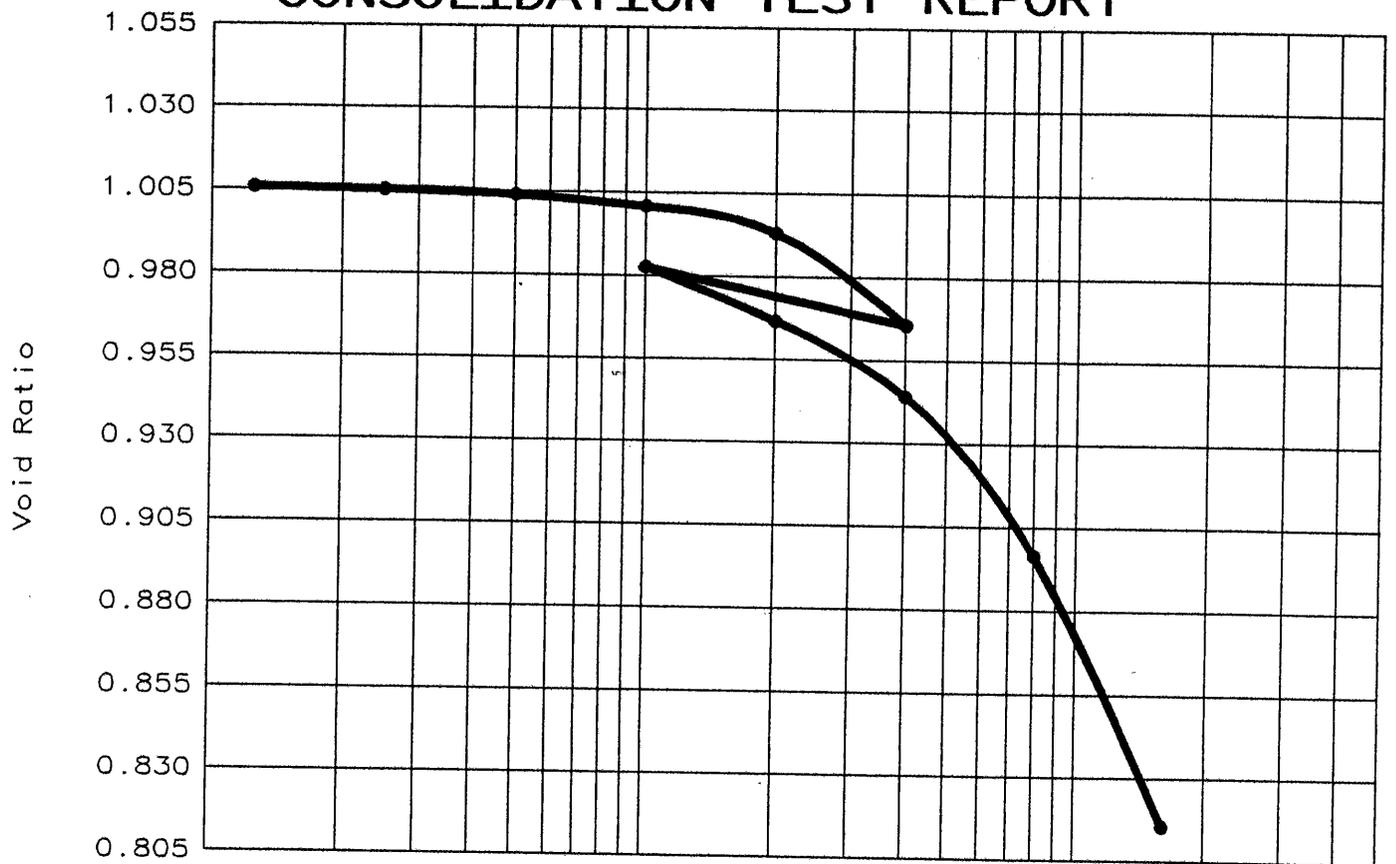
CONSOLIDATION TEST REPORT



Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp.Gr.	Cc	e ₀
87.3 %	31.4 %	86.4	30	11	2.750	0.18	0.9881

TEST RESULTS	MATERIAL DESCRIPTION
Compression Index = 0.18	GRAY SILTY CLAY (SOFT)
Project No.: 04-143 Project: MCKNLEY JUNIOR HIGH SCHOOL Location: BATON ROUGE, LOUISIANA Date: 7/10/04	Class: CL Remarks: BORING B-2 2-4'
CONSOLIDATION TEST REPORT SOILS AND FOUNDATION ENGINEERS, INC.	
Fig. No. A-1	

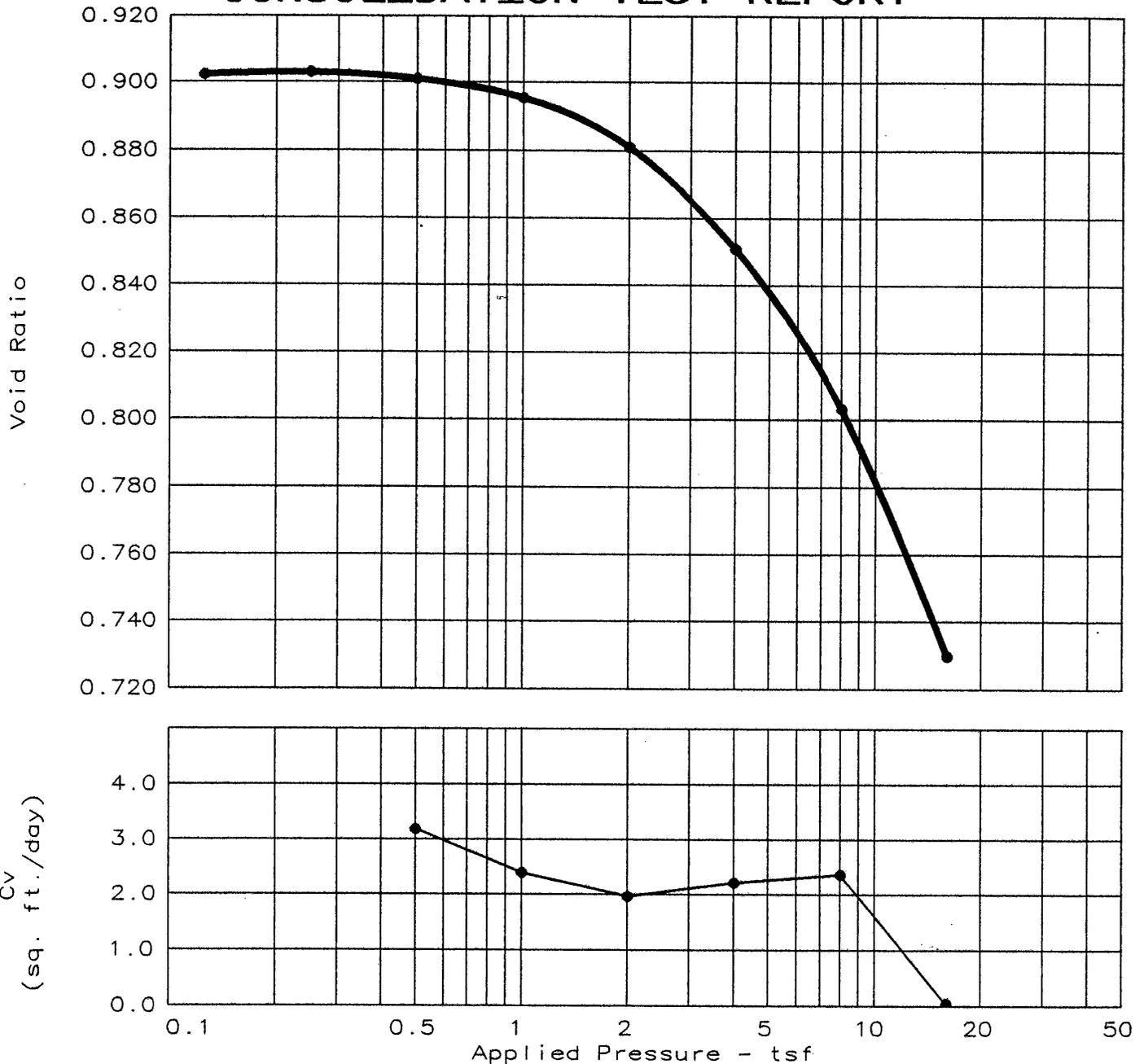
CONSOLIDATION TEST REPORT



Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp.Gr.	Cc	e ₀
96.5 %	35.7 %	84.7	79	52	2.720	0.27	1.0051

TEST RESULTS	MATERIAL DESCRIPTION
Compression Index = 0.27 Project No.: 04-143 Project: MCKINLEY JUNIOR HIGH SCHOOL Location: BATON ROUGE, LOUISIANA Date: 7/9/04	BROWN & GRAY CLAY W/JOINTED STRUCTURE Class: CH Remarks: B-2 DEPTH 18-20'
CONSOLIDATION TEST REPORT SOILS AND FOUNDATION ENGINEERS, INC.	
Fig. No. A-2	

CONSOLIDATION TEST REPORT



Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp.Gr.	C _c	e ₀
89.8 %	29.8 %	89.3	63	29	2.720	0.24	0.9020

TEST RESULTS	MATERIAL DESCRIPTION
Compression Index = 0.24	GRAY & TAN CLAY
Project No.: 04-143 Project: MCKINLEY JUNIOR HIGH SCHOOL Location: BATON ROUGE, LOUISIANA	Class: CH
Date: 7/9/04	Remarks: BORING B-2 48-50'
CONSOLIDATION TEST REPORT SOILS AND FOUNDATION ENGINEERS, INC.	Fig. No. A-3