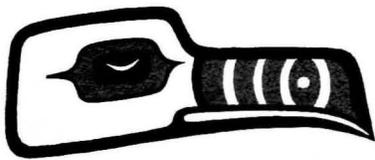




REPORT  
SOILS AND FOUNDATIONS INVESTIGATION  
SANITARY SEWER SYSTEM IMPROVEMENTS  
FOR ABERDEEN NORTH OF THE CHEHALIS RIVER  
CITY OF ABERDEEN, WASHINGTON  
RLA PROJECT NO. 165-13

REPORT NO. 28

**ROGER LOWE ASSOCIATES**



**ROGER LOWE ASSOCIATES  
EARTH SCIENCES**

July 25, 1977

URS Company  
Suite 200  
Fourth and Vine Building  
Seattle, Washington 98121

Attention: Mr. Per E. Zimmerlund  
Project Director

Report  
Soils and Foundations Investigation  
Sanitary Sewer System Improvements  
for Aberdeen North of the Chehalis River  
City of Aberdeen, Washington  
Project No. 165-13

Gentlemen:

With this letter we transmit 25 copies of our report, "Soils and Foundations Investigation, Sanitary Sewer System Improvements for Aberdeen North of the Chehalis River, City of Aberdeen, Washington." Our investigation was performed as described in our letter proposal to you dated October 8, 1976, for which a subcontract agreement was signed on October 20, 1976 and authorization to proceed was received from you effective December 30, 1976.

We have made specific recommendations on an area by area basis regarding bottom heave potential of sewer trenches, types of and placement procedures for pipe bedding and trench backfill materials for manholes and sewers, design recommendations for the proposed pump station in West Aberdeen, as well as estimates of total and differential post-construction settlements and comments relative to precautions to be taken during construction.

We appreciate having had the opportunity to work with you on this interesting project and would like to thank you for the assistance you and members of your staff have given.

Please call us if you have any questions about the conclusions and recommendations presented in this report.

Very truly yours,  
ROGER LOWE ASSOCIATES

*Ronald E. Bucknam*  
Ronald E. Bucknam, Associate

REB:ls

SOILS AND FOUNDATIONS INVESTIGATION  
SANITARY SEWER SYSTEM IMPROVEMENTS  
FOR THE  
CITY OF ABERDEEN, WASHINGTON

INTRODUCTION

This report presents the results of our subsurface soils and foundation investigation related to proposed sanitary sewer system improvements for the City of Aberdeen, Washington on the north side of the Chehalis River.

We undertook this investigation in accordance with the scope of work detailed in our proposal to the URS Company dated October 8, 1976, for which a subcontract agreement was signed on October 20, 1976 and authorization to proceed was received effective December 30, 1976.

The proposed sanitary sewer system improvements in Aberdeen consist of replacement of approximately 200,000 linear feet of sewer and manholes, as well as construction of one sanitary pump station.

Fifty-nine hollow-stem auger borings (Borings 301-349 and 351-360) were made near proposed sewer lines to depths ranging between 11.5 and 19.0 feet. Twenty-one rotary wash borings (Borings 209-229) were made near proposed sewer locations in sections of Aberdeen near the Wishkah River and ranged in depth from 11.5 to 17.5 feet. One hollow-stem auger boring (Boring 350) was made at the location of the proposed pump station to a depth of 39.0 feet. In addition, field vane shear tests were run at selected depths near invert elevations at 14 boring locations. Exploration locations are shown on the Subsurface Exploration Plan, Plate 1 of this report.

All subsurface investigations were observed on a full-time basis by a member of our field engineering staff. A detailed description of the methods of subsurface exploration is presented in Appendix A of this report. Logs of the bore holes are shown on Plates A-2 through A-67.

Summaries of the results of our extensive laboratory testing program conducted in conjunction with this project are also presented in the Appendix.

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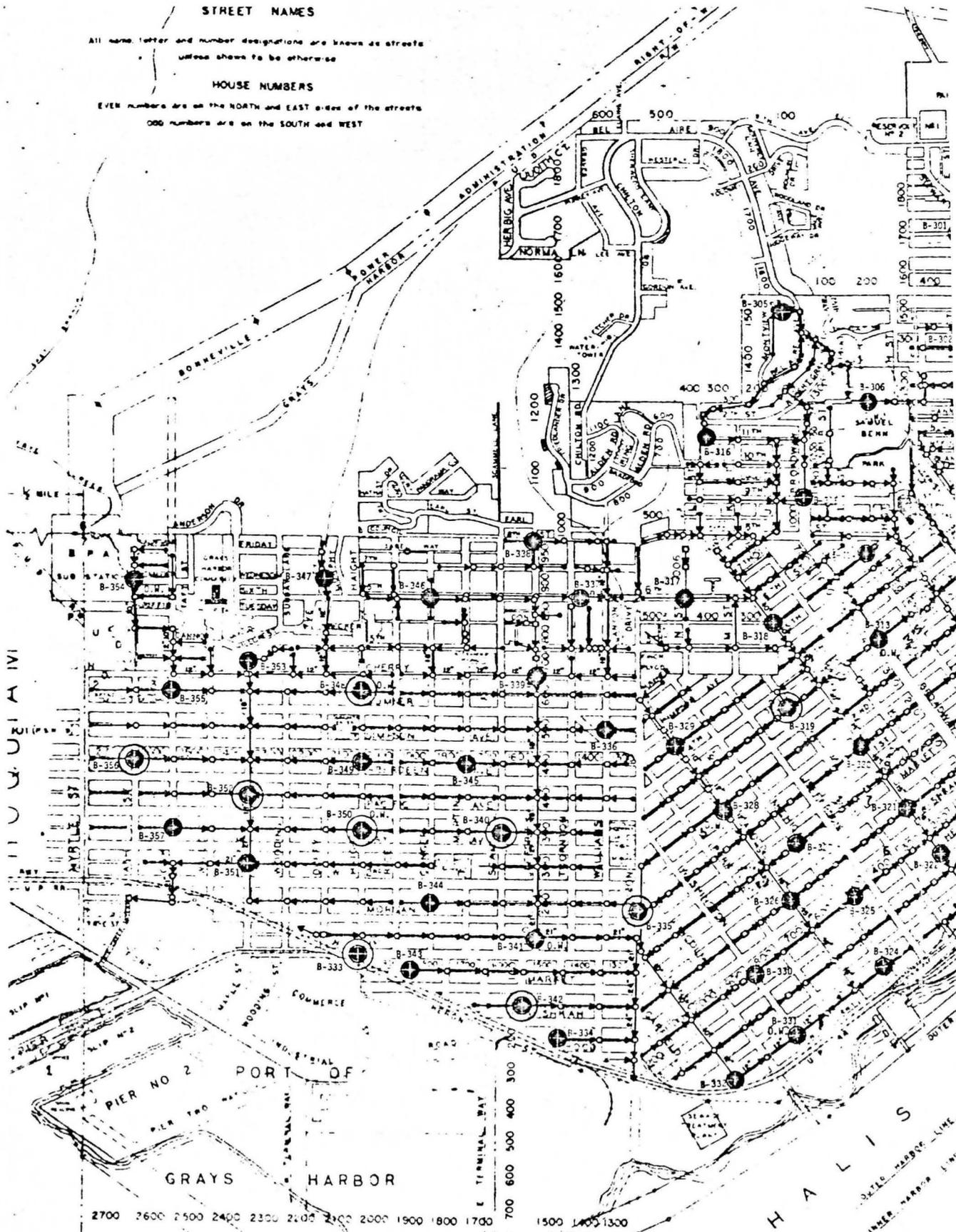
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STREET NAMES

All name letter and number designations are known as streets unless shown to be otherwise

HOUSE NUMBERS

EVEN numbers are on the NORTH and EAST sides of the streets  
ODD numbers are on the SOUTH and WEST



2700 2600 2500 2400 2300 2200 2100 2000 1900 1800 1700 1500 1400 1300

HALIS  
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PIER THREE  
PIER FOUR  
PIER FIVE  
PIER SIX  
PIER SEVEN  
PIER EIGHT  
PIER NINE  
PIER TEN  
PIER ELEVEN  
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PIER THIRTEEN  
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PIER NINETY NINE  
PIER HUNDRED



BORING 213

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0					ASPHALT, RUBBLE
	70.4		3	ML	BROWN SILT WITH SOME FINE SAND (SOFT, WET) (FILL)
5	87.9		3	ML	GRAY SILT WITH SOME SAND AND A TRACE OF ORGANICS (SOFT, WET)
	60.0		5		
10	85.5	45.3	1		VERY SOFT
	77.4	53.8	PUSH		
15			5		
20					

BORING TERMINATED AT 17.5 FEET  
ON 3/9/77

BORING 214

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				SP	BROWN COARSE SAND (MEDIUM DENSE, MOIST) (FILL)
	45.3		3	ML	LIGHT BROWN SILT WITH SOME SAND (VERY SOFT, WET)
5	66.0		3	ML	GRAY SILT WITH SOME SAND AND ORGANICS (VERY SOFT, WET)
	150.8		1		LENSES OF DARK BROWN ORGANIC SILT AND WOOD
10	83.6	50.2	1		
15					

BORING TERMINATED AT 12.5 FEET  
ON 3/9/77

BORING 215

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0					
	49.0		15		ML GREEN SILT AND ORGANICS (VERY SOFT, WET)
	53.4		10		ML GRAY SILT WITH SOME GRAVEL AND ORGANICS (MEDIUM DENSE, WET)
5					
	54.4	68.1	5		SANDY
10	74.3	55.9	2		SOFT
	71.2	57.0	3		
15					
	65.5	62.1	6		MEDIUM STIFF
20					

BORING TERMINATED AT 17.5 FEET

ON 3/9/77

BORING 216

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0					
	42.4		10	 ML	BROWN SILT WITH SOME GRAVEL SAND AND ORGANICS (MEDIUM STIFF, WET)
5	84.5		4		GRAY, TRACE OF SAND AND GRAVEL (SOFT)
	93.9	47.0	1		NO SAND OR GRAVEL. LENSES OF DARK BROWN ORGANIC SILT (VERY SOFT)
10	76.4	52.5	2		
	54.1	69.2	PUSH		
15	83.7		2		SOME SAND
20					

BORING TERMINATED AT 17.5 FEET  
ON 3/10/77

BORING 217

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				GM	BROWN SILTY GRAVEL (MEDIUM DENSE, WET)
	44.9		9	ML	LIGHT BROWN SILT WITH SOME SAND AND GRAVEL (MEDIUM STIFF, WET)
5	47.8		5		ORGANIC LENSES
	272.7	18.7	4	OL	BROWN SILT WITH SOME ORGANICS AND A TRACE OF GRAVEL (SOFT, WET)
10	150.4	31.8	2	ML	GRAY SILT WITH SOME ORGANICS (VERY SOFT, WET)
	122.9	37.7	1		
15			2		
20					

BORING TERMINATED AT 17.5 FEET  
ON 3/11/77

OBSERVATION WELL INSTALLED  
SEE TEXT FOR WATER LEVEL DATA

BORING 218

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				SW	BROWN WELL GRADED SAND WITH SOME SILT (DENSE, WET)(FILL)
5	27.1	92.4	33		WET
	22.9		16		MEDIUM DENSE
10	87.8		15	 WOOD	WOOD - DETAILS OF DEPOSIT UNKNOWN
15			12	 ML	GRAY SILT WITH SOME ORGANICS (STIFF, WET)
20					

BORING TERMINATED AT 18.5 FEET  
ON 3/10/77

OBSERVATION WELL INSTALLED  
SEE TEXT FOR WATER LEVEL DATA

BORING 219

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0					
			7		SM BROWN SILTY SAND (VERY LOOSE, WET)
	19.2		9		
5	120.8		2		ML GRAY SILT WITH SOME ORGANICS (VERY SOFT, WET)
	290.5	17.7	3		
10	87.2	52.0	2		OL DARK BROWN ORGANIC SILT WITH WOOD (VERY SOFT, WET)
					ML GRAY SILT WITH SOME ORGANICS AND A TRACE OF SAND (VERY SOFT, WET)
	102.5	74.4	3		
15					

BORING TERMINATED AT 15.0 FEET

ON 3/10/77

BORING 220

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0					
	49.8	70.7	8		ML BROWN SILT WITH A TRACE OF SAND AND GRAVEL SCATTERED LENSES OF ORGANIC SILT (MEDIUM STIFF, WET)
5	71.5		5		GRAY, VERY SOFT
	90.9		3		
10	79.2	58.3	PUSH		
	69.7	57.8	4		SANDY (SOFT)
15					

BORING TERMINATED AT 15.0 FEET  
ON 3/11/77

OBSERVATION WELL INSTALLED  
SEE TEXT FOR WATER LEVEL DATA

BORING 221

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0					ASPHALT
	92.3		1/18"	 ML	BROWN SILT WITH A TRACE OF SAND (VERY SOFT, WET) WOOD
5	134.6	35.1	8		SOME ORGANICS AND LENSES OF WOOD
	60.9	63.5	4		TRACE OF ORGANICS (MEDIUM STIFF)
10	72.3	60.8	PUSH		SOFT
	72.6	55.5	2		
15					

BORING TERMINATED AT 15.0 FEET  
ON 3/14/77

OBSERVATION WELL INSTALLED  
SEE TEXT FOR WATER LEVEL DATA

BORING 222

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				GP	GRAY GRAVEL (LOOSE, DAMP)
	71.8		9	ML	BROWN SILT WITH A TRACE OF SAND (MEDIUM STIFF, WET)
5	87.8	49.6	3		GRAY WITH A TRACE OF ORGANICS (SOFT)
	192.1	26.5	3	OL	DARK BROWN ORGANIC SILT WITH SOME WOOD (VERY SOFT, WET)
10	116.0	40.6	1	ML	SILT WITH A TRACE OF ORGANICS (VERY SOFT, WET)
	90.2	48.9	1		
15	78.2	55.4	2		

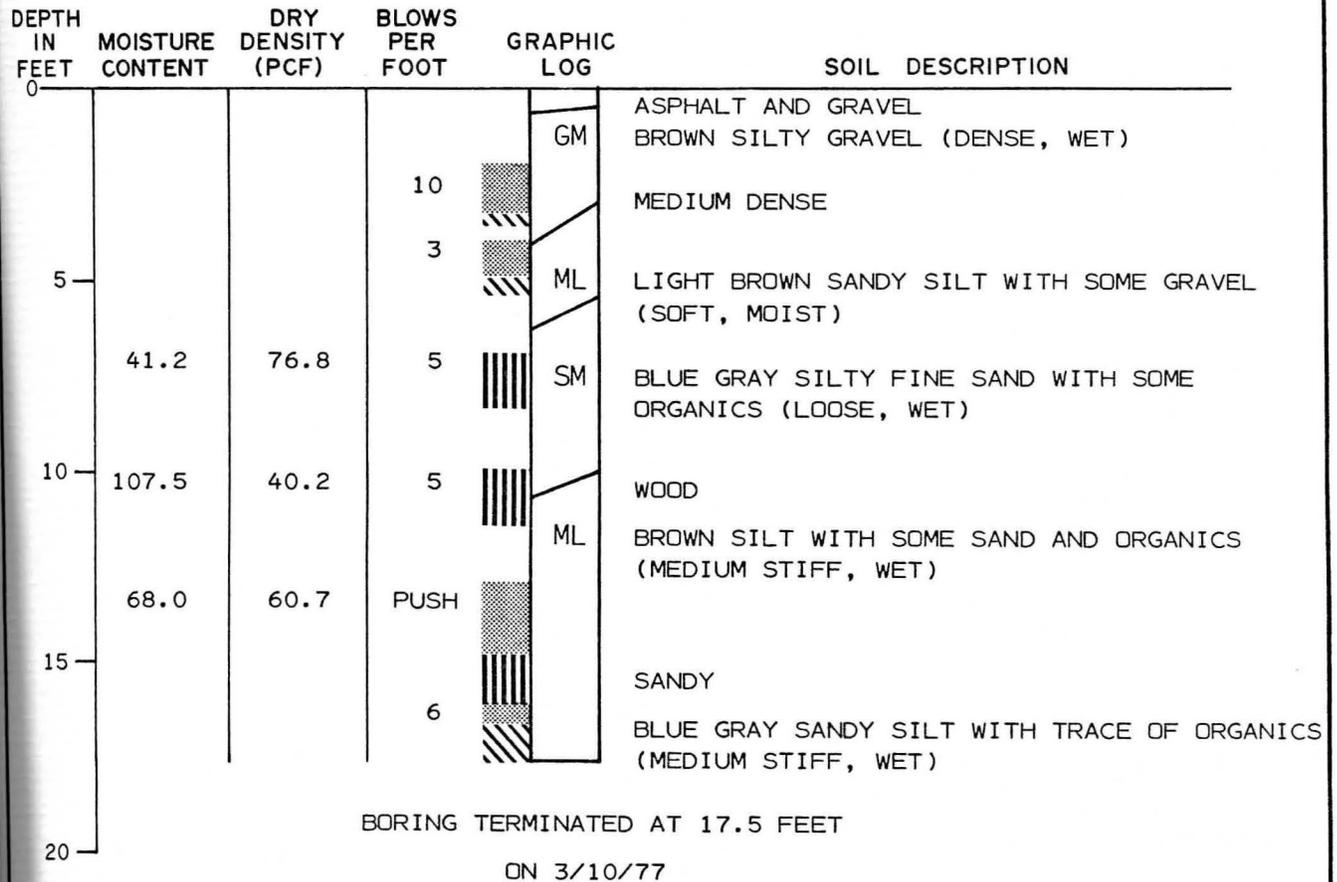
BORING TERMINATED AT 17.5 FEET  
ON 3/14/77

BORING 223

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				GP	BROWN SANDY GRAVEL WITH SOME RUBBLE (LOOSE, WET)
			13	SP	GRAY SILTY SAND (MEDIUM DENSE, WET)
5	128.6	35.5	3	ML	GRAY SILT WITH SOME SAND (SOFT, MOIST)
	138.6	42.7	5		SCATTERED ORGANIC LENSES
10	59.9	64.7	4		
	74.3	54.7	2		
15	70.7	58.1	3		LENSES OF FINE SAND (VERY SOFT, WET)

BORING TERMINATED AT 17.5 FEET  
ON 3/15/77

BORING 225



OBSERVATION WELL INSTALLED  
SEE TEXT FOR WATER LEVEL DATA

BORING 226

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0					
	41.2		11		ML BROWN SANDY SILT WITH TRACE OF GRAVEL (STIFF, WET)
5	42.4	79.2	9		
	32.7	89.0	12		SOME GRAVEL - LENSES OF FINE SILTY SAND TO 2" (SM)
10	29.6	95.7	27		SM LIGHT BROWN SILTY FINE SAND WITH TRACE OF GRAVEL (MEDIUM DENSE, MOIST)
	29.9	90.8	36		DENSE
15					

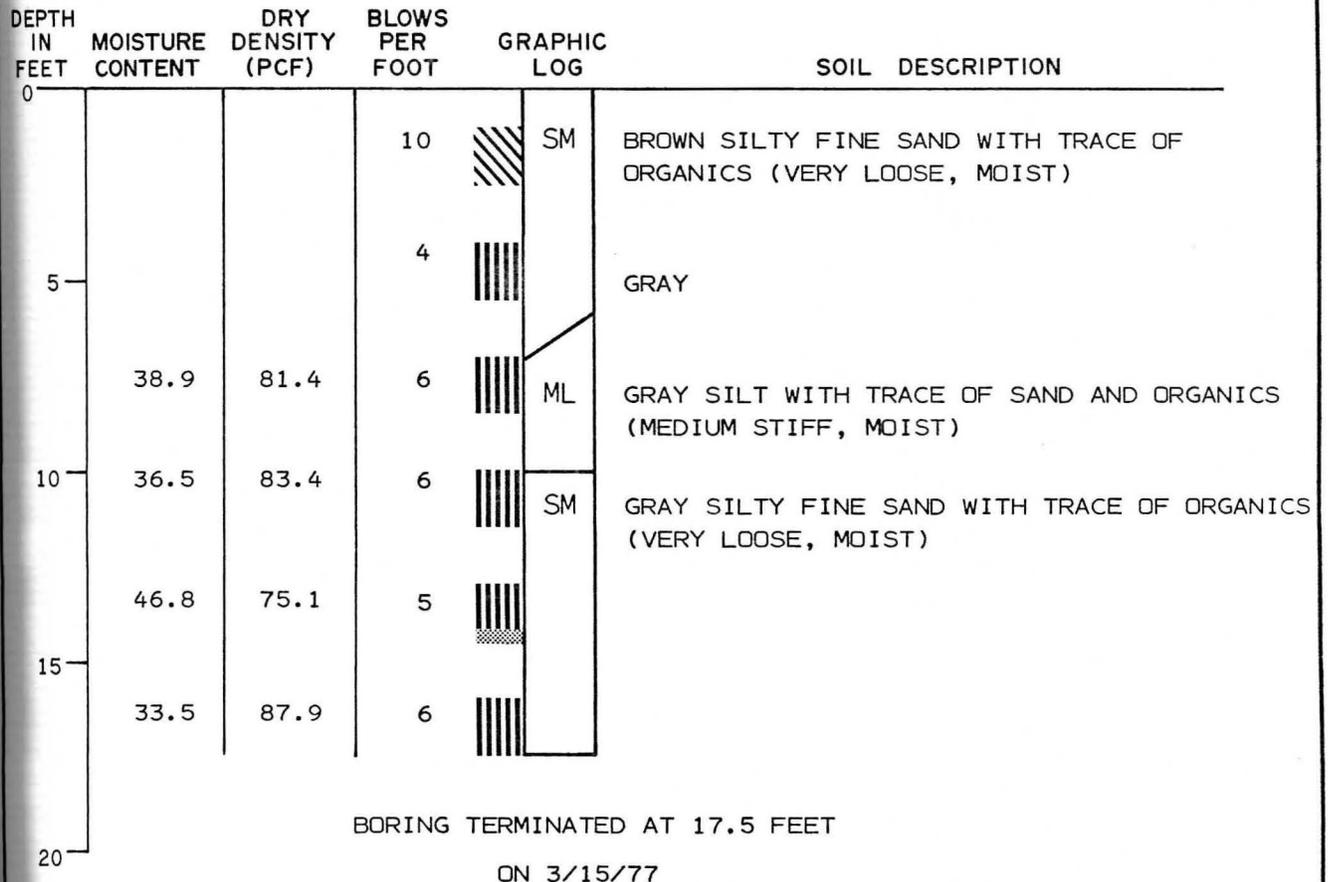
BORING TERMINATED AT 15 FEET  
ON 3/11/77

BORING 227

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0					
			5		SM GRAY AND BROWN MOTTLED SILTY FINE SANDS (LOOSE, MOIST)
5	51.7	70.9	5		ML GRAY SILT WITH A TRACE OF SAND AND ORGANICS (MEDIUM STIFF, WET)
	71.0	57.2	3		SOFT
10	75.6	55.0	1		VERY SOFT
	71.3	56.7	2		
15					

BORING TERMINATED AT 15 FEET  
ON 3/15/77

BORING 228



OBSERVATION WELL INSTALLED  
SEE TEXT FOR WATER LEVEL DATA

BORING 229

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0					
	22.9		7	 SM	BROWN SILTY MEDIUM SAND AND SOME FINE GRAVEL (LOOSE, WET) GARBAGE FILL
5			2	 OL	
	105.5		4	 OL	BROWN ORGANIC SILT WITH SOME SAND AND WOOD (SOFT, WET)
10			4	 ML	GRAY SILT WITH SOME ORGANICS AND TRACE OF SAND (SOFT, WET)
	77.5	58.3		 SM	GRAY SILTY FINE SAND WITH TRACE OF ORGANICS (VERY LOOSE, WET)
15			2	 SM	

BORING TERMINATED AT 15 FEET

ON 3/15/77

BORING 301

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				GP	3" ASPHALT SANDY GRAVEL (FILL)
	47.0	66.0	6	SM	RED BROWN SILTY FINE SAND WITH SOME WOOD AND CHARCOAL
5				ML	LIGHT BROWN CLAYEY SILT (MEDIUM STIFF, MOIST)
	29.0	90.7	26		(VERY STIFF, DAMP)
10	33.1	81.9	19		DARK BROWN SANDY SILT (VERY HARD, DAMP)
BORING TERMINATED AT 11.5'					
ON 5/27/77					

BORING 302

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				GP	3" ASPHALT SANDY GRAVEL (FILL)
	28.4	91.3	75	ML	BROWN CLAYEY SILT (HARD, DAMP)
5					BROWN-GRAY CLAYEY SILT (HARD, DAMP)
			50/5"		
10	25.5	93.1	48/6"		
BORING TERMINATED AT 11' ON					
5/27/77					

BORING 303

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0					3" ASPHALT
				SM	RED BROWN SILTY FINE SAND (DENSE, DAMP)
5			76		
	25.0	97.8	71		
10					BECOMES VERY DENSE
	24.2	100.7	50/5"		
15			50/5 1/2"		
20					

BORING TERMINATED AT 16.5' ON  
5/31/77

BORING 304

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0					6" CONCRETE
					BROWN CLAYEY SILT (MEDIUM STIFF, MOIST)
5			5	ML	
	48.3	72.3			
			15		WITH A TRACE OF FINE GRAVEL
10					
			16	SP	BROWN FINE SAND WITH A TRACE OF SILT (LOOSE, DAMP)
15					
			29	SW	BROWN WELL GRADED SAND WITH SOME FINE GRAVEL (MEDIUM DENSE, MOIST)
20					

BORING TERMINATED AT 16.5' ON

5/26/77

BORING 305

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0					6" CONCRETE
			45	SM	BROWN SILTY FINE SAND (MEDIUM DENSE, DAMP)
5					
	25.5	94.1	47		
10			54		
					BORING TERMINATED AT 16.5' ON
					5/26/77
15					

BORING 306

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0					6" CONCRETE
			43/6"	SM	BROWN SILTY FINE SAND (DENSE, DAMP)
5					
			48/6"		
10					
	20.2	103.3	48/6"		
15					
	23.2	101.9	50/5"		BECOMES VERY DENSE
			44/6"		
20					

BORING TERMINATED AT 18.5' ON

5/26/77

OBSERVATION WELL INSTALLED  
SEE TEXT FOR WATER LEVEL DATA

BORING 307

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				SP	6" CONCRETE
				ML	GREEN FINE SAND
					LIGHT BROWN SANDY SILT
			2	SP	GRAY FINE SAND WITH SOME SILT (VERY LOOSE, MOIST) (FILL)
5					WITH TRACE OF ORGANICS
	360.0	14.4	2	ML	BROWN SANDY SILT, SOME ORGANICS (SOFT, MOIST)
10	140.0	34.1	2		
15					

BORING TERMINATED AT 11.5' ON  
5/26/77

BORING 308

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				GP	3" ASPHALT
				SP	BROWN SANDY GRAVEL (FILL) GREEN FINE SAND (FILL)
	64.9	60.8	4	ML	BROWN GRAY SILT WITH A TRACE OF ORGANICS (SOFT, MOIST)
5					
	71.6	59.2	PUSH		
10			1		
15					

BORING TERMINATED AT 11.5' ON 5/31/77

BORING 309

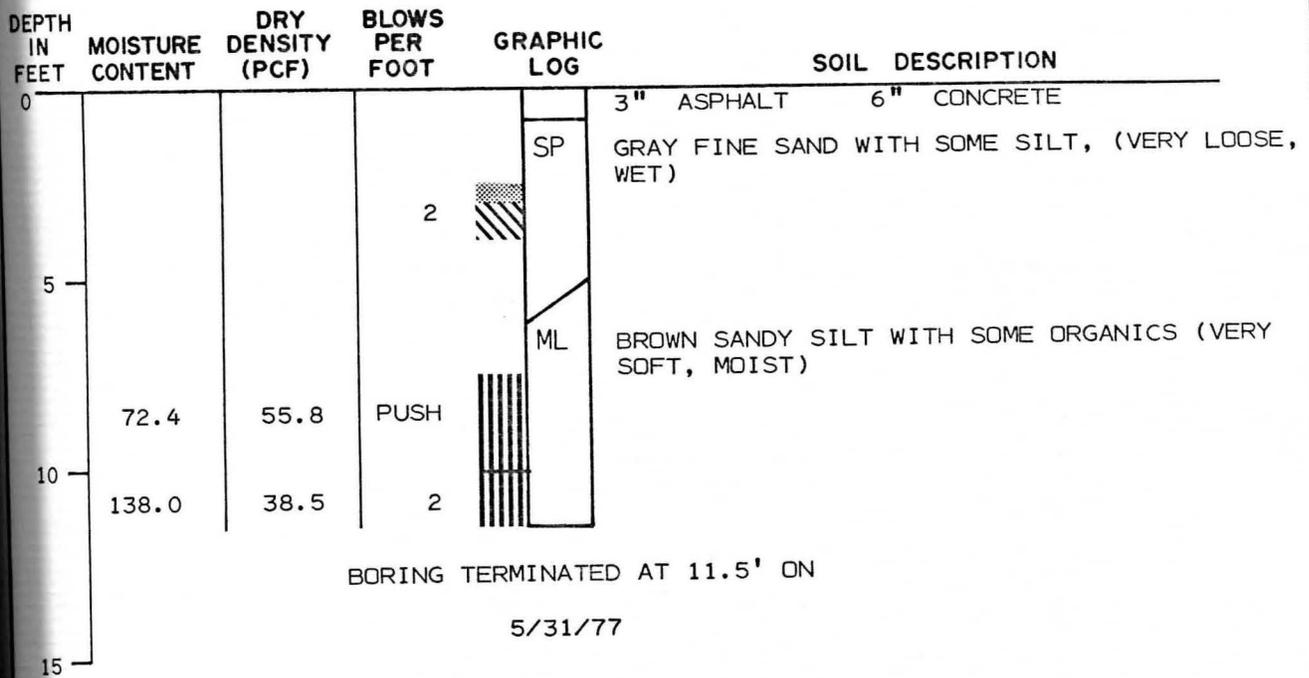
DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				ML	3" ASPHALT GRAY SILT WITH A TRACE OF ORGANICS (SOFT, MOIST)
	86.1	49.0	2		
5					
	49.6	72.7	PUSH		
10	75.6	54.8	2		WITH TRACE OF WOOD
15					

BORING TERMINATED AT 11.5' ON 5/31/77

BORING 310

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				GP	BROWN SANDY GRAVEL (FILL)
			4		ML GRAY SILT WITH SOME WOOD (SOFT, MOIST)
5			2		DARK BROWN SILT WITH SOME ORGANICS (VERY SOFT, MOIST)
10			PUSH		GRAY SILT WITH A TRACE OF FINE SAND (SOFT, MOIST)
15	55.8	58.5	4		
BORING TERMINATED AT 16.5' ON					
5/31/77					
20					

BORING 311



OBSERVATION WELL INSTALLED  
SEE TEXT FOR WATER LEVEL DATA

BORING 312

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				ML	6" CONCRETE BROWN SILT WITH SOME GRAVEL (FILL)
5			5		SAWDUST AND WOOD CHIPS (VERY LOOSE, MOIST) (FILL)
10	85.4	48.3	2	 ML	GRAY-BROWN SILT WITH A TRACE OF ORGANICS AND 1/8" FINE SAND LENSES
15			50/4"	 SP	GRAY SAND AND SOME GRAVEL (VERY DENSE, WET)
			34		BECOMES MEDIUM DENSE

BORING TERMINATED AT 16.5' ON  
5/31/77

BORING 313

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				GP	3" ASPHALT
				ML	BROWN SANDY GRAVEL (FILL) BROWN SILT
			90/10"	SP	BROWN COARSE SAND AND GRAVEL (VERY DENSE, MOIST)
5			70/10"		
10			50/6"		
			50/6"		

BORING TERMINATED AT 13.5' ON

5/31/77

OBSERVATION WELL INSTALLED  
SEE TEXT FOR WATER LEVEL DATA

BORING 314

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				ML	6" CONCRETE
				ML	BROWN SILT
				SM	BROWN SILTY FINE SAND (LOOSE, MOIST)
5			13	ML	GRAY CLAYEY SILT (SOFT, MOIST)
10	32.7	89.8	4		WITH TRACE OF GRAVEL (MEDIUM STIFF, MOIST)
15	32.1	90.4	30	SM	GREEN SILTY FINE SAND WITH SOME GRAVEL (MEDIUM DENSE, MOIST)

BORING TERMINATED AT 14.0' ON

5/26/77

BORING 315

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				ML	6" CONCRETE
				ML	BROWN SILT
				SM	BROWN SILTY FINE SAND (LOOSE, MOIST)
5			8		
10	22.3	82.8	14	SP	BROWN MEDIUM SAND WITH SOME COARSE SAND (LOOSE, MOIST)
15	18.2	108.8	36	SW	BROWN WELL GRADED SAND WITH SOME FINE GRAVEL (MEDIUM DENSE, MOIST)

BORING TERMINATED AT 14.0' ON

5/26/77

BORING 316

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0					1" ASPHALT 6" CONCRETE
				SM	BROWN SILTY FINE SAND (MEDIUM DENSE, DAMP)
			20		
5					
	27.2	95.3	32		
10					
	29.2	92.9	50/3"		BECOMES VERY DENSE
15			52/6"		
					BORING TERMINATED AT 15.5' ON
					5/26/77
20					

BORING 317

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0					6" CONCRETE
				ML	LIGHT BROWN SANDY SILT (MEDIUM STIFF, MOIST)
			9		
5	52.5	67.8	15		
10	41.7	80.9	13		SM GRAY SILTY FINE SAND (LOOSE, MOIST)
	30.9	90.9	57		ML GRAY SANDY SILT (MEDIUM STIFF, MOIST)
					SP GRAY FINE SAND (DENSE, MOIST)
15					

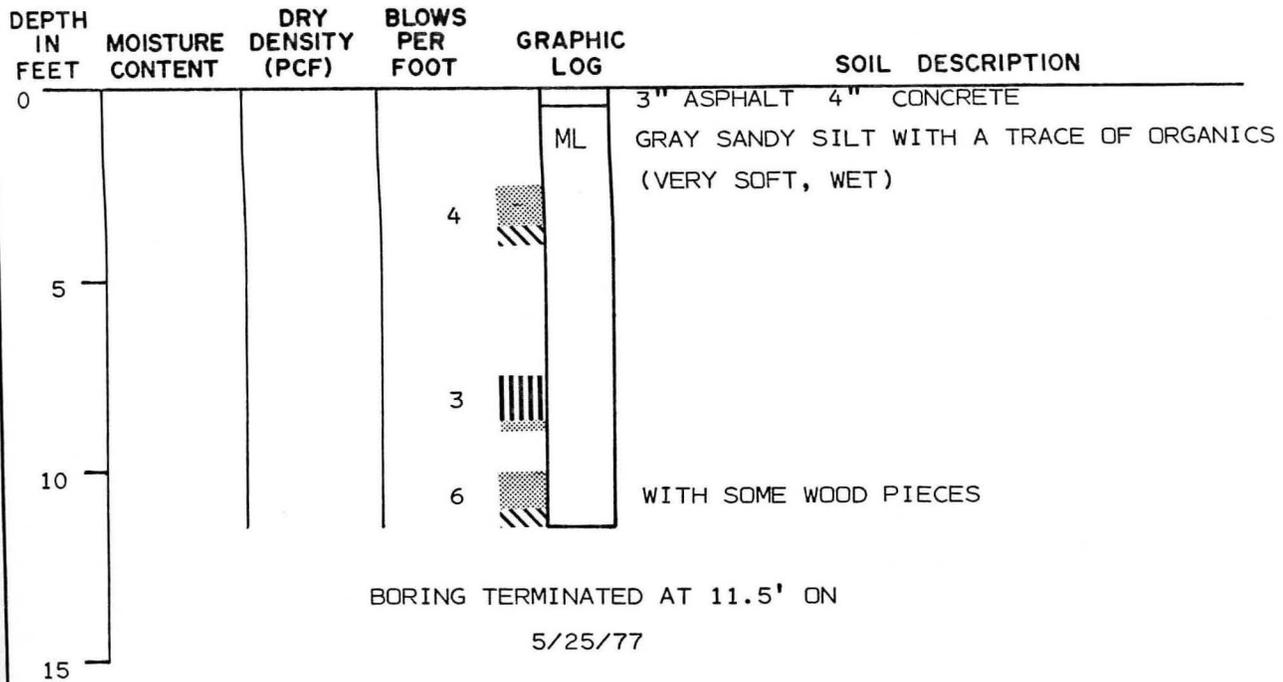
BORING TERMINATED AT 14.0' ON  
5/24/77

BORING 318

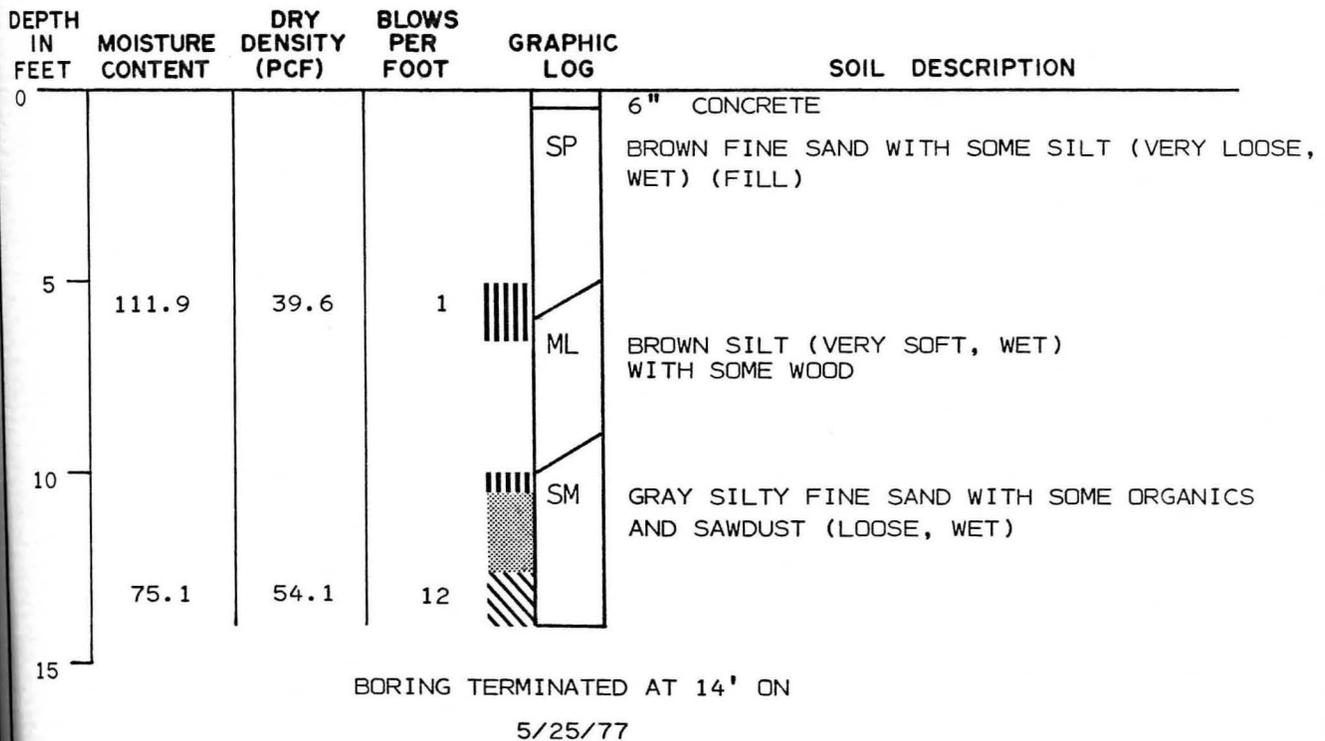
DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0					6" CONCRETE
				ML	BROWN SANDY SILT
5	76.1	54.1	6		MH BROWN CLAYEY SILT (MEDIUM STIFF, MOIST)
10	17.8	107.0	50/2"		SP BROWN FINE SAND (VERY DENSE, DAMP)
			50/3"		
15					

BORING TERMINATED AT 13.1' ON  
5/25/77

BORING 319



BORING 320



BORING 321

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0					6" CONCRETE
	62.7	59.8	1	SP	GRAY FINE SAND WITH SOME SILT (VERY LOOSE, WET) (FILL)
5				ML	GRAY SILT WITH SOME FINE SAND AND A TRACE OF ORGANICS (VERY SOFT, WET)
	135.8	34.5	3	PT	DARK BROWN PEAT (SOFT, MOIST)
10				ML	BROWN SILT WITH A TRACE OF ORGANICS (SOFT, MOIST)
	67.7	60.1	PUSH		GRAY SILT AND SOME SAWDUST (SOFT, MOIST)
15			4		
20					

BORING TERMINATED AT 16.5' ON  
5/25/77

BORING 322

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				6" CONCRETE	
				ML	BROWN SILT (FILL)
				6" CONCRETE	
			3	ML	BROWN SILT (VERY SOFT, MOIST)
5					
	117.3	37.9	1		WITH TRACE OF ORGANICS
10					
	43.9	75.5	PUSH	SM	GRAY SILTY FINE SAND WITH A TRACE OF ORGANICS
15					
	62.9	62.0	2	ML	GRAY SILT WITH A TRACE OF ORGANICS (SOFT, MOIST)
20					

BORING TERMINATED AT 16.5' ON

5/25/77

BORING 323

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				GP	6" CONCRETE
				PT	GRAY GRAVEL WITH SOME SAND & WOOD (FILL)
	59.0		6	ML	WOOD CHIPS (FILL)
5					GRAY-GREEN SILT WITH A TRACE OF ORGANICS (SOFT, MOIST)
	65.8	58.7	3		
10					
			PUSH		
15	59.0	65.1	7	SM	GRAY SILTY FINE SAND WITH A TRACE OF ORGANICS (VERY LOOSE, WET)
20					

BORING TERMINATED AT 16.5' ON  
5/25/77

BORING 324

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				GP	1" ASPHALT GRAY SANDY GRAVEL (FILL)
				ML	GRAY SILT WITH A TRACE OF ORGANICS AND WOOD (VERY SOFT, MOIST)
5			1		
10	55.9	66.6	PUSH		
	70.4	55.9	4		BECOMES SOFT
15					

BORING TERMINATED AT 14.0' ON  
5/25/77

BORING 325

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				GP	6" CONCRETE SANDY GRAVEL (FILL)
				ML	GRAY SILT (VERY SOFT, MOIST)
	80.0				
5					

BORING TERMINATED AT 4.0' DUE  
TO OBSTRUCTION  
5/27/77

BORING 325A

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0					6" CONCRETE
	74.5		5		ML GRAY SILT WITH A TRACE OF ORGANICS (SOFT, MOIST)
5			3		
10	156.5	29.6	1		BECOMES VERY SOFT, WITH WOOD CHIPS
15					

BORING TERMINATED AT 11.5' ON

6/1/77

BORING 326

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				GP	3" ASPHALT, 6" CONCRETE
					GRAY AND BROWN SANDY GRAVEL (FILL)
			3	ML	GRAY SILT (SOFT, MOIST)
5					
	69.8	54.9	3		
10					
	69.4	60.0			
15	54.3	66.6	28	SP	BROWN FINE SAND (MEDIUM DENSE, MOIST)
20					

BORING TERMINATED AT 16.5' ON  
5/24/77

BORING 327

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				GP	6" CONCRETE GRAY SANDY GRAVEL (FILL)
			2		ML BROWN SILT (VERY SOFT, WET)
5					
	80.6	51.5	3		WITH TRACE OF ORGANICS
10					
	76.9	54.0	PUSH		SM BROWN GRAY SILTY FINE SAND (LOOSE, MOIST)
15					
	79.3	52.3	15		
20					

BORING TERMINATED AT 16.5' ON  
5/24/77

BORING 328

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0					3" ASPHALT
				GP	GRAY AND BROWN SAND AND GRAVEL (FILL)
			11		ASPHALT AND WOOD (FILL)
5				ML	GRAY SILT WITH A TRACE OF ORGANICS (VERY SOFT, MOIST)
			12		
10					
	83.9				
15			12		SM
	95.9				GRAY SILTY FINE SAND (LOOSE, MOIST)

BORING TERMINATED AT 16.5' ON  
5/24/77

OBSERVATION WELL INSTALLED  
SEE TEXT FOR WATER LEVEL DATA

BORING 329

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0					10" ASPHALT
				GP	BROWN AND GRAY SANDY GRAVEL (WET) (FILL)
				ML	GRAY SILT (VERY SOFT, WET)
5			1		
10	90.1		1		WITH TRACE OF ORGANICS (SOFT, MOIST)
	87.2	50.3	5		WITH TRACE OF FINE SAND
15					BORING TERMINATED AT 14.0' ON 5/31/77

BORING 330

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0					6" ASPHALT, 4" CONCRETE
				GP	GRAY SANDY GRAVEL (FILL)
	59.5	59.9	2	ML 	GRAY SILT WITH A TRACE OF ORGANICS (SOFT, MOIST)
5	188.5	28.3	4		
10			PUSH		BECOMES VERY SOFT
			2		
15					BORING TERMINATED AT 14' ON 5/24/77

BORING 331

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				GP	3" ASPHALT GRAY-BROWN SANDY GRAVEL (FILL)
	102.0	73.1	5	ML	BROWN SILT WITH A TRACE OF ORGANICS (SOFT, MOIST)
5	91.1		48		ENCOUNTERED WOOD
	66.9	59.4	7		BECOMES GRAY (VERY SOFT, MOIST)
10	61.3		PUSH		WITH A TRACE OF FINE SAND
			5	SM	GRAY SILTY FINE SAND WITH A TRACE OF ORGANICS (VERY LOOSE, MOIST)
15					

BORING TERMINATED AT 14.0' ON

5/23/77

OBSERVATION WELL INSTALLED  
SEE TEXT FOR WATER LEVEL DATA

BORING 332

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				GP	2" ASPHALT GRAY SANDY GRAVEL (FILL)
			6	ML	GRAY SILT WITH A TRACE OF ORGANICS (SOFT, MOIST)
5					
	97.3	45.5	PUSH		WITH TRACE OF FINE GRAVEL
10			3		BECOMES VERY SOFT
15					

BORING TERMINATED AT 11.5' ON  
5/23/77

BORING 333

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				GP	3" ASPHALT BROWN SANDY GRAVEL (FILL)
5			5	ML	GRAY SILT WITH A TRACE OF ORGANICS (SOFT, MOIST)
10	27.4		4		
15	55.6		PUSH		
	42.7	77.4	PUSH		WITH SOME FINE SAND
20	63.5	61.7	4		

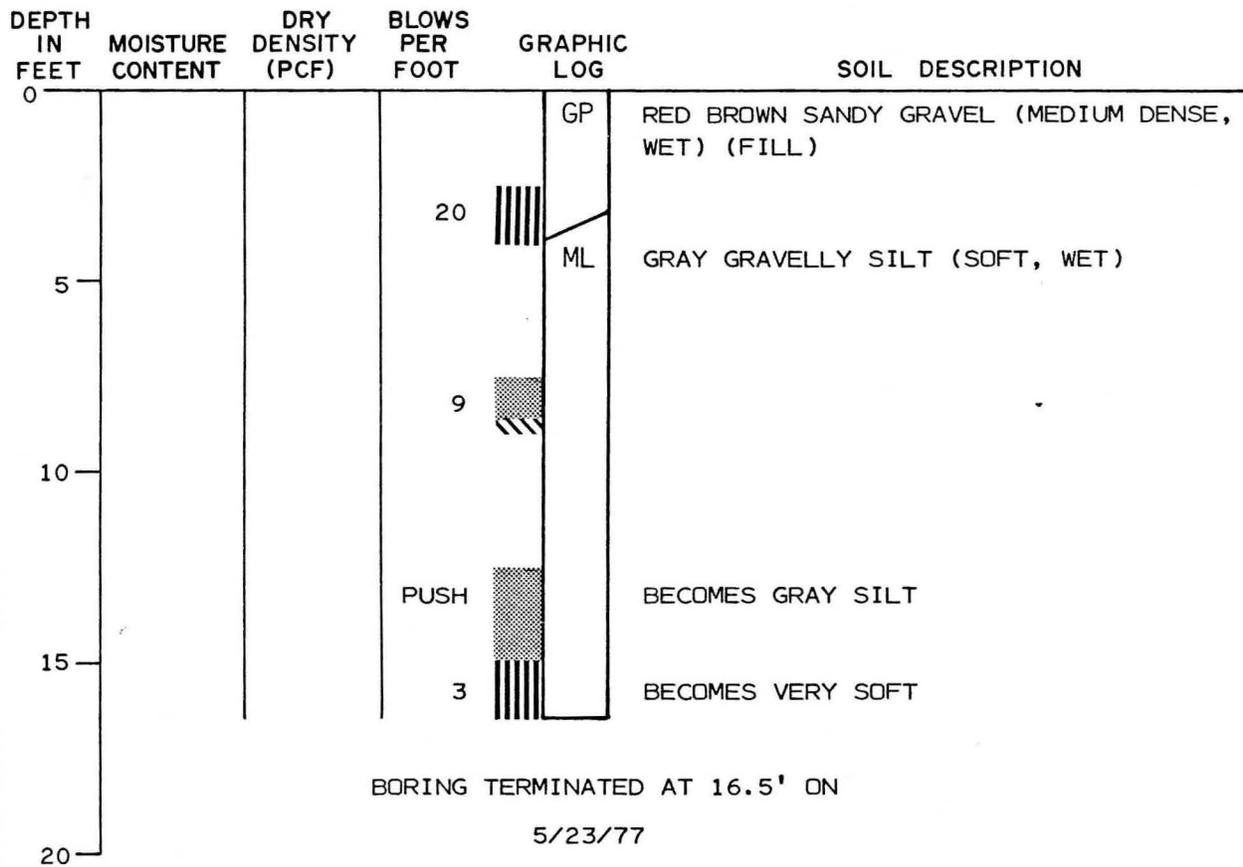
BORING TERMINATED AT 19' ON  
5/19/77

BORING 334

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				GP	1" ASPHALT
					BROWN SANDY GRAVEL (FILL)
			4	ML	GRAY BROWN SILT WITH A TRACE OF ORGANICS (SOFT, MOIST)
5					
	89.8	47.4	3		BECOMES VERY SOFT
10					
	74.7	76.0	PUSH	SM	GRAY SILTY FINE SAND WITH SOME WOOD (VERY LOOSE, MOIST)
15					
	55.0	67.2	5	ML	GRAY SILT WITH SOME FINE SAND AND A TRACE OF ORGANICS (SOFT, MOIST)
20					

BORING TERMINATED AT 16.5' ON  
5/23/77

BORING 335



BORING 336

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0					10" ASPHALT
				SM	BROWN SILTY FINE SAND WITH SOME GRAVEL (FILL)
			5	PT	DARK BROWN SILT WITH WOOD PIECES (SOFT, MOIST) (FILL)
5	109.2	41.4	3	ML	BROWN SILT WITH A TRACE OF ORGANICS (SOFT, MOIST)
10			5	SM	BROWN SILTY FINE SAND WITH SOME SAWDUST (VERY LOOSE, MOIST)
	43.1	74.0	15	SP	WITH A TRACE OF SILT (LOOSE)
15					

BORING TERMINATED AT 14.0' ON

5/20/77

BORING 337

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0					1" ASPHALT, 4" CONCRETE
	70.0	56.9	7	ML	LIGHT BROWN CLAYEY SILT (MEDIUM STIFF, MOIST)
5					
			9	SM	BROWN SILTY FINE SAND (LOOSE, MOIST)
10					
	34.2	75.2	6		
15			9		
			35	SP	LIGHT BROWN FINE SAND WITH SOME SILT AND FINE GRAVEL (MEDIUM DENSE, MOIST)
20					

BORING TERMINATED AT 19.0' ON  
5/25/77

OBSERVATION WELL INSTALLED  
SEE TEXT FOR WATER LEVEL DATA

BORING 338

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				GP	3" ASPHALT
					DARK BROWN SANDY GRAVEL (FILL)
			12	SM	BROWN SILTY FINE SAND (LOOSE, MOIST)
5					BECOMES MEDIUM DENSE
	35.9	82.3	20		
10				SM	LOOSE, WITH A TRACE OF ORGANICS
	36.2	81.1	17		
BORING TERMINATED AT 11.5' ON					
5/19/77					
15					

BORING 339

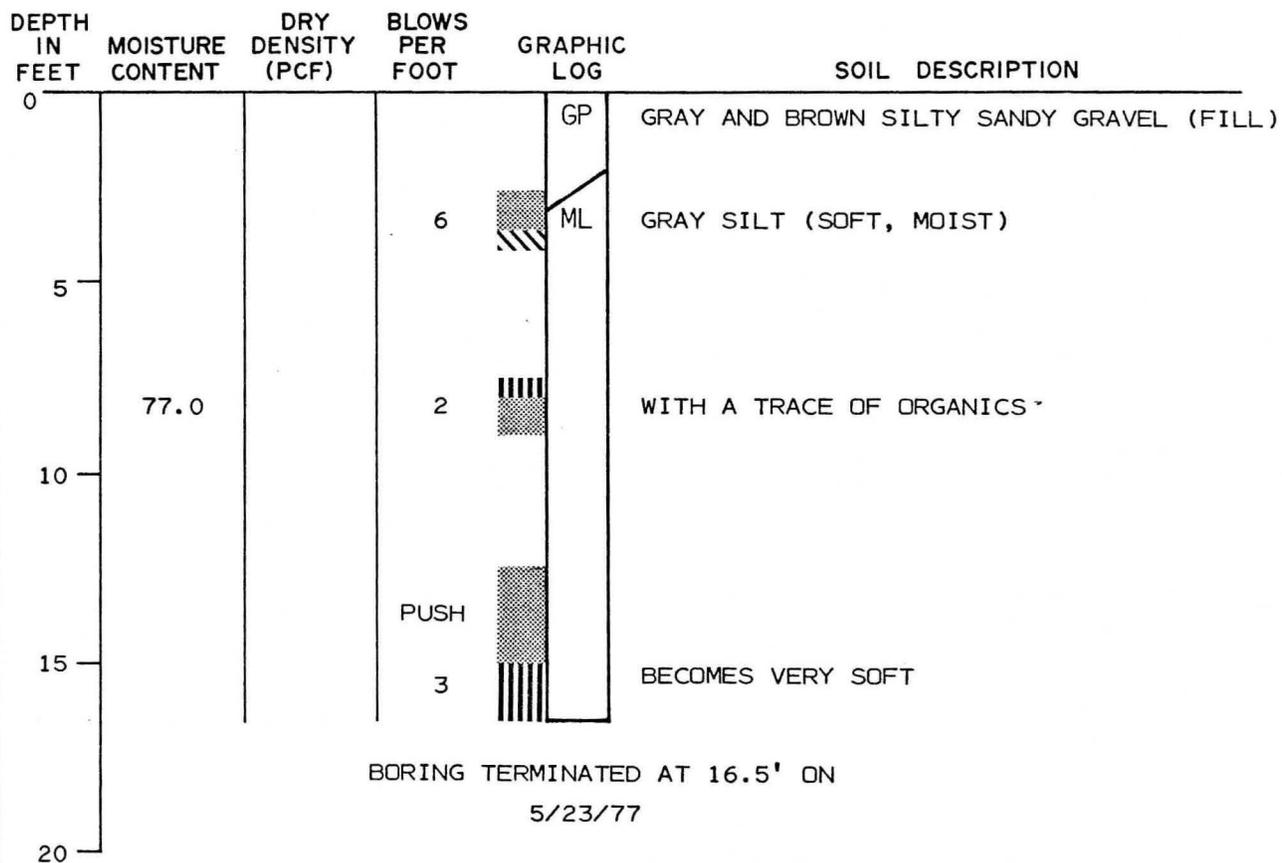
DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				GP	DARK BROWN SANDY GRAVEL (FILL)
					<PT DARK BROWN PEAT (SOFT, MOIST)(FILL)
			3	ML	GRAY BROWN SILT WITH SOME ORGANICS (FILL)
5					
	301.6	16.0	4	PT	BROWN SILTY SAWDUST WITH SOME FINE GRAVEL (SOFT, MOIST) (FILL)
10				SM	GRAY SILTY FINE SAND (LOOSE, MOIST)
			14		
BORING TERMINATED AT 11.5' ON					
5/19/77					
15					

BORING 340

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0					3" ASPHALT
				SM	RED BROWN SILTY SAND WITH SOME GRAVEL (FILL)
			6		ML GRAY SILT WITH TRACE OF ORGANICS (SOFT, MOIST)
5					
	78.5	52.3	5		
10					
	65.1	60.9	PUSH		
15					
	52.4	76.3	2		
20					

BORING TERMINATED AT 16.5'  
ON 5/20/77

BORING 341



OBSERVATION WELL INSTALLED  
SEE TEXT FOR WATER LEVEL DATA

BORING 342

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				GP	3" ASPHALT BROWN SANDY GRAVEL (FILL)
	58.4	78.6	7	ML	GRAY SILT WITH A TRACE OF ORGANICS (MEDIUM STIFF, MOIST)
5					
			2		BECOMES VERY SOFT, WET
10	70.0	57.0	6		BECOMES MEDIUM STIFF
15					

BORING TERMINATED AT 11.5' ON  
5/19/77

BORING 343

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				ML	BROWN SANDY SILT (FILL)
4			4	ML	BROWN GRAY SILT WITH TRACE OF ORGANICS (SOFT, MOIST)
7.5	71.3	54.1	3		
10				SM	GRAY SILTY FINE SAND (LOOSE, MOIST)
12.5	40.9 56.1	79.1 66.6	PUSH		
13			13		WITH A TRACE OF ORGANICS
BORING TERMINATED AT 16.5' ON 5/18/77					
20					

BORING 344

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				GP	3" ASPHALT DARK GRAY SANDY GRAVEL (FILL)
	61.6	58.9	2	ML	GRAY SILT WITH SOME ORGANICS (SOFT, MOIST)
5					
	64.8		1		BECOMES VERY SOFT
10					
			PUSH		
15			1		WITH A TRACE OF FINE SAND
20					

BORING TERMINATED AT 16.5' ON  
5/18/77

BORING 345

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				GP	3" ASPHALT
					DARK GRAY SANDY GRAVEL (FILL)
				ML	GRAY SILT WITH A TRACE OF ORGANICS (SOFT, MOIST)
5	84.8	48.8	4		
10	51.3	70.3	3		
	69.7		3		
15					

BORING TERMINATED AT 14.0' ON  
5/20/77

BORING 346

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				GP	DARK BROWN SANDY GRAVEL (FILL)
				SM	BROWN SILTY FINE SAND (LOOSE, MOIST)
5			16		
	36.8	84.1	21		WITH SOME SILT
10	28.4	93.1	14		
15					

BORING TERMINATED AT 16.5' ON  
5/19/77

BORING 347

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				SP	3" ASPHALT
					BROWN FINE SAND WITH SOME GRAVEL (FILL)
			22	PT	SILTY PEAT WITH A TRACE OF GRAVEL (VERY SOFT, WET)
5			5	SP	GRAY FINE SAND AND WOOD (LOOSE, MOIST)
			9	ML	BROWN SILT WITH SOME GRAVEL AND WOOD (VERY SOFT, WET)
10			9	SP	GRAVELLY SAND (LOOSE, WET)

BORING TERMINATED AT 11.5'  
ON 5/25/77

BORING 348

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				ML	DARK BROWN SANDY GRAVELLY SILT (FILL)
	46.6	52.0	3	ML	BROWN SILT WITH A TRACE OF ORGANICS (SOFT, MOIST)
5					BECOMES GRAY, VERY SOFT
	85.3	51.2	1		WITH A TRACE OF FINE SAND
10	82.9	52.1	1		

BORING TERMINATED AT 11.5' ON  
5/18/77

OBSERVATION WELL INSTALLED  
SEE TEXT FOR WATER LEVEL DATA

BORING 349

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				GP	3" ASPHALT
				SM	BROWN SANDY GRAVEL (FILL)
	141.6	33.2	6	PT	RED BROWN SILTY FINE SAND (FILL)
				ML	SAWDUST (VERY LOOSE, MOIST) (FILL)
5	141.6	33.2	1		GRAY SILT WITH A TRACE OF ORGANICS (SOFT, MOIST)
10	84.4		3		
			1		
15					

BORING TERMINATED AT 14.0' ON  
5/20/77

BORING 350

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				GP	3" ASPHALT GRAY AND BROWN SANDY GRAVEL (FILL)
150.6	32.1	4	ML	GRAY SILT WITH A TRACE OF ORGANICS (SOFT, MOIST)	
62.8		4		BECOMES VERY STIFF	
71.1	56.0	2			
15				OBSERVATION WELL INSTALLED WITH TIP AT 15' SEE TEXT FOR WATER LEVEL DATA	
67.3	58.4		PUSH	WITH A TRACE OF FINE SAND	
65.4	61.1	4			
65.2	61.7	4	SP	GRAY FINE SAND WITH A TRACE OF ORGANICS (VERY LOOSE, MOIST)	
37.4	82.0	17		BECOMES LOOSE	
		3		WITH SOME SILT AND TRACE OF SHELL FRAGMENTS (VERY LOOSE, MOIST)	

BORING TERMINATED AT 39.0' ON  
5/20/77

BORING 351

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				ML	GRAY AND BROWN SANDY SILT WITH SOME GRAVEL (FILL)
5	54.0	68.6	6	ML	GRAY SILT WITH A TRACE OF ORGANICS (SOFT, MOIST)
10	61.1	62.4	2		
15	56.1	66.6	PUSH		WITH A TRACE OF FINE SAND
			3		WITH SOME FINE SAND

BORING TERMINATED AT 16.5' ON

5/17/77

BORING 352

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				SP	3" ASPHALT
					BROWN SAND AND GRAVEL (FILL)
5	94.9		2	ML	BROWN SILT WITH A TRACE OF ORGANICS (SOFT, MOIST)
10			2		BECOMES VERY SOFT
15			2	SM	GRAY SILTY FINE SAND WITH A TRACE OF ORGANICS (VERY LOOSE, WET)

BORING TERMINATED AT 14.0' ON

5/16/77

BORING 353

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				SP	BROWN AND GRAY SILTY GRAVELLY SAND WITH SOME WOOD (FILL)
5			4	ML	GRAY SILT WITH SOME ORGANICS (VERY SOFT, WET)
10	58.1	64.4	3		
15	69.7		3		WITH WOOD

BORING TERMINATED AT 11.5' ON

5/17/77

BORING 354

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				ML	BROWN GRAY SANDY GRAVELLY SILT (FILL)
7			7	ML	GRAY SILT WITH A TRACE OF ORGANICS (SOFT, MOIST)
11.5	116.1	38.7	PUSH		
10	97.1	44.1	3	SM	GRAY SILTY FINE SAND WITH SOME ORGANICS (VERY LOOSE, MOIST)
BORING TERMINATED AT 11.5' ON 5/17/77					
15					

OBSERVATION WELL INSTALLED  
SEE TEXT FOR WATER LEVEL DATA

BORING 355

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				SP	RED-BROWN SILTY GRAVELLY SAND (FILL)
12			12	ML	GRAY SILT WITH A TRACE OF WOOD (MEDIUM STIFF, MOIST)
11.5	91.1		PUSH		WITH SOME WOOD
10			3		WITH A TRACE OF ORGANICS (SOFT, MOIST)
BORING TERMINATED AT 11.5' ON 5/17/77					
15					

BORING 356

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				GP	BROWN SANDY GRAVEL (FILL)
5	61.5	62.5	4	ML ML	BROWN SANDY GRAVELLY SILT (FILL) GRAY SILT (SOFT, MOIST)
10	57.8	65.8	PUSH	SM	GRAY SILTY FINE SAND WITH A TRACE OF ORGANICS (VERY LOOSE, MOIST)
15			3		

BORING TERMINATED AT 14.0' ON  
5/16/77

BORING 357

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				SP	3" ASPHALT
					BROWN SAND AND GRAVEL (FILL)
	88.8	46.6	6	ML	BROWN SILT WITH A TRACE OF ORGANICS (SOFT, MOIST)
5					
	74.2	55.3	2		BECOMES GRAY
10					
	35.2	81.7	PUSH	SM	GRAY SILTY FINE SAND (VERY LOOSE, MOIST)
15			5		
20					

BORING TERMINATED AT 16.5' ON  
5/16/77

BORING 358

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				ML	3" SOD DARK BROWN SILTY WITH SOME ORGANICS (TOP-SOIL)
				ML	BROWN SANDY SILT AND A TRACE OF ORGANICS (STIFF, MOIST)
5	39.9	75.9	7		
10	40.5	78.6	11		OBSERVATION WELL INSTALLED AT 11.5'
	35.4	83.7	8		SM
					LIGHT BROWN SILTY FINE SAND (LOOSE, MOIST)
15					

BORING TERMINATED AT 14.0' ON

5/27/77

OBSERVATION WELL INSTALLED  
SEE TEXT FOR WATER LEVEL DATA

BORING 359

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0					3" ASPHALT
				ML	BROWN SILT WITH SOME SAND AND A TRACE OF ORGANICS (MEDIUM STIFF, MOIST)
	38.1	76.2	7		
5					
	46.6	74.1	10		BECOMES STIFF
10					
	51.4	70.4	7		BECOMES MEDIUM STIFF
15					
	47.5	72.7	6		
20					

BORING TERMINATED AT 16.5' ON

5/27/77

BORING 360

DEPTH IN FEET	MOISTURE CONTENT	DRY DENSITY (PCF)	BLOWS PER FOOT	GRAPHIC LOG	SOIL DESCRIPTION
0				GP	3" ASPHALT SANDY GRAVEL (FILL)
				ML	LIGHT BROWN SILT WITH SOME SAND (MEDIUM STIFF, MOIST)
44.7	70.7	5			
5					
32.7	87.3	4			LIGHT BROWN & RED (SOFT, MOIST)
10					
67.3	54.2	4			GRAY BROWN WITH A TRACE OF ORGANICS AND WOOD (SOFT, MOIST)
15					

BORING TERMINATED AT 11.5' ON  
5/27/77

<u>BORING NUMBER</u>	<u>DEPTH (FT.)</u>	<u>SHEAR STRENGTH (LBS/FT<sup>2</sup>)</u>
213	8.0	192
	10.0	537
	12.0	480
	14.0	588
217	9.0	405
	10.5	645
	12.0	504
	14.0	>1110
	15.0	570
223	8.0	810
	10.0	966
	12.0	987
	14.0	720
227	6.0	1008
	8.0	582
	10.0	798
	12.0	486
310	8.0	1014
	10.0	840
	12.0	699
	14.0	840
319	4.0	444
333	4.0	186
	6.0	810
	8.0	675
	10.0	519
335	8.0	444
	10.0	597
	12.0	540
	14.0	549
340	8.0	564
	10.0	666
	12.0	555
	14.0	483
342	4.0	951
	6.0	675
	8.0	477
	10.0	>1140
	11.0	1170

<u>BORING NUMBER</u>	<u>DEPTH (FT.)</u>	<u>SHEAR STRENGTH (LBS/FT<sup>2</sup>)</u>
348	5.0	378
	8.0	360
	11.0	345
	14.0	750
	17.0	540
350	3.0	690
	4.0	360
	5.5	288
	7.0	315
	8.5	420
	10.0	345
	11.5	330
	13.0	330
	14.5	390
	16.0	444
	17.5	690
	19.0	1080
	20.5	990
22.0	1134	
23.5	936	
25.0	900	
352	6.0	393
	8.0	510
	10.0	435
	12.0	468
356	6.0	285
	8.0	258
	10.0	375
	12.0	516

ROGER LOWE ASSOCIATES	EXPLORATION NUMBER	SAMPLE DEPTH (FT)	MOISTURE CONTENT %	DRY DENSITY (LBS/FT <sup>2</sup> )	CONFINING PRESSURE (LBS/FT <sup>2</sup> )	SHEAR RATE* (IN./MIN.)	INDICATED STRENGTH (LBS/FT <sup>2</sup> )	
							YIELD	PEAK
	336	10.0			208		144	201
	343	2.5			832		268	603
	343	15.0			208		144	297
	356	12.5	57.8	65.8	416		191	383
	356	12.5	57.8	65.8	1040		287	478

DIRECT SHEAR TEST RESULTS

KEY: \* ALL TESTS ARE RUN ON SATURATED SAMPLES AT A STRAIN RATE OF 0.05 INCHES PER MINUTE UNLESS NOTED OTHERWISE.

EXPLORATION NUMBER	SAMPLE NUMBER	SAMPLE DEPTH (FT)	MOISTURE CONTENT (%)	DRY DENSITY (LBS/FT <sup>2</sup> )	CONFINING PRESSURE (PSI)	FAILURE STRAIN (%)	SHEAR STRENGTH (LBS/FT <sup>2</sup> )
211	4	10.0	82.2	51.6	4	8.9	335
212	3	8.0	56.4	65.5	5	13.8	251
214	4	11.0	83.6	50.2	8	16.8	211
215	4	10.0	74.3	55.9	7	16.6	262
215	5	13.0	71.2	57.0	10	18.0	245
216	4	10.0	76.4	52.5	3	18.9	186
216	5	13.0	54.1	69.2	2	11.7	442
219	5	10.0	87.2	52.0	4	12.9	176
220	4	10.0	79.2	58.3	8	12.2	285
221	4	10.0	72.3	60.8	3	13.7	410
222	5	13.0	90.2	48.9	5	17.0	135
223	5	13.0	74.3	54.7	6	11.3	268
227	4	10.0	75.6	55.0	7	15.6	168
309	2	7.5	49.6	72.7	0	20.0	161
309	3	10.0	75.6	54.8	0	12.0	290
310	3	12.5	---	---	0	11.9	573
311	2	7.5	72.4	55.8	0	14.5	281
314	2	10.0	32.7	89.8	0	7.1	556
320	1	5.0	111.9	39.6	0	9.9	70
321	2	7.5	135.8	34.5	0	11.0	340
321	3	12.5	67.7	60.1	0	10.9	462
322	2	7.5	117.3	37.9	0	6.9	211
322	3	12.5	43.9	75.5	0	7.7	672
322	4	15.0	62.9	62.0	0	14.7	304

ROGER LOWE ASSOCIATES

TRIAXIAL SHEAR TEST RESULTS

ROGER LOWE ASSOCIATES	EXPLORATION NUMBER	SAMPLE NUMBER	SAMPLE DEPTH (FT)	MOISTURE CONTENT (%)	DRY DENSITY (LBS/FT <sup>2</sup> )	CONFINING PRESSURE (PSI)	FAILURE STRAIN (%)	SHEAR STRENGTH (LBS/FT <sup>2</sup> )
		323	2	7.5	65.8	58.7	0	13.3
	323	3	12.5	---	---	0	21.3	151
	324	2	10.0	55.9	66.6	0	8.9	259
	324	3	12.5	70.4	55.9	0	10.9	437
	325	1	2.5	80.0	---	0	18.0	99
	325A	1	2.5	74.5	---	0	12.1	146
	325A	3	10.0	156.5	29.6	0	11.0	72
	326	2	7.5	69.8	54.9	0	12.5	306
	326	3	12.5	69.4	60.0	0	11.2	419
	327	2	7.5	80.6	51.5	0	17.8	70
	327	3	12.5	76.9	54.0	0	11.8	282
	329	2	10.0	90.1	---	0	18.0	169
	330	1	2.5	59.5	59.9	0	11.1	299
	330	2	5.0	188.5	28.3	0	13.2	110
	331	3	10.0	66.9	59.4	0	11.4	543
	332	2	7.5	97.3	45.5	0	14.0	209
	332	3	10.0	---	---	0	20.4	269
	333	4	15.0	42.7	77.9	0	9.8	339
	333	5	17.5	63.5	61.7	0	18.9	188
	334	2	7.5	89.8	47.4	0	18.6	84
	334	3	12.5	74.7	76.0	0	10.6	532
	334	4	15.0	55.0	67.2	0	9.1	220
	337	3	12.5	34.2	75.2	0	11.0	490
	340	2	7.5	78.5	52.3	0	12.8	477

TRIAxIAL SHEAR TEST RESULTS

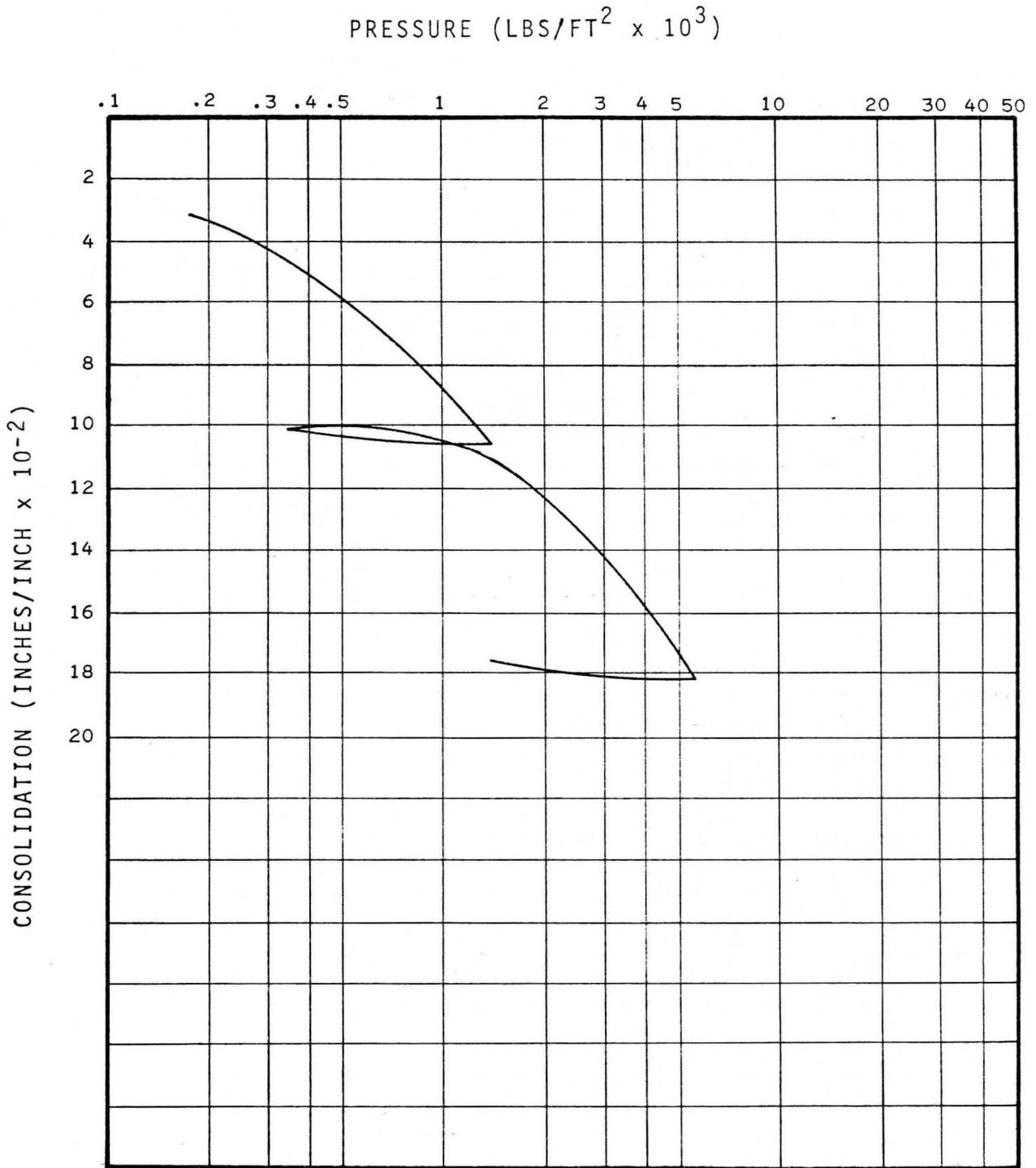
ROGER LOWE ASSOCIATES	EXPLORATION NUMBER	SAMPLE NUMBER	SAMPLE DEPTH (FT)	MOISTURE CONTENT (%)	DRY DENSITY (LBS/FT <sup>2</sup> )	CONFINING PRESSURE (PSI)	FAILURE STRAIN (%)	SHEAR STRENGTH (LBS/FT <sup>2</sup> )
		340	3	12.5	65.1	60.9	0	11.9
	340	4	15.0	52.4	76.3	0	8.0	842
	341	2	7.5	77.0	---	0	7.5	393
	341	3	15.0	---	---	0	20.6	140
	342	1	2.5	58.4	78.6	0	7.7	437
	342	3	10.0	70.0	57.0	0	9.9	758
	343	3	12.5	56.1	66.6	0	9.6	338
	344	1	2.5	61.6	58.9	0	9.2	189
	345	2	10.0	51.3	70.3	0	13.2	328
	345	3	12.5	69.7	---	0	20.3	75
	348	1	2.5	46.6	52.0	0	11.3	144
	348	2	7.5	85.3	51.2	0	13.7	113
	348	3	10.0	82.9	52.1	0	12.1	127
	349	3	10.0	84.4	---	0	7.9	343
	349	4	12.5	---	---	0	8.8	249
	350	1	2.5	150.6	32.1	0	6.0	311
	350	3	12.5	71.1	56.0	0	11.0	135
	350	4	20.0	67.3	58.4	0	17.0	203
	350	5	22.5	65.4	61.1	0	12.1	245
	351	2	7.5	61.1	62.4	0	17.0	176
	351	3	12.5	56.1	66.6	0	15.8	426
	351	4	15.0	---	---	0	13.5	318
	352	2	10.0	---	---	0	14.3	158
	352	3	12.5	---	---	0	19.5	154

TRIAxIAL SHEAR TEST - RESULTS

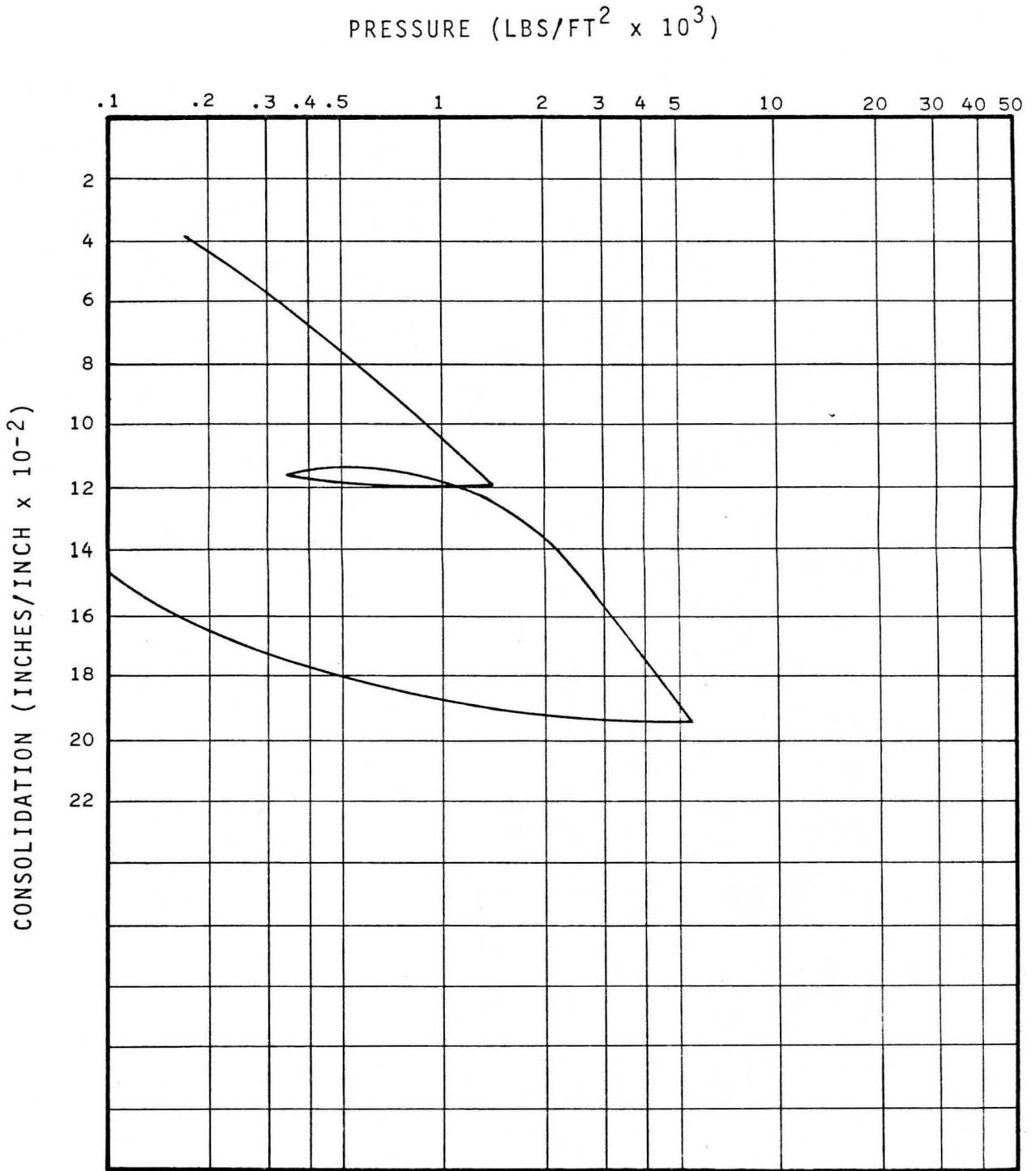
EXPLORATION NUMBER	SAMPLE NUMBER	SAMPLE DEPTH (FT)	MOISTURE CONTENT (%)	DRY DENSITY (LBS/FT <sup>2</sup> )	CONFINING PRESSURE (PSI)	FAILURE STRAIN (%)	SHEAR STRENGTH (LBS/FT <sup>2</sup> )
353	2	7.5	58.1	64.4	0	17.0	207
356	1	5.0	61.5	62.5	0	21.3	312
356	2	10.0	57.8	65.8	0	14.6	338
357	1	2.5	88.8	46.6	0	11.0	250
360	2	7.5	32.7	87.3	0	10.0	281
360	3	10.0	67.3	54.2	0	7.0	454

ROGER LOWE ASSOCIATES

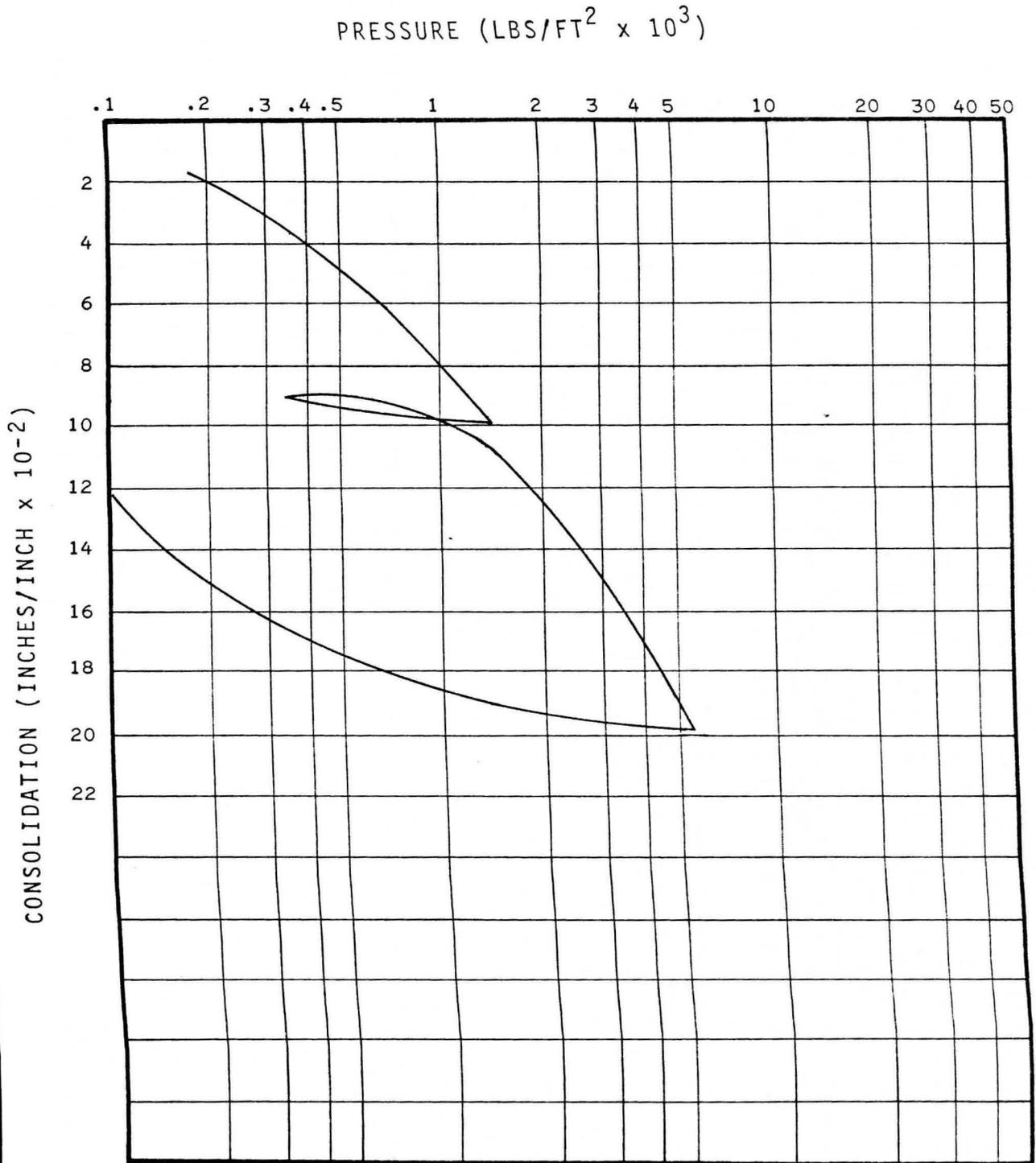
TRIAxIAL SHEAR TEST RESULTS



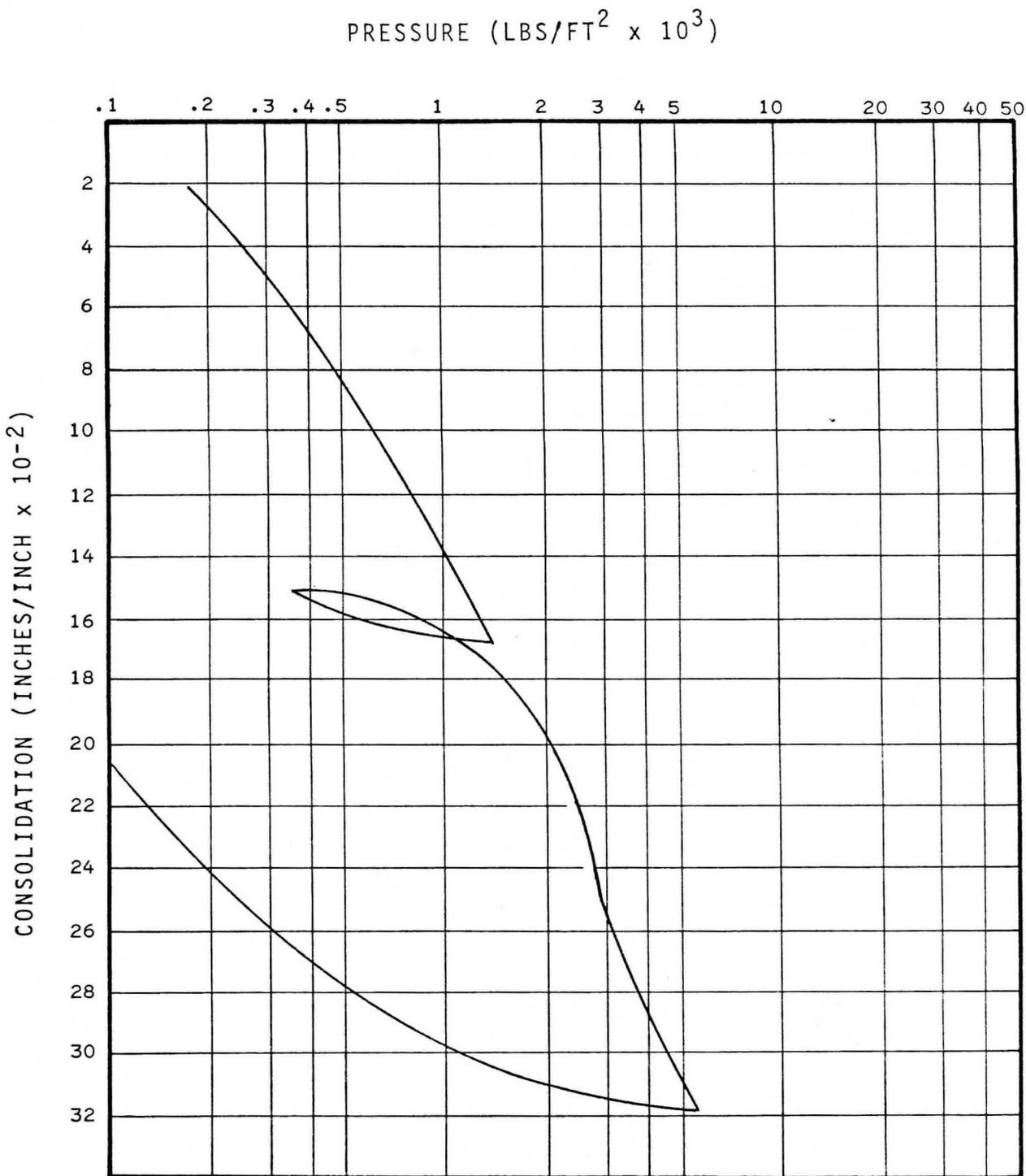
KEY	BORING NUMBER	SAMPLE DEPTH (FT)	SOIL CLASSIFICATION	MOISTURE CONTENT (%)	DRY DENSITY (LBS/FT <sup>3</sup> )
—	310	12.5	BROWN SILT WITH SOME ORGANICS	71.0	58.9



KEY	BORING NUMBER	SAMPLE DEPTH (FT)	SOIL CLASSIFICATION	MOISTURE CONTENT (%)	DRY DENSITY (LBS/FT <sup>3</sup> )
	341	15.0	GRAY SILT WITH SOME SAND	56.2	65.8



KEY	BORING NUMBER	SAMPLE DEPTH (FT)	SOIL CLASSIFICATION	MOISTURE CONTENT (%)	DRY DENSITY (LBS/FT <sup>3</sup> )
	355	3	GRAY SILT WITH SOME SAND	69.8	57.0



KEY	BORING NUMBER	SAMPLE DEPTH (FT)	SOIL CLASSIFICATION	MOISTURE CONTENT (%)	DRY DENSITY (LBS/FT <sup>3</sup> )
	325A	7.5	GRAY SILT WITH A TRACE OF ORGANICS	109.6	41.0