



*'History's Hometown'*

# CITY OF AUBURN

Department of Municipal Utilities

Subject: Addendum #3, Biosolids Processing and Dryer Design

Date: June 11, 2020

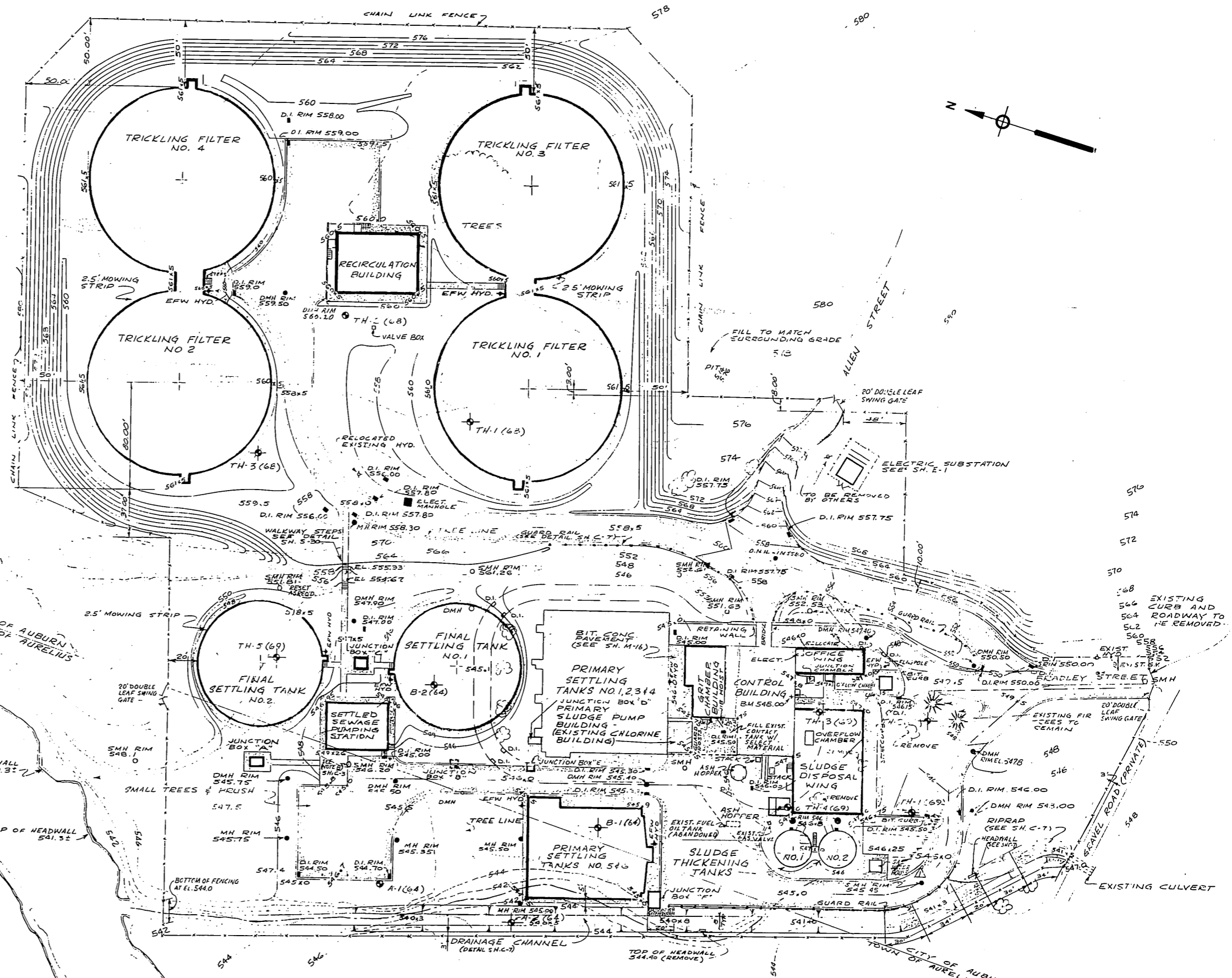
To All Prospective Bidders:

Item #1: The bid documents for construction will be included in Future Services (Task 7). Final NYSDEC approval documents and final bid documents shall be added to Task 7 by way of addendum.

Item #2: Competitive procurement bidding of equipment shall be added to Task 7 by way of addendum. Bidding criteria and development of the selection criteria is in Task 2.

Item #3: Geotechnical reports and soil boring data from past projects in 1968 and 1994 are provided as an attachment to this addendum.

- LEGEND**
- |          |          |                              |
|----------|----------|------------------------------|
| EXISTING | PROPOSED | BUILDING OR STRUCTURE        |
| -560-    | -562-    | CONTOUR                      |
| 561.5    | 562.9    | SPOT ELEVATION               |
|          |          | TREES                        |
|          |          | BRUSH AND TREES              |
|          |          | SEWER MANHOLE                |
|          |          | DRAIN MANHOLE                |
|          |          | DRAIN INLET                  |
|          |          | UTILITY POLE                 |
|          |          | FIRE HYDRANT                 |
|          |          | E.F.W. HYDRANT               |
| -X-X-    |          | CHAIN LINK FENCE             |
|          |          | BITUMINOUS CONCRETE PAVEMENT |
|          |          | MOWING STRIP                 |
|          |          | CURB                         |
|          |          | GUARD POST                   |
|          |          | GUARD RAIL                   |
|          |          | PROPERTY LINE                |
|          |          | BORING                       |
|          |          | RIPRAP                       |



- GENERAL NOTES**
- ALL ELEVATIONS INDICATED REFER TO CITY OF AUBURN DATUM. BENCH MARK AT MAIN ENTRANCE TO CONTROL BUILDING EL. 548.00
  - FIELD SURVEY WAS PERFORMED BY CITY FORCES IN 1969
  - BORING LOGS ARE BOUND IN THE SPECIFICATIONS. SAMPLES OF 1968 BORINGS MAY BE SEEN AT THE SEWAGE TREATMENT PLANT.
  - PROVIDE UNIFORM SLOPE OF ROADWAY BETWEEN ELEVATIONS INDICATED ON CENTERLINE.
  - EXISTING MANHOLES TO REMAIN SHALL HAVE FRAMES AND COVERS RESET TO SUIT FINISHED GRADE.
  - EXISTING DRAIN INLETS, DRAIN MANHOLES AND SEWER MANHOLES TO BE ABANDONED SHALL BE CUT OFF ONE FOOT BELOW FINISHED GRADE AND FILLED WITH SELECTED MATERIAL OR REMOVED, UNLESS OTHERWISE DIRECTED.
  - CLEAR, GRUB, LOAM AND SEED ALL SOIL AREAS WITHIN FENCE LINE, EXCEPT ON UNDISTURBED PORTION OF STEEP SLOPE BETWEEN 548 AND 560 CONTOURS. DISTURBANCE OF THAT AREA SHALL BE MINIMIZED.

THIS IS A HALF SIZE REPRODUCTION

REVISION	11/9/70	Woodie	Tichocki	GAS METER NO. ADDED
MADE BY	CHECKED BY	DESCRIPTION		
SCALE	1" = 40'-0"		DATE JUNE, 1970	
APPROVED				
FOR METCALF & EDDY, ENGINEERS				
John J. Babel			6-8-70	
REG. PROF. ENGR. N.Y. NO. 21161			DATE	

CITY OF AUBURN, NEW YORK  
SEWAGE TREATMENT PLANT

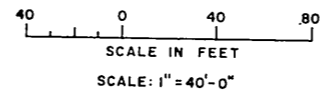
GRADING PLAN

CIVIL

M&E METCALF & EDDY, ENGINEERS  
BOSTON - NEW YORK - PALO ALTO

H 49272  
2

DRAWN BY W.K.  
DEPT. CHECK W.V.R.  
PROJ. CHECK W.V.R.

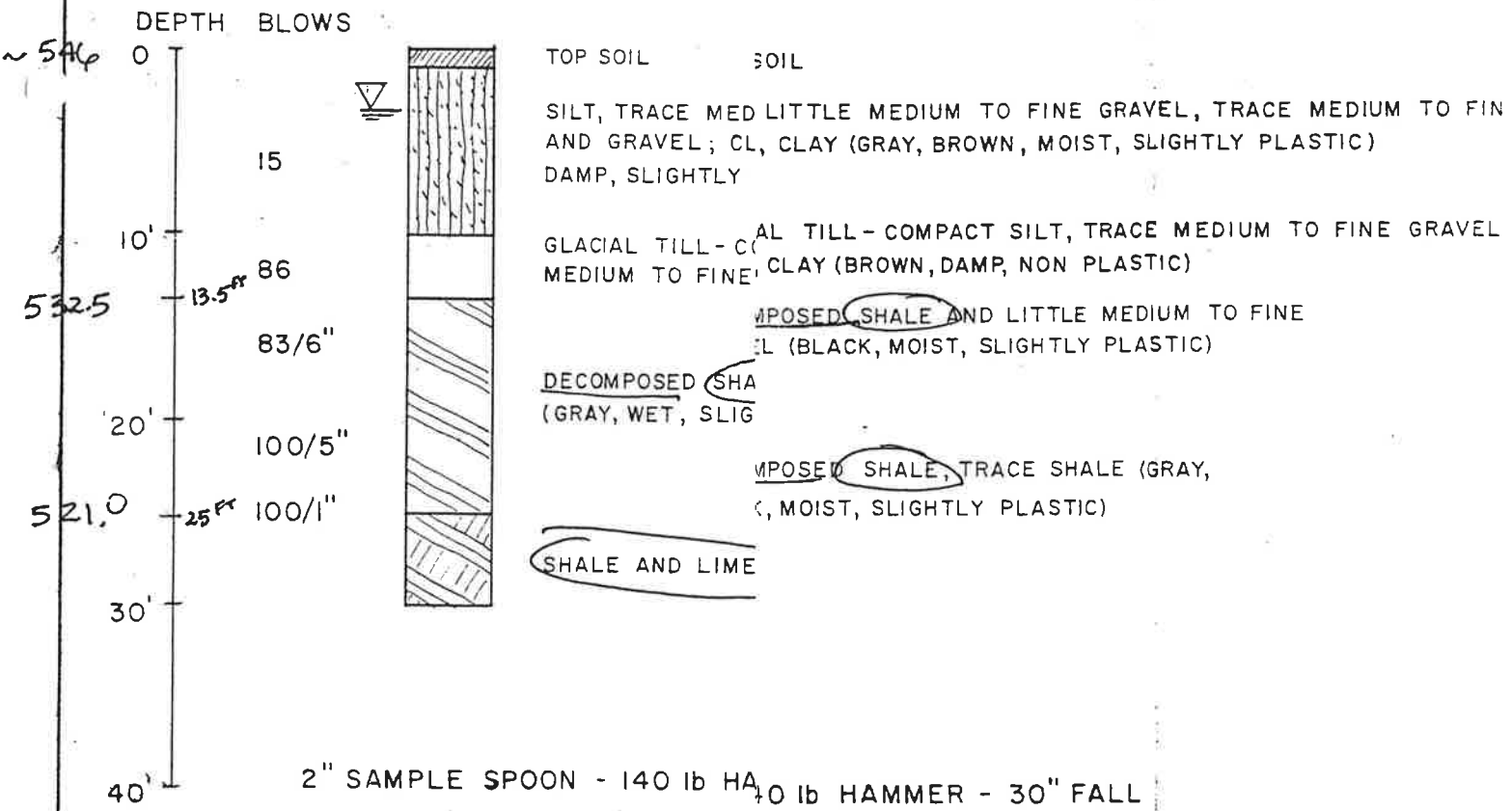


**COPY**

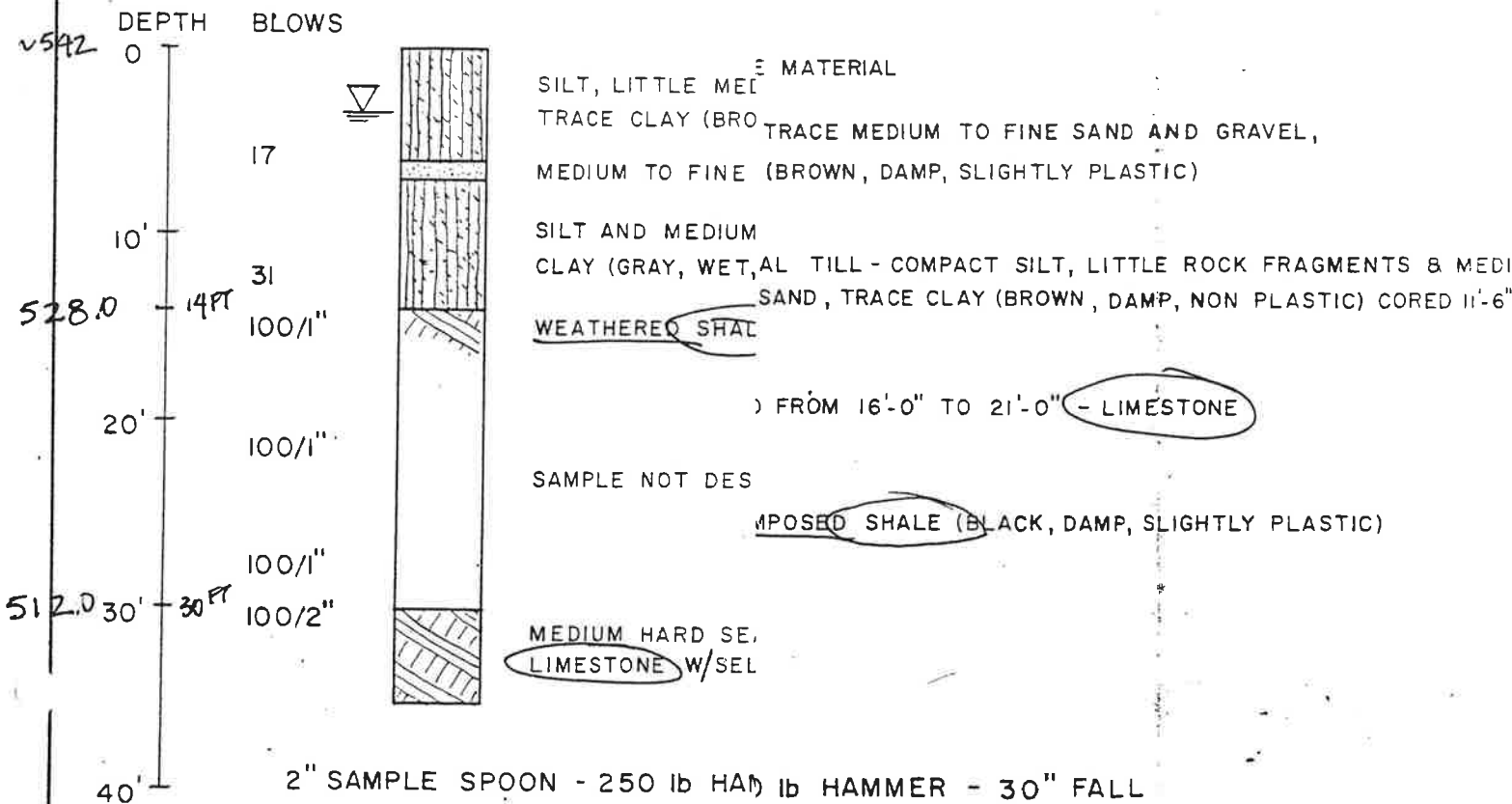


# TEST HOLE A-B-1

2585.1



# TEST HOLE A-B-2





**Geoniga Cell Tech. Ltd. Subsurface Investigations**

5972 COURT ST. RD. • SYRACUSE, N. Y. 13206 • 463.4595

**SUBSURFACE SURVEYS**

JOB NO. E-3825 HOLE NO. TH-5 (69)

TITLE PROPOSED SECONDARY TREATMENT PLANT, AUBURN, NEW YORK

CLIENT MCCAULEY & EDDY, CONSULTING ENGINEERS, NEW YORK, NEW YORK

ELEV. **BST. 550** AT GROUND SURFACE TECHNICIAN D. CLATER

DATE STARTED JULY 28, 1969 COMPLETED JULY 28, 1969

GROUND WATER 8'6" BELOW SURFACE AT COMPLETION

DEPTH BELOW SURFACE	C	BLOWS ON SAMPLER		SAMPLE NO	DEPTH OF SAMPLE	CLASSIFICATION & REMARKS
		0.6"	6" - 18" N			
3						
3	3		3-3	1	1'0"-2'6"	LOOSE MEDIUM TO FINE SAND, LITTLE SILT (POSSIBLE FILL) (BROWN, DAMP, NON PLASTIC)
5						
7						
11	8		9-11	2	5'0"-6'6"	(BROWN, DAMP, NON PLASTIC)
15						
15						9'0"
10'	12					
14	6		6-17	3	10'-11'6"	COMPACT SILT & FINE SAND, LITTLE MEDIUM TO FINE GRAVEL, TRACE ORGANIC MATTER (POSSIBLE FILL) (DARK BROWN, DAMP, NON PLASTIC)
15'	106=6"					14'6"
						535.5
						THIN BEDDED, GRAY, LIMESTONE, MEDIUM HARD (SKANEATELES FORMATION)
20'						19'
						BORING TERMINATED AT 19'6"
						NOTE: CORE DRILLED FROM 14'6" TO 19'6" REC. 33" (55%)

NOTE: N = NO. BLOWS TO DRIVE 2" SPOON 12" WITH 140 LB. WT. 30" PER BLOW  
C = NO. BLOWS TO DRIVE 2 1/2" CAPING 12" WITH 250 LB. WT. 24" PER BLOW

EST. 546

**Overberg Soil Testing, Inc. Subsurface Investigation**

5972 COURT ST. RD. • SYRACUSE, N. Y. 13206 • 463-4595

SUBSURFACE SURVEYS

JOB NO. 6-3819

HOLE NO. TH-4 (69)

TITLE PROPOSED SECONDARY TREATMENT PLANT, AUBURN, NEW YORK

CLIENT METCALF & EDDY, CONSULTING ENGINEERS, NEW YORK, NEW YORK

ELEV. AT GROUND SURFACE \_\_\_\_\_ TECHNICIAN D. SLATER

DATE STARTED JULY 23, 1969 COMPLETED JULY 23, 1969

GROUND WATER 4'6" BELOW SURFACE AT COMPLETION

DEPTH BELOW SURFACE	C	BLOWS ON SAMPLER		SAMPLE NO.	DEPTH OF SAMPLE	CLASSIFICATION & REMARKS
		0-6"	6"-10" N			
10						
15	23		10-6	1	1'0"-2'6"	MISCELLANEOUS FILL CONSISTING OF: SILT SAND, GRAVEL, CINDERS, ETC. (BROWN, BLACK, DAMP, NON PLASTIC)
17						
21						
49						
53	7		10-7	2	5'0"-6'6"	(BROWN, BLACK, DAMP, NON PLASTIC) 6'6"
108						
						VERY DENSE GLACIAL TILL CONSISTING OF: MEDIUM TO FINE SAND, SOME SILT & MEDIUM TO FINE GRAVEL, ROCK FRAGMENTS (GRAY, WET, NON PLASTIC)
10'	50=5"			3	10'-10'5"	
15'						532.5 13'6"
						THIN BEDDED, GRAY, LIMESTONE, MEDIUM HARD (SKANEATELES FORMATION)
						18'6"
20'						BORING TERMINATED AT 18'6"
						NOTE: CORE DRILLED FROM 13'6" TO 18'6" REC. 42" (70%)

NOTE: N = NO. BLOWS TO DRIVE 2" SPOON 12" WITH 140 LB. WT. 30" PER BLOW  
C = NO. BLOWS TO DRIVE 1 1/4" CASING 12" WITH 250 LB. WT. 24" PER BLOW

# Orontagn Soil Testing, Inc. *Subsurface Investigations*

5972 COURT ST. RD. • SYRACUSE, N. Y. 13206 • 463.4595

SURFACE SURVEYS

JOB NO. 6-3819 HOLE NO. TH-3 (69)

TITLE PROPOSED SECONDARY TREATMENT PLANT, AUBURN, NEW YORK

CLIENT METCALF & EDDY, CONSULTING ENGINEERS, NEW YORK, NEW YORK

EST. 548

ELEV. AT GROUND SURFACE TECHNICIAN D. SLATER

DATE STARTED JULY 28, 1969 COMPLETED JULY 28, 1969

GROUND WATER 2'3" BELOW SURFACE AT COMPLETION

DEPTH BELOW SURFACE	C	BLOWS ON SAMPLER		SAMPLE NO.	DEPTH OF SAMPLE	CLASSIFICATION & REMARKS
		0-6"	6"-18" N			
4						
9	3	8-8		1	1'0"-2'6"	FIRM SILT, SOME MEDIUM TO FINE SAND, LITTLE MEDIUM TO FINE GRAVEL (BROWN, GRAY, DAMP, NON PLASTIC)
11						
100					544.0	4'0"
						THIN BEDDED, GRAY, LIMESTONE, MEDIUM HARD (SKANEATELES FORMATION)
						9'0"
						BORING TERMINATED AT 9'0"
						NOTE: CORE DRILLED FROM 4'0" TO 9'0"
						REC. 3'0" (5%)

NOTE: N - NO BLOWS TO DRIVE 2" SPOON 12" WITH 140 LB. WT. 30" PER BLOW  
C - NO BLOWS TO DRIVE 2 1/2" CASING 12" WITH 250 LB. WT. 24" PER BLOW

Cambridge Soil Testing, Inc. *Subsurface Investigations*

5972 COURT ST. RD. • SYRACUSE, N. Y. 13206 • 463.4595

SURFACE SURVEYS

JOB NO. 11-3119 HOLE NO. TH-2 (69)  
 TITLE PROPOSED SECONDARY TREATMENT PLANT, AUBURN, NEW YORK  
 CLIENT METCALF & EDDY, CONSULTING ENGINEERS, NEW YORK, NEW YORK  
 ELEV. AT GROUND SURFACE \_\_\_\_\_ TECHNICIAN D. SLATER  
 DATE STARTED JULY 23, 1969 COMPLETED JULY 23, 1969  
 GROUND WATER 1'2" BELOW SURFACE AT COMPLETION

EST. 548

DEPTH BELOW SURFACE	BLOWS ON SAMPLER		SAMPLE NO.	DEPTH OF SAMPLE	CLASSIFICATION & REMARKS
	0.6"	6"-18"			
11					
17	6	7-7	1	1'0"-2'6"	FIRM, MEDIUM TO FINE SAND, LITTLE SILT MEDIUM TO FINE GRAVEL (POSSIBLE BILL) (BROWN, DAMP, NON PLASTIC)
128					3'6"
					5495 THIN BEDDED, GRAY, LIMESTONE, MEDIUM HARD (SKANEATELES FORMATION)
					8'6"
					BORING TERMINATED AT 8'6"
					NOTE: CORE DRILLED FROM 3'6" TO 8'6" REC. 43" (71.6%)

NOTE: N = NO BLOWS TO DRIVE 2" SPOON 12" WITH 140 LB. WT. 30" PER BLOW  
 C = NO BLOWS TO DRIVE 2 1/4" CASING 12" WITH 250 LB. WT. 24" PER BLOW

HOLE NO. TW-1(69)

SECONDARY TREATMENT PLANT, MELUN, NEW YORK

WALSH & EDDY, CONSULTING ENGINEERS, NEW YORK, NEW YORK

EST 546

AT GROUND SURFACE TECHNICIAN D. SLATER

STARTED JULY 23, 1969 COMPLETED JULY 23, 1969

GROUND WATER 5'1" BELOW SURFACE AT COMPLETION

BLOWS ON SAMPLER	DEPTH OF SAMPLE	DEPTH OF SAMPLE	CLASSIFICATION & REMARKS
0-6 6'-18" N			
17	15-14	1'0"-2'6"	MISCELLANEOUS FILL CONSISTING OF: SILT, SAND, GRAVEL, CINDERS, ETC. (BROWN, DAMP, NON PLASTIC)
		541.5	
			THIN BEDDED, GRAY, LIMESTONE, MEDIUM HARD (SKANEATELES FORMATION)
			BORING TERMINATED AT 9'6"
			NOTE: CORE DRILLED FROM 4'6" TO 9'6" REC. 43" (71.65)

NOTE: BLOWS TO DRIVE 1" SPEC. 12" WITH 140 LB. WT. 30" PER BLOW  
 1" SPEC. 12" WITH 150 LB. WT. 24" PER BLOW

ORLANDO/ALMA  
19025  
SURFACE SURVEYS

**Chondaga Soil Testing, Inc. Subsurface Investigation**

5972 COURT ST. RD. • SYRACUSE, N. Y. 13206 • 463-4585

JOB NO. K-3576 HOLE NO. TH-3 (68)  
 TITLE SECONDARY SEWAGE TREATMENT PLANT, AUBURN, NEW YORK  
 CLIENT DEPARTMENT OF ENGINEERING, AUBURN, NEW YORK  
 ELEV. AT GROUND SURFACE TECHNICIAN R. BUSH  
 DATE STARTED NOVEMBER 26, 1968 COMPLETED NOVEMBER 26, 1968  
 GROUND WATER 0'6" BELOW SURFACE AT COMPLETION

EST. 576

SURFACE	C	BLOWS ON SAMPLER		SAMPLE NO.	DEPTH OF SAMPLE	CLASSIFICATION & REMARKS
		0-6"	6"-18" N			
						TOP SOIL 1'0"
	5	6		1	1'0"-2'6"	SOFT SILT, SOME MEDIUM TO FINE GRAVEL LITTLE FINE SAND (BROWN, MOIST, PLASTIC) 4'0"
	21	108		2	5'0"-6'6"	GLACIAL TILL CONSISTING OF: SILT, COARSE TO FINE GRAVEL, LITTLE CLAY, TRACE FINE SAND, BOULDER FRAGMENTS (BROWN, MOIST, SLIGHTLY PLASTIC)
	44	86		3	10'-11'6"	(BROWN, MOIST, NON PLASTIC)
		93=6"		4	15'-15'6"	(GRAY, DAMP, NON PLASTIC)
		141=6"		5	20'-20'6"	(GRAY, DAMP, NON PLASTIC)
		175=4"		6	25'-25'4"	(GRAY, WET, NON PLASTIC)
		200=2"		7	30'-30'2"	(GRAY, DAMP, NON PLASTIC) 30'2" BORING TERMINATED AT 30'2"

NOTE: N = NO. BLOWS TO DRIVE 1" SPOON 12" WITH 140 LB. WT. 30" PER BLOW

SEE BELOW  
546

JOB NO. K-3576 HOLE NO. TH-2 (68)

TITLE SECONDARY SEWAGE TREATMENT PLANT, AUBURN, NEW YORK

CLIENT DEPARTMENT OF ENGINEERING, AUBURN, NEW YORK

ELEV. AT GROUND SURFACE TECHNICIAN R. BUSH

DATE STARTED NOVEMBER 25, 1968 COMPLETED NOVEMBER 25, 1968

GROUND WATER 3'6" BELOW SURFACE AT COMPLETION-0'2" BELOW SURFACE  
12 HOURS AFTER COMPLETION

C	BLOWS ON SAMPLER		SAMPLE NO.	DEPTH OF SAMPLE	CLASSIFICATION & REMARKS
	0-6"	6"-18" N			
					TOP SOIL 1'0"
	5	9	1	1'0"-2'6"	SOFT SILT, TRACE MEDIUM TO FINE GRAVEL FINE SAND, ORGANIC MATTER (BROWN, DAMP, SLIGHTLY PLASTIC) 4'0"
	31	150	2	5'0"-6'6"	DENSE SILT, SOME COARSE TO FINE GRAVEL LITTLE FINE SAND, BOULDER FRAGMENTS (BROWN, MOIST, NON PLASTIC)
	41	99	3	10'-11'6"	DENSE SANDY SILT, FINE TO MEDIUM SAND (BROWN, MOIST, NON PLASTIC)
	125	150=3"	4	15'-15'9"	GLACIAL TILL CONSISTING OF: DENSE SILT SOME FINE TO MEDIUM GRAVEL AND SAND, SHALE FRAGMENTS (GRAY, DAMP, NON PLASTIC) 13'6"
	122	150=4"	5	20'-21'10"	(GRAY, DAMP, NON PLASTIC)
	200=3"		6	25'-25'3"	(GRAY, WET, NON PLASTIC)
	250=2"		7	30'-30'2"	(GRAY, DAMP, NON PLASTIC) 30'2" BORING TERMINATED AT 30'2"

NOTE: N = NO. BLOWS TO DRIVE 2" SPOON 12" WITH 140 LB. WT. 30" PER BLOW  
C = NO. BLOWS TO DRIVE 2 1/2" CASING 12" WITH 250 LB. WT. 24" PER BLOW

EST. 577

NOTE  
BELOW  
547

ONONDAGA  
SOILS

Onondaga Soil Testing, Inc. Subsurface Investigation

5972 COURT ST. RD. • SYRACUSE, N. Y. 13208 • 463-4505

SURFACE SURVEYS

JOB NO. K-3576 HOLE NO. TH-1 (68)

TITLE SECONDARY SEWAGE TREATMENT PLANT, AUBURN, NEW YORK

CLIENT DEPARTMENT OF ENGINEERING, AUBURN, NEW YORK

EST. 546 ELEV. AT GROUND SURFACE TECHNICIAN D. ROWE

DATE STARTED OCTOBER 29, 1968 COMPLETED NOVEMBER 4, 1968

GROUND WATER 12'7" BELOW SURFACE AT COMPLETION- 14'2" BELOW SURFACE  
48 HOURS AFTER COMPLETION

PAGE 1 OF 2

C	BLOWS ON SAMPLER		SAMPLE NO.	DEPTH OF SAMPLE	CLASSIFICATION & REMARKS
	0-6"	6"-18" N			
14			1	1'0"-2'6"	TOP SOIL 0'4"
28	2	50			
65					SEE NOTE "A" 3'0"
					VERY DENSE FINE TO MEDIUM SAND, SOME SILT, LITTLE FINE GRAVEL (GRAY, DAMP, NON PLASTIC)
65	142		2	5'0"-6'6"	
					(GRAY, DAMP, NON PLASTIC)
70	345		3	10'-11'6"	
					BOULDERS NOTED
140	450		4	15'-16'6"	(GRAY, DAMP, NON PLASTIC)
					18'6"
					VERY DENSE SILT, LITTLE FINE SAND, VARVES STIFF CLAY (GRAY, DAMP, NON PLASTIC)
	200		5	20'-20'6"	
					24'0"
	150=2"		6	25'-25'2"	VERY DENSE GLACIAL TILL CONSISTING OF: SILT, LITTLE SAND AND GRAVEL (GRAYISH BROWN, DAMP, NON PLASTIC)
	100=4"		7	30'-30'4"	(GREYISH BROWN, DAMP, NON PLASTIC) 30'4"
	(250# HAMMER)				BORING TERMINATED AT 30'4"

NOTE: N = NO. BLOWS TO DRIVE 2" SPOON 18" WITH 140 LB. WT. 30" PER BLOW

200L  
SECTION  
546



# Onondaga Soil Testing, Inc. *Subsurface Investigation*

5972 COURT ST. RD.

SYRACUSE, N. Y. 13206

463.4595

SUBSURFACE SURVEYS

JOB NO. K-3576

HOLE NO. TH-1 (68)

TITLE SECONDARY SEWAGE TREATMENT PLANT, AUBURN, NEW YORK

CLIENT DEPARTMENT OF ENGINEERING, AUBURN, NEW YORK

ELEV. AT GROUND SURFACE TECHNICIAN D. ROWE

DATE STARTED OCTOBER 29, 1968 COMPLETED NOVEMBER 4, 1968

GROUND WATER 12' 7" BELOW SURFACE AT COMPLETION-14' 2" BELOW SURFACE  
48 HOURS AFTER COMPLETION

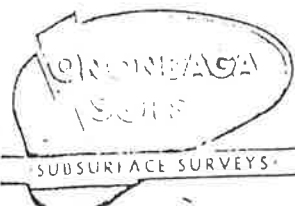
PAGE 2 OF 2

C	BLOWS ON SAMPLER		SAMPLE NO.	DEPTH OF SAMPLE	CLASSIFICATION & REMARKS
	0-6"	6"-18" N			
					<p>NOTE ADVANCED TEST HOLE WITH ROTARY BIT FROM 3'0" TO 30'0", NO CASING USED.</p> <p>NOTE "A" DENSE GLACIAL TILL CONSISTING OF: CLAY, SOME SILT, TRACE FINE GRAVEL (BROWN, DAMP, NON PLASTIC)</p>

NOTE: N = NO. BLOWS TO DRIVE 2" SPOON 12" WITH 140 LB. WT. 30" PER BLOW

COPY

APPENDIX A  
Boring Logs  
1968



JOB NO. K-3576 HOLE NO. TH-1 (68)

TITLE SECONDARY SEWAGE TREATMENT PLANT, AUBURN, NEW YORK

CLIENT DEPARTMENT OF ENGINEERING, AUBURN, NEW YORK

ELEV. AT GROUND SURFACE TECHNICIAN D. ROWE

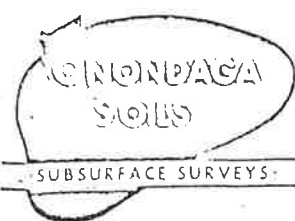
DATE STARTED OCTOBER 29, 1968 COMPLETED NOVEMBER 4, 1968

GROUND WATER 12'7" BELOW SURFACE AT COMPLETION- 14'2" BELOW SURFACE  
48 HOURS AFTER COMPLETION

PAGE 1 OF 2

DEPTH BELOW SURFACE	C	BLOWS ON SAMPLER		SAMPLE NO.	DEPTH OF SAMPLE	CLASSIFICATION & REMARKS
		0-6"	6"-18" N			
	14					TOP SOIL 0'4"
	28	2	50	1	1'0"-2'6"	SEE NOTE "A" 3'0"
5'	65					VERY DENSE FINE TO MEDIUM SAND, SOME SILT, LITTLE FINE GRAVEL (GRAY, DAMP, NON PLASTIC)
	65	142		2	5'0"-6'6"	
10'	70	345		3	10'-11'6"	(GRAY, DAMP, NON PLASTIC) BOULDERS NOTED
15'	140	450		4	15'-16'6"	(GRAY, DAMP, NON PLASTIC)
						18'6"
20'			200	5	20'-20'6"	VERY DENSE SILT, LITTLE FINE SAND, VARVES STIFF CLAY (GRAY, DAMP, NON PLASTIC)
						24'0"
25'			150=2"	6	25'-25'2"	VERY DENSE GLACIAL TILL CONSISTING OF: SILT, LITTLE SAND AND GRAVEL (GRAYISH BROWN, DAMP, NON PLASTIC)
30'			100=4" (250# HAMMER)	7	30'-30'4"	(GREYISH BROWN, DAMP, NON PLASTIC) 30'4" BORING TERMINATED AT 30'4"

NOTE: N = NO. BLOWS TO DRIVE 2" SPOON 12" WITH 140 LB. WT. 30" PER BLOW



# Onondaga Soil Testing, Inc. *Subsurface Investigation*

5972 COURT ST. RD. • SYRACUSE, N. Y. 13206 • 463-4595

JOB NO. K-3576 HOLE NO. TH-1 (68)

TITLE SECONDARY SEWAGE TREATMENT PLANT, AUBURN, NEW YORK

CLIENT DEPARTMENT OF ENGINEERING, AUBURN, NEW YORK

ELEV. AT GROUND SURFACE TECHNICIAN D. ROWE

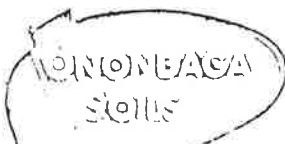
DATE STARTED OCTOBER 29, 1968 COMPLETED NOVEMBER 4, 1968

GROUND WATER 12'7" BELOW SURFACE AT COMPLETION-14'2" BELOW SURFACE  
48 HOURS AFTER COMPLETION

PAGE 2 OF 2

DEPTH BELOW SURFACE	C	BLOWS ON SAMPLER		SAMPLE NO.	DEPTH OF SAMPLE	CLASSIFICATION & REMARKS
		0-6"	6"-18" N			
						NOTE ADVANCED TEST HOLE WITH ROTARY BIT FROM 3'0" TO 30'0", NO CASING USED.  NOTE "A" DENSE GLACIAL TILL CONSISTING OF: CLAY, SOME SILT, TRACE FINE GRAVEL (BROWN, DAMP, NON PLASTIC)

NOTE: N = NO. BLOWS TO DRIVE 2" SPOON 12" WITH 140 LB. WT. 30" PER BLOW



# Onondaga Soil Testing, Inc. Subsurface Investigation

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JOB NO. K-3576 HOLE NO. TH-2 (68)

TITLE SECONDARY SEWAGE TREATMENT PLANT, AUBURN, NEW YORK

CLIENT DEPARTMENT OF ENGINEERING, AUBURN, NEW YORK

ELEV. AT GROUND SURFACE TECHNICIAN R. RUSH

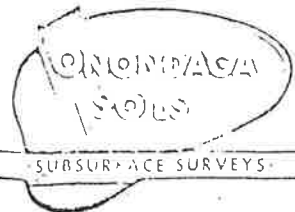
DATE STARTED NOVEMBER 25, 1968 COMPLETED NOVEMBER 25, 1968

GROUND WATER 3'6" BELOW SURFACE AT COMPLETION-0'2" BELOW SURFACE

12 HOURS AFTER COMPLETION

DEPTH BELOW SURFACE	C	BLOWS ON SAMPLER		SAMPLE NO.	DEPTH OF SAMPLE	CLASSIFICATION & REMARKS
		0-6"	6"-18" N			
						TOP SOIL 1'0"
5'		5	9	1	1'0"-2'6"	SOFT SILT, TRACE MEDIUM TO FINE GRAVEL FINE SAND, ORGANIC MATTER (BROWN, DAMP, SLIGHTLY PLASTIC) 4'0"
		31	150	2	5'0"-6'6"	DENSE SILT, SOME COARSE TO FINE GRAVEL LITTLE FINE SAND, BOULDER FRAGMENTS (BROWN, MOIST, NON PLASTIC)
10'		41	99	3	10'-11'6"	DENSE SANDY SILT, FINE TO MEDIUM SAND (BROWN, MOIST, NON PLASTIC)
15'		125	150=3"	4	15'-15'9"	GLACIAL TILL CONSISTING OF: DENSE SILT SOME FINE TO MEDIUM GRAVEL AND SAND, SHALE FRAGMENTS (GRAY, DAMP, NON PLASTIC) 13'6"
20'		122	150=4"	5	20'-21'10"	(GRAY, DAMP, NON PLASTIC)
25'			200=3"	6	25'-25'3"	(GRAY, WET, NON PLASTIC)
30'			250=2"	7	30'-30'2"	(GRAY, DAMP, NON PLASTIC) 30'2"
						BORING TERMINATED AT 30'2"

NOTE: N = NO. BLOWS TO DRIVE 2" SPOON 12" WITH 140 LB. WT. 30" PER BLOW



**Chrompac Soil Testing, Inc. Subsurface Investigation**

5972 COURT ST. RD. • SYRACUSE, N. Y. 13206 • 463.4595

JOB NO. K-3576 HOLE NO. TH-3 (68)  
 TITLE SECONDARY SEWAGE TREATMENT PLANT, AUBURN, NEW YORK  
 CLIENT DEPARTMENT OF ENGINEERING, AUBURN, NEW YORK  
 ELEV. AT GROUND SURFACE TECHNICIAN R. BUSH  
 DATE STARTED NOVEMBER 26, 1968 COMPLETED NOVEMBER 26, 1968  
 GROUND WATER 0'6" BELOW SURFACE AT COMPLETION

DEPTH BELOW SURFACE	C	BLOWS ON SAMPLER		SAMPLE NO.	DEPTH OF SAMPLE	CLASSIFICATION & REMARKS
		0-6"	6"-18" N			
5'	5	6		1	1'0"-2'6"	TOP SOIL SOFT SILT, SOME MEDIUM TO FINE GRAVEL LITTLE FINE SAND (BROWN, MOIST, PLASTIC) 4'0"
	21	108		2	5'0"-6'6"	GLACIAL TILL CONSISTING OF: SILT, COARSE TO FINE GRAVEL, LITTLE CLAY, TRACE FINE SAND, BOULDER FRAGMENTS (BROWN, MOIST, SLIGHTLY PLASTIC)
10'	44	86		3	10'-11'6"	(BROWN, MOIST, NON PLASTIC)
15'		93=6"		4	15'-15'6"	(GRAY, DAMP, NON PLASTIC)
20'		141=6"		5	20'-20'6"	(GRAY, DAMP, NON PLASTIC)
25'		175=4"		6	25'-25'4"	(GRAY, WET, NON PLASTIC)
30'		200=2"		7	30'-30'2"	(GRAY, DAMP, NON PLASTIC) BORING TERMINATED AT 30'2"

NOTE: N = NO. BLOWS TO DRIVE 1" SPOON 12" WITH 140 LB. WT. 30" PER BLOW

HOLE NO. 70-(69)

W. W. BROWDER TREATMENT PLANT, NEW YORK, NEW YORK

F. J. ALLEN & EDDY, CONSULTING ENGINEERS, NEW YORK, NEW YORK

BY GROUND SURFACE TECHNICIAN D. SLAMER

STARTED JULY 23, 1969 COMPLETED JULY 23, 1969

GROUND WATER 3' 0" BELOW SURFACE AT COMPLETION

BLOWS ON SAMPLER	DEPTH OF SAMPLE	CLASSIFICATION & REMARKS
0-6	0'-0" - 6'-0"	
17	1'-0" - 2'-6"	MISCELLANEOUS FILL CONSISTING OF SILT, SAND, GRAVEL, CINDERS, ETC. (BROWN, DAMP, NON PLASTIC)
		THIN BEDDED, GRAY, LIMESTONE, MEDIUM HARD (SKANEATELES FORMATION)
		BORING TERMINATED AT 9'-6"
		NOTE: CORE DRILLED FROM 4'-6" TO 9'-6" REC. 43" (71.6%)

NOTE: 1. BLOWS TO DRIVE 12" SPT WITH 140 LB. WT. 30" PER BLOW  
 2. BLOWS TO DRIVE 12" SPT WITH 150 LB. WT. 24" PER BLOW

**Onondaga Soil Testing, Inc. Subsurface Investigation**

5972 COURT ST. RD. • SYRACUSE, N. Y. 13206 • 463.4595

SUBSURFACE SURVEYS

JOHNNO. J. BRIN

HOLE NO TH-2 (69)

TITLE PROPOSED SECONDARY TREATMENT PLANT, AUBURN, NEW YORK

CLIENT METCALF & EDDY, CONSULTING ENGINEERS, NEW YORK, NEW YORK

ELEV. AT GROUND SURFACE \_\_\_\_\_ TECHNICIAN D. SLATER

DATE STARTED JULY 23, 1969 COMPLETED JULY 23, 1969

GROUND WATER 1'2" BELOW SURFACE AT COMPLETION

DEPTH BELOW SURFACE	C	BLOWS ON SAMPLER		SAMPLE NO	DEPTH OF SAMPLE	CLASSIFICATION & REMARKS
		0-6"	6"-18"			
11						
17	6		7-7	1	1'0"-2'6"	FIRM, MEDIUM TO FINE SAND, LITTLE SILT MEDIUM TO FINE GRAVEL (POSSIBLE BELL) (BROWN, DAMP, NON PLASTIC)
128						3'6"
5'						THIN BEDDED, GRAY, LIMESTONE, MEDIUM HARD (SKANEATELES FORMATION)
						8'6"
10'						BORING TERMINATED AT 8'6"
						NOTE: CORE DRILLED FROM 3'6" TO 8'6" REC. 43" (71.6%)

NOTE: N = NO BLOWS TO DRIVE 2" SPOON 12" WITH 140 LB. WT. 30" PER BLOW  
C = NO BLOWS TO DRIVE 2 1/2" CASING 12" WITH 150 LB. WT. 24" PER BLOW



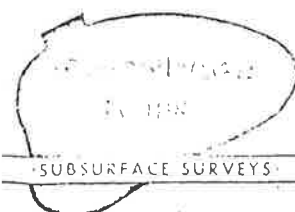
# Onondaga Soil Testing, Inc. *Subsurface Investigation*

5972 COURT ST. RD. • SYRACUSE, N. Y. 13206 • 463.4595

NO. 6-1819 HOLE NO. CH-3 (69)  
 PROPOSED SECONDARY TREATMENT PLANT, AUBURN, NEW YORK  
 ENGINEER: METCALF & EDDY, CONSULTING ENGINEERS, NEW YORK, NEW YORK  
 LOCATION: AT GROUND SURFACE TECHNICIAN: D. SLATER  
 DATE STARTED: JULY 28, 1969 COMPLETED: JULY 28, 1969  
 GROUND WATER: 2'3" BELOW SURFACE AT COMPLETION

BLOWS ON SAMPLER		SAMPLE NO.	DEPTH OF SAMPLE	CLASSIFICATION & REMARKS
0-6"	6"-18"			
3	8-8	1	1'0"-2'6"	FIRM SILT, SOME MEDIUM TO FINE SAND, LITTLE MEDIUM TO FINE GRAVEL (BROWN, GRAY, DAMP, NON PLASTIC) 4'0"
				THIN BEDDED, GRAY, LIMESTONE, MEDIUM HARD (SKANEATELES FORMATION) 9'0"
				BORING TERMINATED AT 9'0"
				NOTE: CORE DRILLED FROM 4'0" TO 9'0" * REC. 3'0" (5%)

NOTE: N = NO BLOWS TO DRIVE 2" SPOON 12" WITH 140 LB. WT. 30" PER BLOW  
 C = NO BLOWS TO DRIVE 2 1/2" CASING 12" WITH 250 LB. WT. 24" PER BLOW



**Subsurface Surveys, Inc. Subsurface Investigation**

5972 COURT ST. RD. • SYRACUSE, N. Y. 13206 • 463-4595

JOB NO. TR-4 (69) HOLE NO. TR-4 (69)

TITLE PROPOSED SECONDARY TREATMENT PLANT, AUBURN, NEW YORK

CLIENT METCALF & EDDY, CONSULTING ENGINEERS, NEW YORK, NEW YORK

ELEV. AT GROUND SURFACE \_\_\_\_\_ TECHNICIAN D. SLATER

DATE STARTED JULY 23, 1969 COMPLETED JULY 23, 1969

GROUND WATER 4'6" BELOW SURFACE AT COMPLETION

DEPTH BELOW SURFACE	BLOWS ON SAMPLER		SAMPLE NO.	DEPTH OF SAMPLE	CLASSIFICATION & REMARKS
	C	N			
10					
15	23	10-6	1	1'0"-2'6"	MISCELLANEOUS FILL CONSISTING OF: SILT, SAND, GRAVEL, CINDERS, ETC. (BROWN, BLACK, DAMP, NON PLASTIC)
17					
21					
49					
53	7	10-7	2	5'0"-6'6"	(BROWN, BLACK, DAMP, NON PLASTIC) 6'5"
108					
	50=5"		3	10'-10'5"	VERY DENSE GLACIAL TILL CONSISTING OF: MEDIUM TO FINE SAND, SOME SILT & MEDIUM TO FINE GRAVEL, ROCK FRAGMENTS (GRAY, WET, NON PLASTIC) 13'6"
15'					THIN BEDDED, GRAY, LIMESTONE, MEDIUM HARD (SKANEATELES FORMATION) 18'6"
20'					BORING TERMINATED AT 18'6"
					NOTE: CORE DRILLED FROM 13'6" TO 18'6" REC. 42" (70%)

NOTE: N = NO. BLOWS TO DRIVE 2" SPOON 12" WITH 140 LB. WT. 30" PER BLOW  
 C = NO. BLOWS TO DRIVE 1 1/2" CABING 12" WITH 280 LB. WT. 24" PER BLOW

**Chromalga Soil Test, Inc. Subsurface Investigations**

5972 COURT ST. RD. • SYRACUSE, N. Y. 13205 • 463.4595

SUBSURFACE SURVEYS

JOB NO. 1-3835

HOLE NO. TH-5 (69)

TITLE PROPOSED SECONDARY TREATMENT PLANT, AUBURN, NEW YORK

CLIENT METCALF & EDDY, CONSULTING ENGINEERS, NEW YORK, NEW YORK

ELEV. AT GROUND SURFACE \_\_\_\_\_ TECHNICIAN D. CLATER

DATE STARTED JULY 29, 1969 COMPLETED JULY 28, 1969

GROUND WATER 5'6" BELOW SURFACE AT COMPLETION

DEPTH BELOW SURFACE	C	BLOWS ON SAMPLER		SAMPLE NO.	DEPTH OF SAMPLE	CLASSIFICATION & REMARKS
		0-6"	6"-18" N			
3						
3		3	3-3	1	1'0"-2'6"	LOOSE MEDIUM TO FINE SAND, LITTLE SILT (POSSIBLE FILL) (BROWN, DAMP, NON PLASTIC)
5						
7						
11		8	9-11	2	5'0"-6'6"	(BROWN, DAMP, NON PLASTIC)
15						
8						9'0"
10						
12						
14		6	6-17	3	10'-11'6"	COMPACT SILT & FINE SAND, LITTLE MEDIUM TO FINE GRAVEL, TRACE ORGANIC MATTER (POSSIBLE FILL) (DARK BROWN, DAMP, NON PLASTIC)
15						14'6"
15		106=6"				
						THIN BEDDED, GRAY, LIMESTONE, MEDIUM HARD (SKANEATELES FORMATION)
20						19'6"
						BORING TERMINATED AT 19'6"
						NOTE: CORE DRILLED FROM 14'6" TO 19'6" REC. 33" (55%)

NOTE: N = NO BLOWS TO DRIVE 2" SPOON 12" WITH 140 LB. WT. 30" PER BLOW  
 C = NO BLOWS TO DRIVE 2 1/2" CASING 12" WITH 250 LB. WT. 24" PER BLOW

NOTES

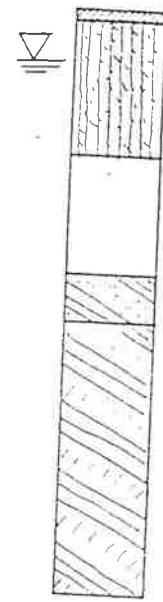
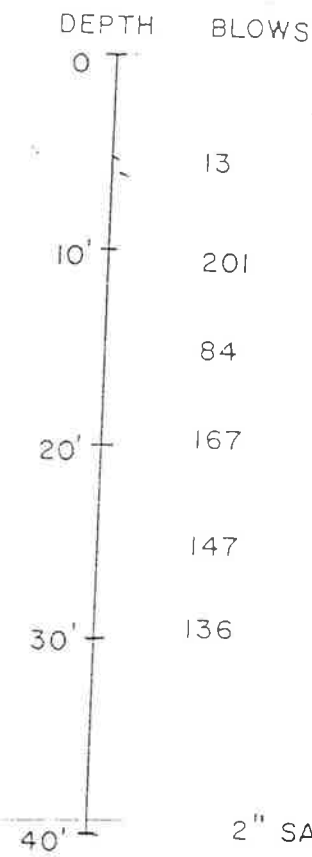
▽ INDICATES GROUND  
= WATER SURFACE

BLOWS INDICATES NUMBER REQUIRED  
TO DRIVE SPOON 12 INCHES UNLESS  
NOTED OTHERWISE

THE DATA HEREON WERE TRANSPOSED  
FROM LOGS OF BORINGS MADE BY  
ONONDAGA SOIL TESTING, INC. IN  
1964. NO SAMPLES ARE AVAILABLE.

SOIL BORINGS

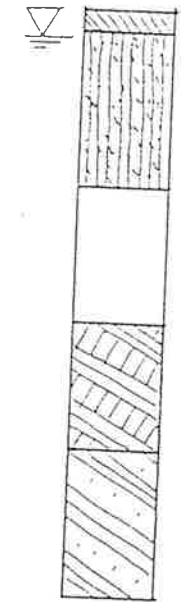
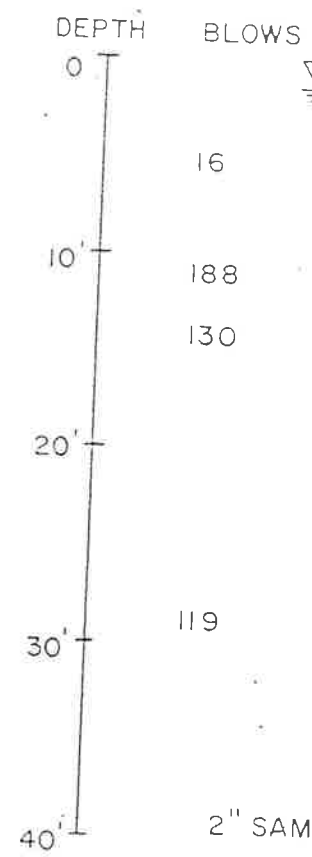
# TEST HOLE B-1



TOP SOIL  
 SILT, LITTLE MEDIUM TO FINE GRAVEL, TRACE SAND, CLAY (GRAY, BROWN, MOIST, SLIGHTLY PLASTIC)  
 GLACIAL TILL - COMPACT SILT, TRACE MEDIUM TO FINE SAND, CLAY (BROWN, DAMP, NON PLASTIC)  
 DECOMPOSED SHALE AND LITTLE MEDIUM TO FINE GRAVEL (BLACK, MOIST, SLIGHTLY PLASTIC)  
 DECOMPOSED SHALE, TRACE SHALE (GRAY, BLACK, MOIST, SLIGHTLY PLASTIC)

2" SAMPLE SPOON - 140 lb HAMMER - 30" FALL

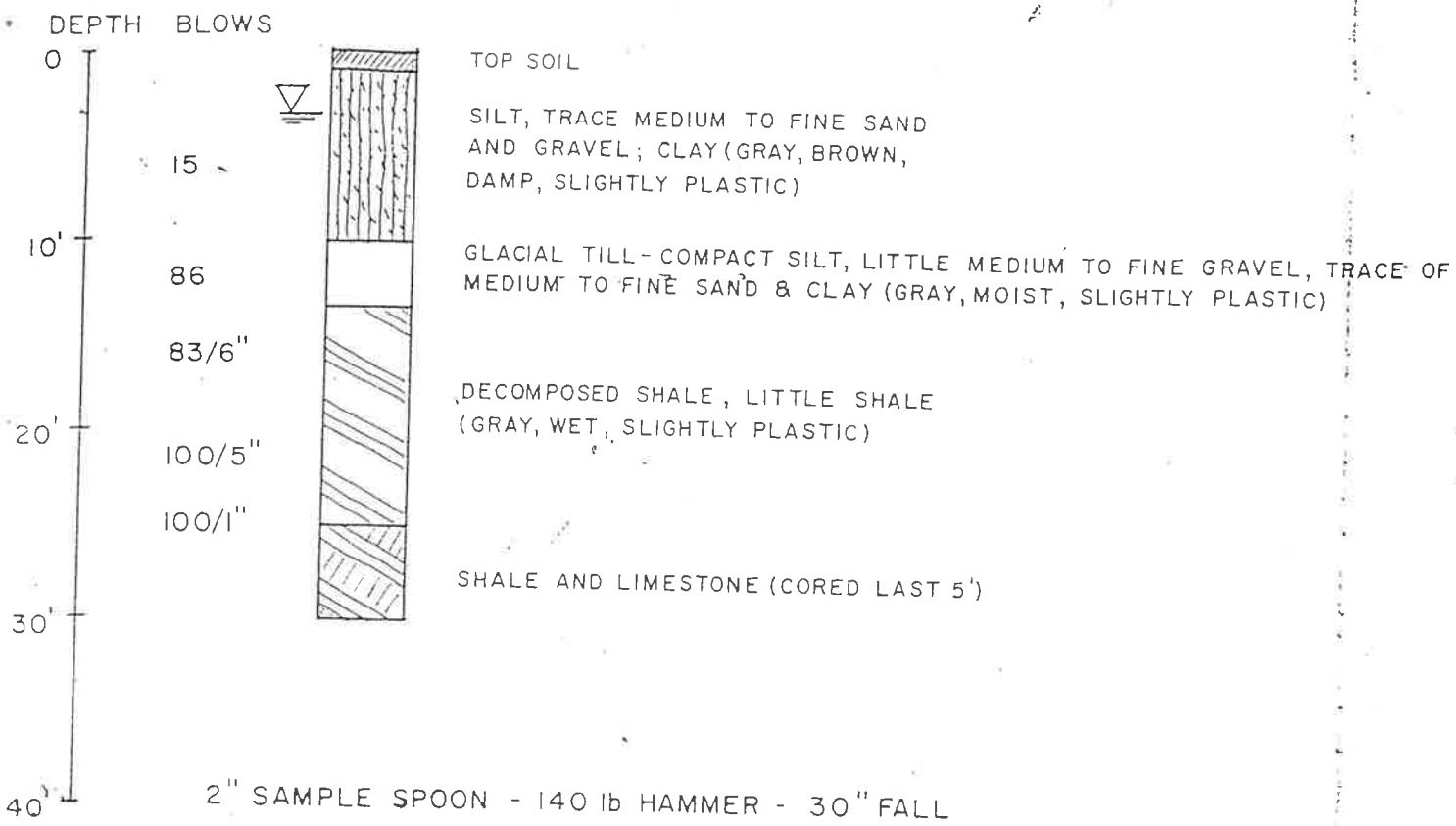
# TEST HOLE B-2



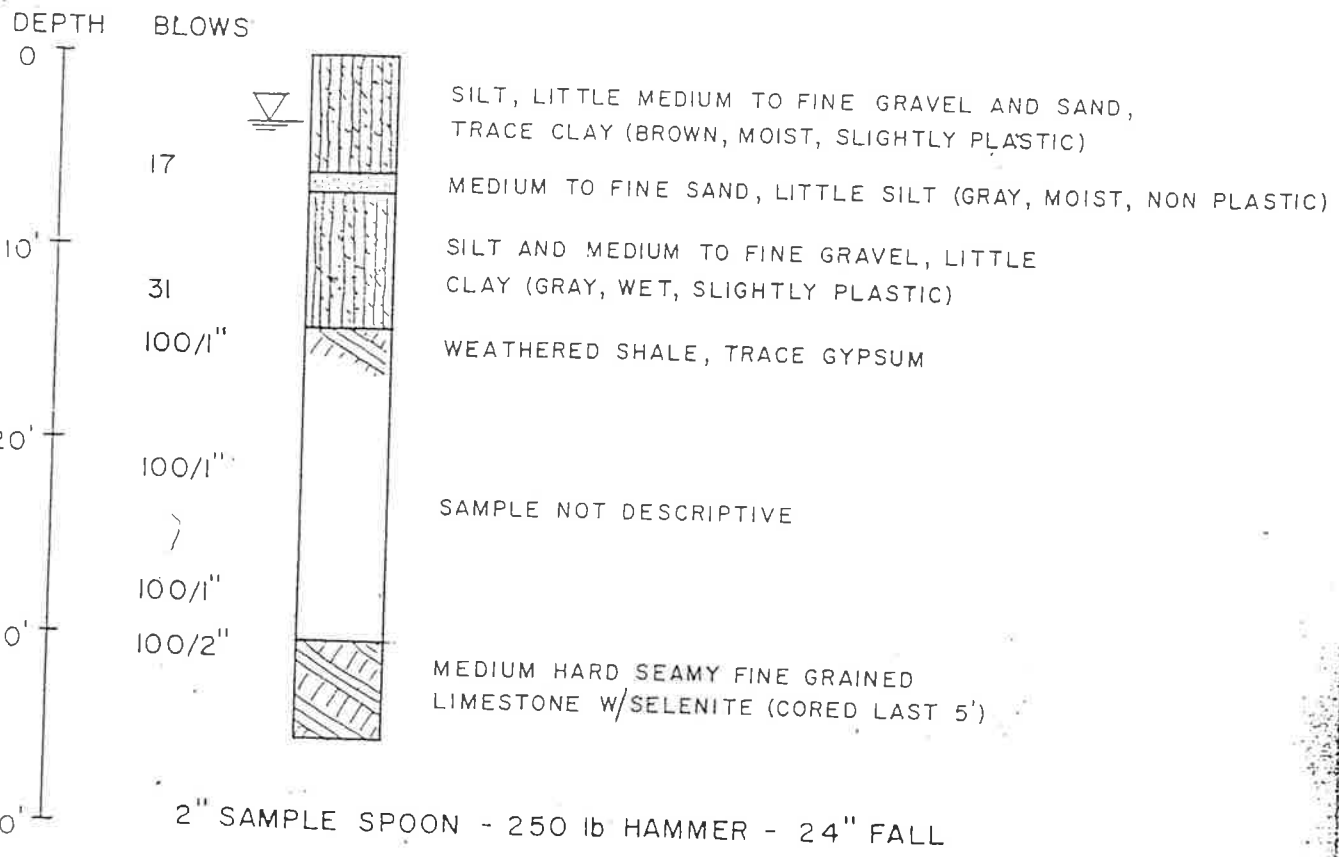
WASTE MATERIAL  
 SILT, TRACE MEDIUM TO FINE SAND AND GRAVEL, CLAY (BROWN, DAMP, SLIGHTLY PLASTIC)  
 GLACIAL TILL - COMPACT SILT, LITTLE ROCK FRAGMENTS & MEDIUM TO FINE SAND, TRACE CLAY (BROWN, DAMP, NON-PLASTIC) CORED 11'-6" TO 12'-0"  
 CORED FROM 16'-0" TO 21'-0" - LIMESTONE  
 DECOMPOSED SHALE (BLACK, DAMP, SLIGHTLY PLASTIC)

2" SAMPLE SPOON - 140 lb HAMMER - 30" FALL

# TEST HOLE A-1



# TEST HOLE A-2



COPY



FISHER RD., EAST SYRACUSE, N.Y. 13057  
TELEPHONE AREA CODE 315/437-1429

November 17, 1977

City of Auburn  
Memorial City Hall  
24 South Street  
Auburn, New York 13021

Attention: Mrs. Lupien

Re: 75111  
Site Investigation  
Allen Street  
Auburn, New York

Gentlemen:

Enclosed are copies of the logs and the cover letter for the above referenced project.

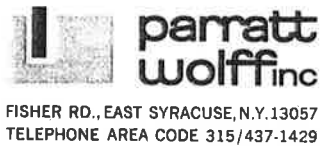
Very truly yours,

PARRATT - WOLFF, INC.

*Linda N. Callahan*

Linda N. Callahan  
Secretary

LNC  
encs:



December 8, 1975

City of Auburn  
21 South Street  
Auburn, New York 13021

Attention: Mr. George Govern  
City Engineer

Re: #111  
Site Investigation  
Allen Street  
Auburn, New York

Gentlemen:

Enclosed are the logs of ten test borings made for you for the above project.

Samples from these borings have been delivered to your office this date under separate cover.

The borings were made at points indicated on the enclosed plot plan and were drilled in accordance with ASTM method D 1586.

Subsurface soils at the site consist generally of hard silt and medium dense fine sand. Several relatively soft areas were discovered. The shallowest boring #3, which has loose sand to a depth of eight feet below existing ground surface, boring #4, loose sand to approximately ten feet and boring #9 which revealed a loose silt and sand from a depth of twelve feet to twenty two feet, although the material from ground surface to twelve feet in this hole was hard silt. No other apparent problem areas were noted.

Ground water depths varied from four feet below ground surface to below seventeen feet, so no generalizations can be drawn concerning a ground water table at the site. If high ground water would be a problem for a specific structure at a specific spot on the site, it is suggested that a test pit or another boring be made to accurately determine ground water.

Thank you for this opportunity to work with you.

Very truly yours,

PARRATT - WOLFF, INC.

Staffen Wolff  
SW/lo  
encs:



### TEST BORING LOG

PROJECT Site Investigation  
 LOCATION Allen Street  
 Auburn, New York  
 DATE STARTED 12/3/75 COMPLETED 12/3/75  
 GROUND WATER Dry on completion

HOLE NO. B-1  
 SURF. ELEV.  
 JOB NO. 75111

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET  1  OF  1

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
5.0		6/8	1	0.0'-	TOPSOIL 0.5'
		7		1.5'	Brown moist medium dense fine SAND, some silt, trace fine gravel 3.0'
10.0		11/20	2	5.0'-	Red-brown moist hard SILT, little fine sand, trace fine gravel
		22		6.5'	
15.0		14/24	3	10.0'-	Gray wet dense fine SAND, little silt, trace fine to medium gravel 13.5'
		27		11.5'	
20.0		11/21	4	15.0'-	Bottom of Boring 16.5'
		21		16.5'	

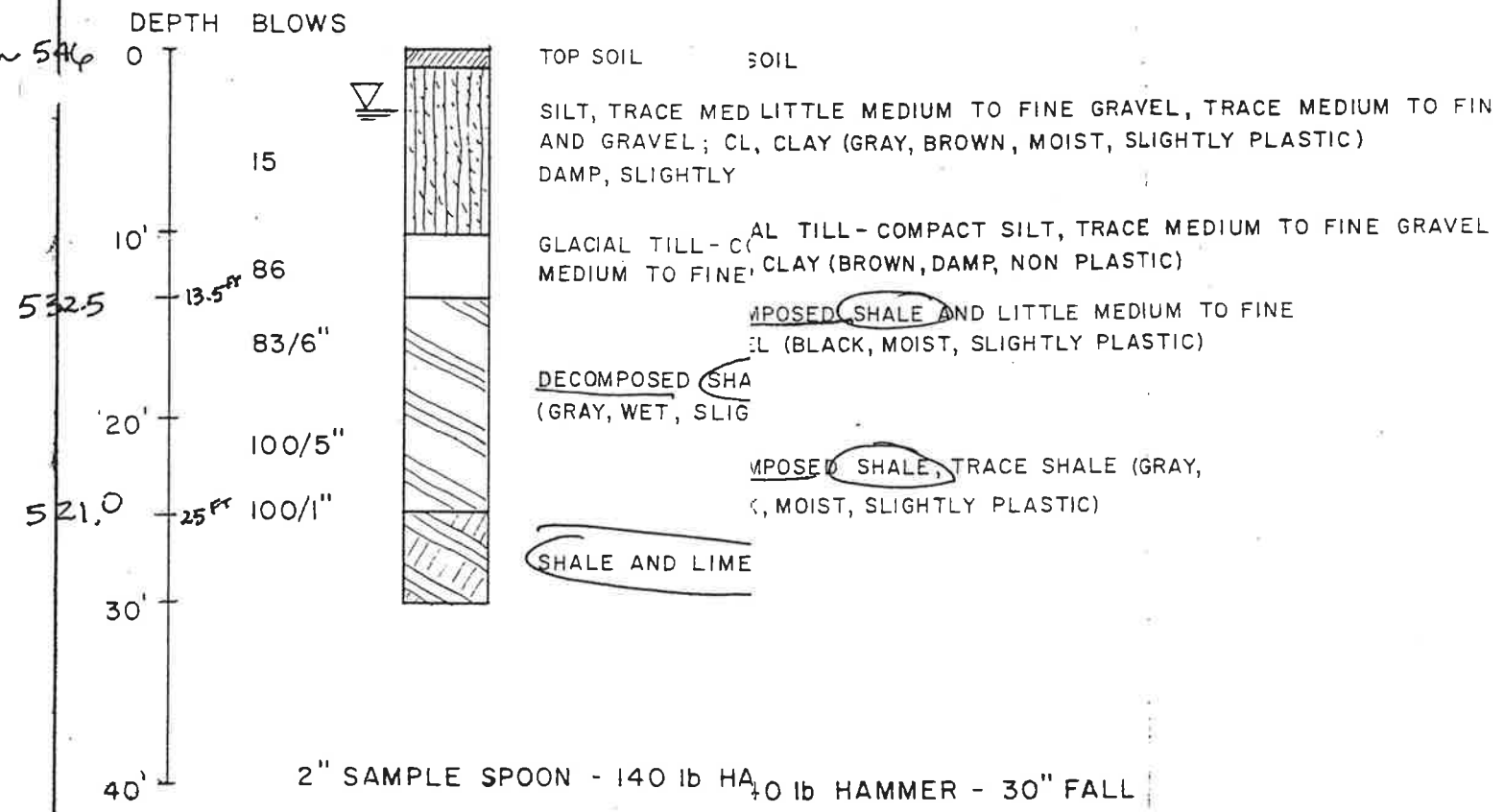
FILE 2585.11

COPY

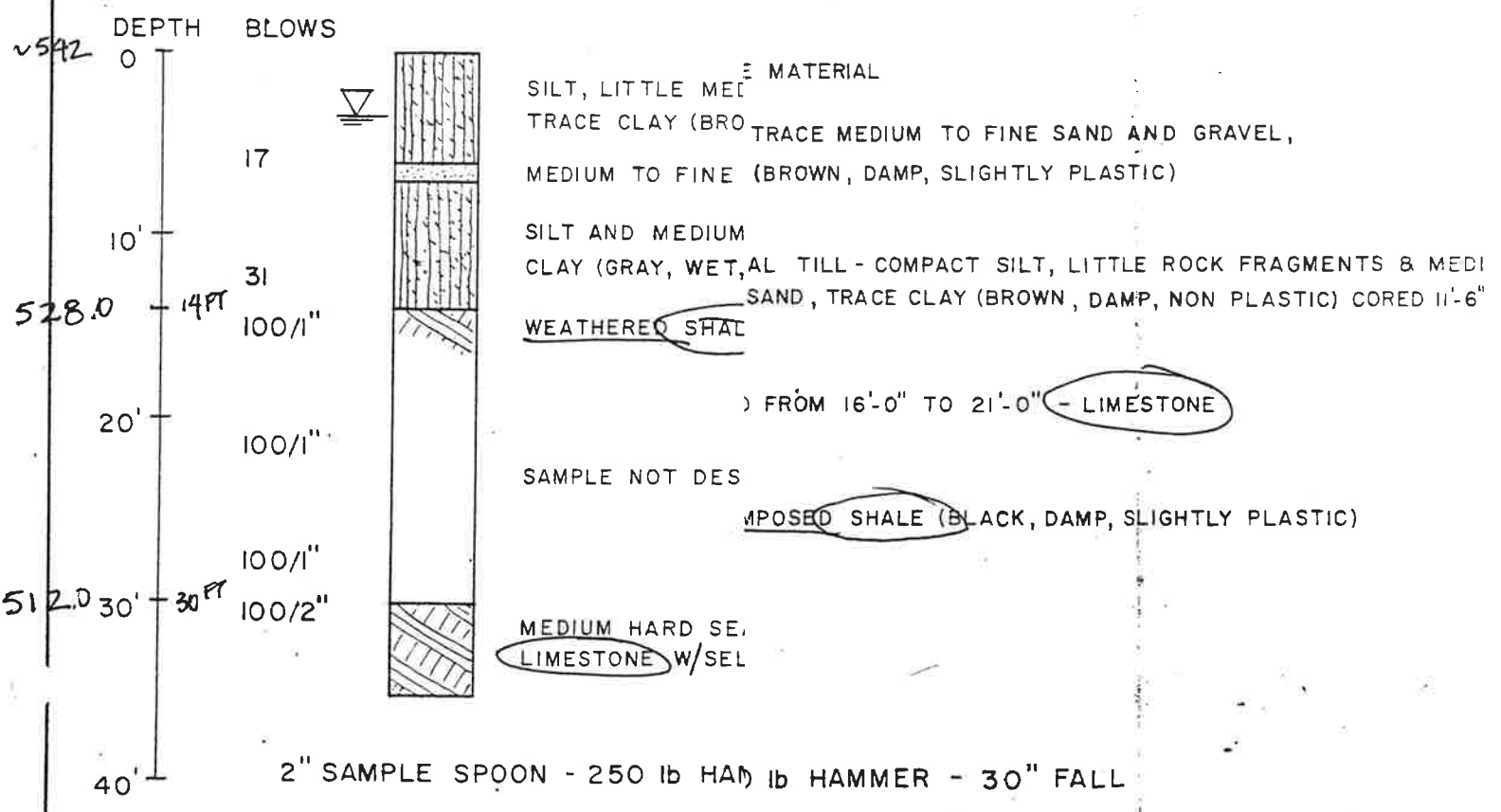


# TEST HOLE A-1 B-1

2585.1



# TEST HOLE A-2 B-2



*Geonaga Soil Testing, Ltd. Subsurface Investigation*

5972 COURT ST. RD. • SYRACUSE, N. Y. 13206 • 463.4595

SUBSURFACE SURVEYS

JOB NO. L-3825 HOLE NO. TH-5 (69)

TITLE PROPOSED SECONDARY TREATMENT PLANT, AUBURN, NEW YORK

CLIENT METCALF & EDDY, CONSULTING ENGINEERS, NEW YORK, NEW YORK

ELEV. AT GROUND SURFACE TECHNICIAN D. SLATER

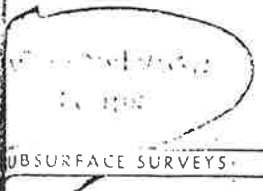
DATE STARTED JULY 28, 1969 COMPLETED JULY 28, 1969

GROUND WATER 3'6" BELOW SURFACE AT COMPLETION

BST. 550

DEPTH BELOW SURFACE	C	BLOWS ON SAMPLER		SAMPLE NO	DEPTH OF SAMPLE	CLASSIFICATION & REMARKS
		0.6"	6" - 18" N			
3						
3	3		3-3	1	1'0"-2'6"	LOOSE MEDIUM TO FINE SAND, LITTLE SILT (POSSIBLE FILL) (BROWN, DAMP, NON PLASTIC)
5						
5	8		9-11	2	5'0"-6'6"	(BROWN, DAMP, NON PLASTIC)
8						9'0"
10	6		6-17	3	10'-11'6"	COMPACT SILT & FINE SAND, LITTLE MEDIUM TO FINE GRAVEL, TRACE ORGANIC MATTER (POSSIBLE FILL) (DARK BROWN, DAMP, NON PLASTIC)
15	106=6"					14'6"
						535.5
						THIN BEDDED, GRAY, LIMESTONE, MEDIUM HARD (SKANEATELES FORMATION)
20						19'6"
						BORING TERMINATED AT 19'6"
						NOTE: CORE DRILLED FROM 14'6" TO 19'6" REC. 33" (55%)

NOTE: N = NO. BLOWS TO DRIVE 2" SPOON 12" WITH 140 LB. WT. 30" PER BLOW  
C = NO. BLOWS TO DRIVE 2 1/2" CASING 12" WITH 250 LB. WT. 24" PER BLOW



# Geological Soil Testing, Inc. *Subsurface Investigation*

5972 COURT ST. RD. • SYRACUSE, N. Y. 13206 • 463-4595

JOB NO. TR 3812 HOLE NO. TH-4 (69)

TITLE PROPOSED SECONDARY TREATMENT PLANT, AUBURN, NEW YORK

CLIENT METCALF & EDDY, CONSULTING ENGINEERS, NEW YORK, NEW YORK

ELEV. AT GROUND SURFACE \_\_\_\_\_ TECHNICIAN D. SLATER

DATE STARTED JULY 23, 1969 COMPLETED JULY 23, 1969

GROUND WATER 4'6" BELOW SURFACE AT COMPLETION

EST.  
54p

DEPTH BELOW SURFACE	BLOWS ON SAMPLER		SAMPLE NO.	DEPTH OF SAMPLE	CLASSIFICATION & REMARKS
	C	6" - 10" N			
10					
15	23	10-6	1	1'0"-2'6"	MISCELLANEOUS FILL CONSISTING OF: SILT SAND, GRAVEL, CINDERS, ETC. (BROWN, BLACK, DAMP, NON PLASTIC)
17					
21					
5' 49					
53	7	10-7	2	5'0"-6'6"	(BROWN, BLACK, DAMP, NON PLASTIC) 6'5"
108					
	50=5"		3	10'-10'5"	VERY DENSE GLACIAL TILL CONSISTING OF: MEDIUM TO FINE SAND, SOME SILT & MEDIUM TO FINE GRAVEL, ROCK FRAGMENTS (GRAY, WET, NON PLASTIC)
15'					532.5 13'6'
					THIN BEDDED, GRAY, LIMESTONE, MEDIUM HARD (SKANEATELES FORMATION)
					18'6'
20'					BORING TERMINATED AT 18'6"
					NOTE: CORE DRILLED FROM 13'6" TO 18'6" REC. 42" (70%)

NOTE: N = NO BLOWS TO DRIVE 2" SPOON 12" WITH 140 LB. WT. 30" PER BLOW  
C = NO. BLOWS TO DRIVE 1 1/2" CASING 12" WITH 250 LB. WT. 24" PER BLOW

# Onondaga Soil Testing, Inc. *Soil Surface Investigations*

5972 COURT ST. RD. • SYRACUSE, N. Y. 13206 • 463-4595

SURFACE SURVEYS

JOB NO. W-3819 HOLE NO. TH-3 (69)

TITLE PROPOSED SECONDARY TREATMENT PLANT, AUBURN, NEW YORK

CLIENT METCALF & EDDY, CONSULTING ENGINEERS, NEW YORK, NEW YORK

EST. 548

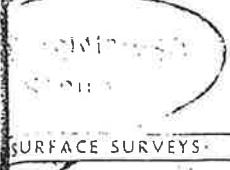
ELEV. AT GROUND SURFACE \_\_\_\_\_ TECHNICIAN D. SLATER

DATE STARTED JULY 28, 1969 COMPLETED JULY 28, 1969

GROUND WATER 2'3" BELOW SURFACE AT COMPLETION

DEPTH BELOW SURFACE	C	BLOWS ON SAMPLER		SAMPLE NO.	DEPTH OF SAMPLE	CLASSIFICATION & REMARKS
		0-6"	6"-18" N			
4						
9		8	8-8	1	1'0"-2'6"	FIRM SILT, SOME MEDIUM TO FINE SAND, LITTLE MEDIUM TO FINE GRAVEL (BROWN, GRAY, DAMP, NON PLASTIC)
11						
100					544.0	4'0"
						THIN BEDDED, GRAY, LIMESTONE, MEDIUM HARD (SKANEATELES FORMATION)
						9'0"
						BORING TERMINATED AT 9'0"
						NOTE: CORE DRILLED FROM 4'0" TO 9'0"
						REC. 3'0" (5%)

NOTE: N - NO BLOWS TO DRIVE 2" SPOON 12" WITH 140 LB. WT. 30" PER BLOW  
 C - NO BLOWS TO DRIVE 2 1/2" CASING 12" WITH 250 LB. WT. 24" PER BLOW



# Onitanga Soil Testing, Inc. *Subsurface Investigation*

5972 COURT ST. RD. • SYRACUSE, N. Y. 13206 • 463-4595

SURFACE SURVEYS

JOB NO. 3314 HOLE NO. TH-2 (69)

TITLE PROPOSED SECONDARY TREATMENT PLANT, AUBURN, NEW YORK

CLIENT METCALF & EDDY, CONSULTING ENGINEERS, NEW YORK, NEW YORK

ELEV. AT GROUND SURFACE \_\_\_\_\_ TECHNICIAN D. SLATER

DATE STARTED JULY 23, 1969 COMPLETED JULY 23, 1969

GROUND WATER 1'2" BELOW SURFACE AT COMPLETION

EST. 548

FEET BELOW SURFACE	BLOWS ON SAMPLER		SAMPLE NO.	DEPTH OF SAMPLE	CLASSIFICATION & REMARKS
	0.6" N	6" - 18"			
11					
17	6	7-7	1	1'0"-2'6"	FIRM, MEDIUM TO FINE SAND, LITTLE SILT MEDIUM TO FINE GRAVEL (POSSIBLE BILL) (BROWN, DAMP, NON PLASTIC)
128					3'6"
					5445
					THIN BEDDED, GRAY, LIMESTONE, MEDIUM HARD (SKANEATELES FORMATION)
					8'6"
					BORING TERMINATED AT 8'6"
					NOTE: CORE DRILLED FROM 3'6" TO 8'6" REC. 43" (71.6%)

NOTE: N = NO BLOWS TO DRIVE 2" SPOON 12" WITH 140 LB. WT. 30" PER BLOW  
C = NO BLOWS TO DRIVE 2 1/2" CASING 12" WITH 250 LB. WT. 24" PER BLOW

*Handwritten title or notes at the top of the page.*

5972 COURT ST. RD. • SYRACUSE, N. Y. 13206 • 463.4555

HOLE NO. TW-1(69)

1. THE SECONDARY TREATMENT PLANT, ALBANY, NEW YORK

2. WALT & EDDY, CONSULTING ENGINEERS, NEW YORK, NEW YORK

A. GROUND SURFACE \_\_\_\_\_ TECHNICIAN D. SEATON

WAS STARTED JULY 23, 1969 COMPLETED JULY 23, 1969

GROUND WATER 5'1" BELOW SURFACE AT COMPLETION

EST 546

BLOWS ON SAMPLER	SAMPLE NO	DEPTH OF SAMPLE	CLASSIFICATION & REMARKS
0-6 6" N			
17 15-14	1	1'0"-2'6"	MISCELLANEOUS FILL CONSISTING OF: SILT, SAND, GRAVEL, CINDERS, ETC. (BROWN, DAMP, NON PLASTIC)
		541.5	
			THIN BEDDED, GRAY, LIMESTONE, MEDIUM HARD (SKANEATELES FORMATION)
			BORING TERMINATED AT 9'6"
			NOTE: CORE DRILLED FROM 4'6" TO 9'6" REC. 43" (71.60)

140

NOTE: BLOWS TO DRIVE 2" SPEC. 4" WITH 140 LB. WT. 30" PER BLOW  
TO DRIVE 2" SPEC. 4" WITH 250 LB. WT. 24" PER BLOW



ORION/ACIA

150125

SURFACE SURVEYS

Chondaga Soil Testing, Inc. Subsurface Investigation

5972 COURT ST. RD.

• SYRACUSE, N. Y. 13206 •

463.4595

JOB NO. K-3576

HOLE NO. TH-3 (68)

TITLE SECONDARY SEWAGE TREATMENT PLANT, AUBURN, NEW YORK

CLIENT DEPARTMENT OF ENGINEERING, AUBURN, NEW YORK

ELEV. AT GROUND SURFACE TECHNICIAN R. BUSH

DATE STARTED NOVEMBER 26, 1968 COMPLETED NOVEMBER 26, 1968

GROUND WATER 0'6" BELOW SURFACE AT COMPLETION

EST. 576

SURFACE	C	BLOWS ON SAMPLER		SAMPLE NO.	DEPTH OF SAMPLE	CLASSIFICATION & REMARKS
		0-6"	6"-18" N			
						TOP SOIL 1'0"
	5	6		1	1'0"-2'6"	SOFT SILT, SOME MEDIUM TO FINE GRAVEL LITTLE FINE SAND (BROWN, MOIST, PLASTIC) 4'0"
	21	108		2	5'0"-6'6"	GLACIAL TILL CONSISTING OF: SILT, COARSE TO FINE GRAVEL, LITTLE CLAY, TRACE FINE SAND, BOULDER FRAGMENTS (BROWN, MOIST, SLIGHTLY PLASTIC)
	44	86		3	10'-11'6"	(BROWN, MOIST, NON PLASTIC)
		93=5"		4	15'-15'6"	(GRAY, DAMP, NON PLASTIC)
		141=6"		5	20'-20'6"	(GRAY, DAMP, NON PLASTIC)
		175=4"		6	25'-25'4"	(GRAY, WET, NON PLASTIC)
		200=2"		7	30'-30'2"	(GRAY, DAMP, NON PLASTIC) 30'2" BORING TERMINATED AT 30'2"

NOTE: N = NO. BLOWS TO DRIVE 2" SPOON 12" WITH 140 LB. WT. 30" PER BLOW

SEE BELOW 546

NONIACA  
SOILS

Onondaga Soil Testers, Inc. Subsurface Investigation

5972 COURT ST. RD. • SYRACUSE, N. Y. 13208 • 463.4595

SURFACE SURVEYS

JOB NO. K-3576 HOLE NO. TH-2 (68)

TITLE SECONDARY SEWAGE TREATMENT PLANT, AUBURN, NEW YORK

CLIENT DEPARTMENT OF ENGINEERING, AUBURN, NEW YORK

ELEV. AT GROUND SURFACE TECHNICIAN R. RUSH

DATE STARTED NOVEMBER 25, 1968 COMPLETED NOVEMBER 25, 1968

GROUND WATER 3'6" BELOW SURFACE AT COMPLETION-0'2" BELOW SURFACE

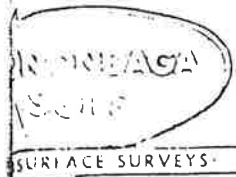
12 HOURS AFTER COMPLETION

C	BLOWS ON SAMPLER		SAMPLE NO.	DEPTH OF SAMPLE	CLASSIFICATION & REMARKS
	0-6"	6"-18" N			
					TOP SOIL 1'0"
5	9		1	1'0"-2'6"	SOFT SILT, TRACE MEDIUM TO FINE GRAVEL FINE SAND, ORGANIC MATTER (BROWN, DAMP, SLIGHTLY PLASTIC) 4'0"
31	150		2	5'0"-6'6"	DENSE SILT, SOME COARSE TO FINE GRAVEL LITTLE FINE SAND, BOULDER FRAGMENTS (BROWN, MOIST, NON PLASTIC)
41	99		3	10'-11'6"	DENSE SANDY SILT, FINE TO MEDIUM SAND (BROWN, MOIST, NON PLASTIC) 13'6"
125	150=3"		4	15'-15'9"	GLACIAL TILL CONSISTING OF: DENSE SILT SOME FINE TO MEDIUM GRAVEL AND SAND, SHALE FRAGMENTS (GRAY, DAMP, NON PLASTIC)
122	150=4"		5	20'-21'10"	(GRAY, DAMP, NON PLASTIC)
	200=3"		6	25'-25'3"	(GRAY, WET, NON PLASTIC)
	250=2"		7	30'-30'2"	(GRAY, DAMP, NON PLASTIC) 30'2' BORING TERMINATED AT 30'2"

NOTE: N = NO. BLOWS TO DRIVE 2" SPOON 12" WITH 140 LB. WT. 30" PER BLOW  
C = NO. BLOWS TO DRIVE 2 1/2" CASING 12" WITH 180 LB. WT. 24" PER BLOW

EST. 547

NOTE  
FROM  
547



# Onondaga Soil Testing, Inc. Subsurface Investigation

5972 COURT ST. RD. • SYRACUSE, N. Y. 13206 • 463 4505

JOB NO. K-3576 HOLE NO. TH-1 (68)

TITLE SECONDARY SEWAGE TREATMENT PLANT, AUBURN, NEW YORK

CLIENT DEPARTMENT OF ENGINEERING, AUBURN, NEW YORK

EST. 546 ELEV. AT GROUND SURFACE TECHNICIAN D. ROWE

DATE STARTED OCTOBER 29, 1968 COMPLETED NOVEMBER 4, 1968

GROUND WATER 12'7" BELOW SURFACE AT COMPLETION- 14'2" BELOW SURFACE  
48 HOURS AFTER COMPLETION

PAGE 1 OF 2

C	BLOWS ON SAMPLER		SAMPLE NO.	DEPTH OF SAMPLE	CLASSIFICATION & REMARKS
	0-6"	6"-18" N			
14					TOP SOIL 0'4"
28	22	50	1	1'0"-2'6"	SEE NOTE "A" 3'0"
65					VERY DENSE FINE TO MEDIUM SAND, SOME SILT, LITTLE FINE GRAVEL (GRAY, DAMP, NON PLASTIC)
	65	142	2	5'0"-6'6"	(GRAY, DAMP, NON PLASTIC)
					(GRAY, DAMP, NON PLASTIC)
	70	345	3	10'-11'6"	BOULDERS NOTED
					(GRAY, DAMP, NON PLASTIC)
	140	450	4	15'-16'6"	(GRAY, DAMP, NON PLASTIC)
					18'6"
					VERY DENSE SILT, LITTLE FINE SAND, VARVES STIFF CLAY (GRAY, DAMP, NON PLASTIC)
		200	5	20'-20'6"	(GRAY, DAMP, NON PLASTIC)
					24'0"
		150=2"	6	25'-25'2"	VERY DENSE GLACIAL TILL CONSISTING OF: SILT, LITTLE SAND AND GRAVEL (GRAYISH BROWN, DAMP, NON PLASTIC)
					(GREYISH BROWN, DAMP, NON PLASTIC) 30'4"
		100=4"	7	30'-30'4"	BORING TERMINATED AT 30'4"
	(250# HAMMER)				

NOTE: N = NO. BLOWS TO DRIVE 2" SPOON 12" WITH 140 LB. WT. 30" PER BLOW

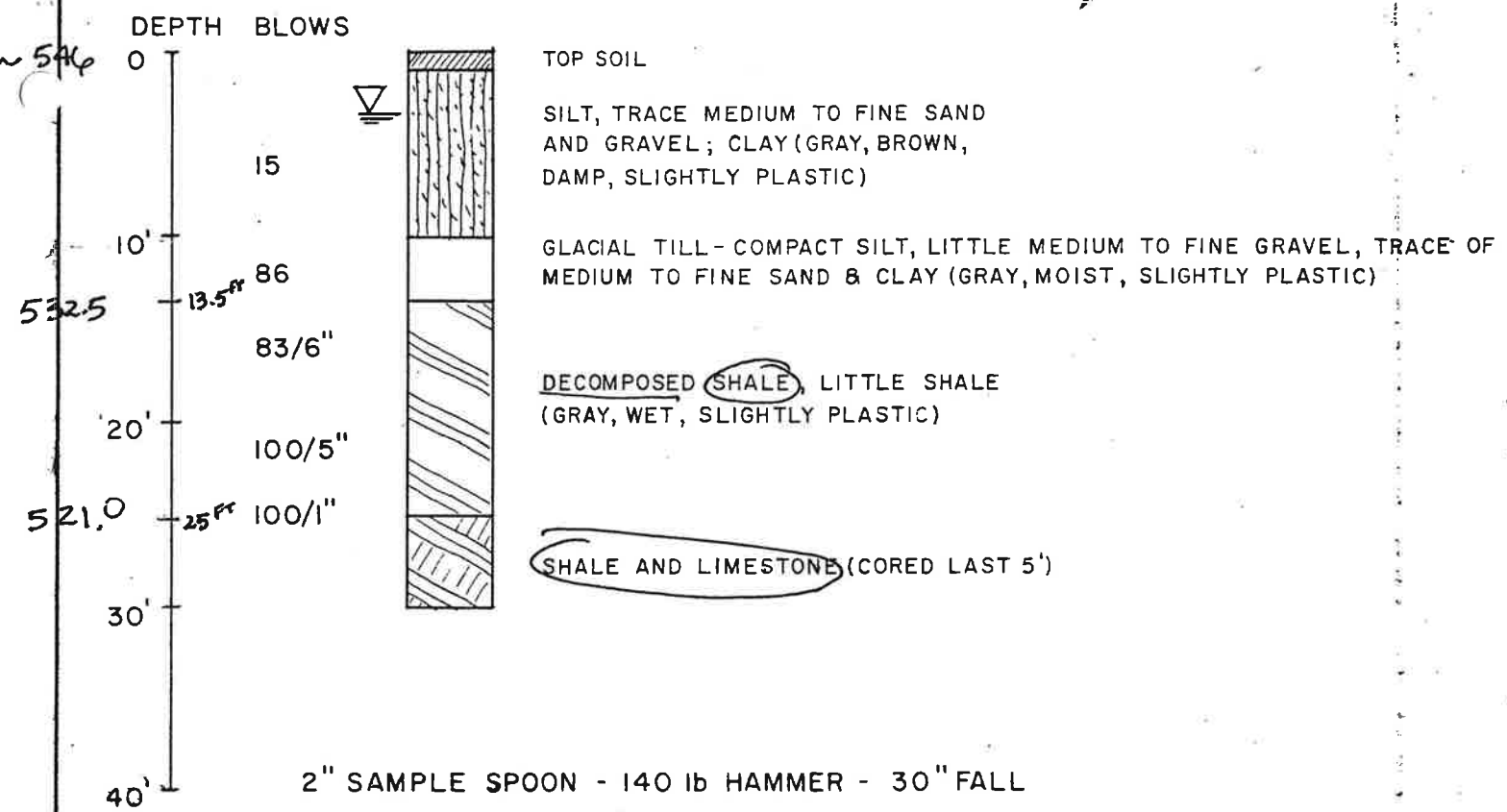
200# SEWON 546



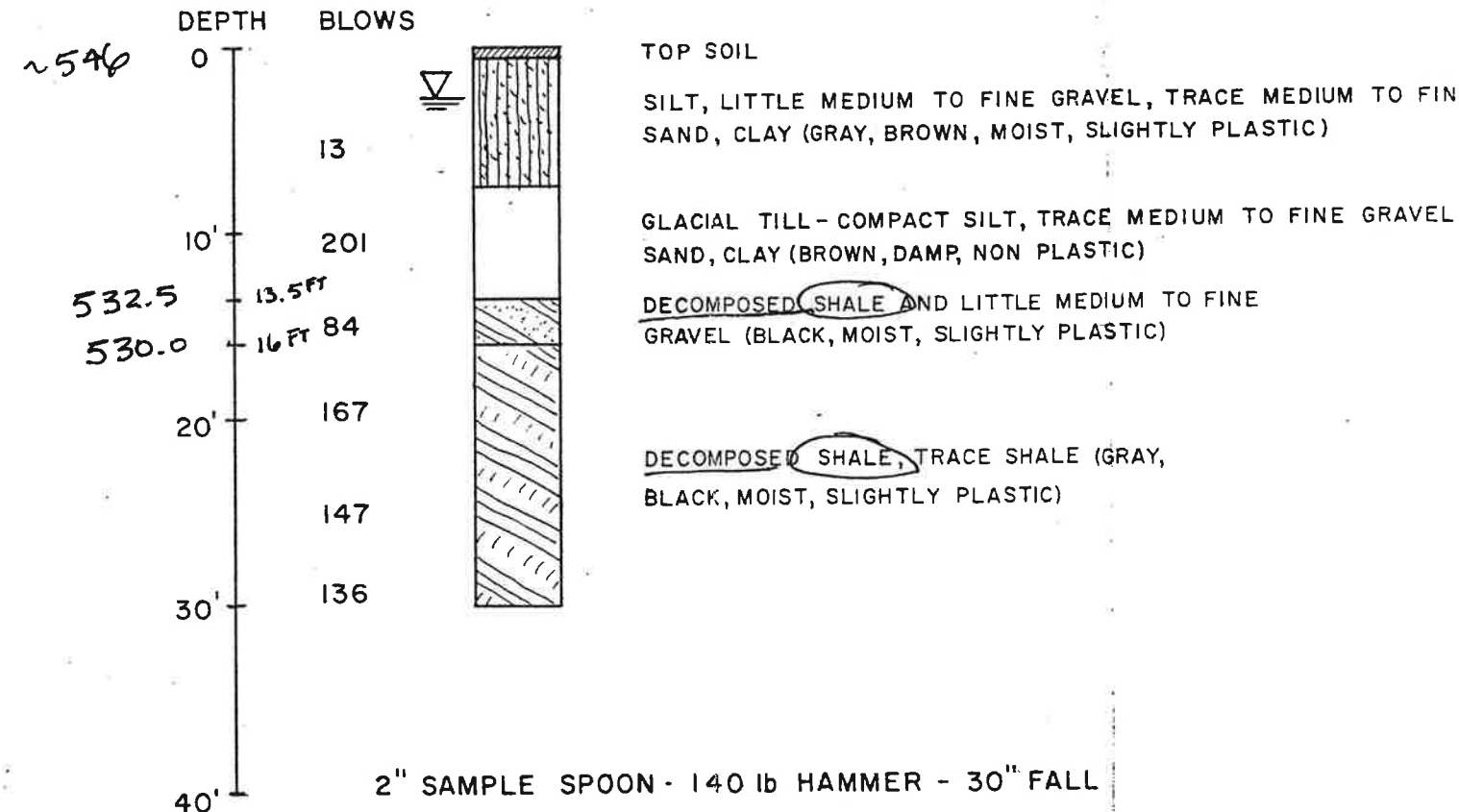
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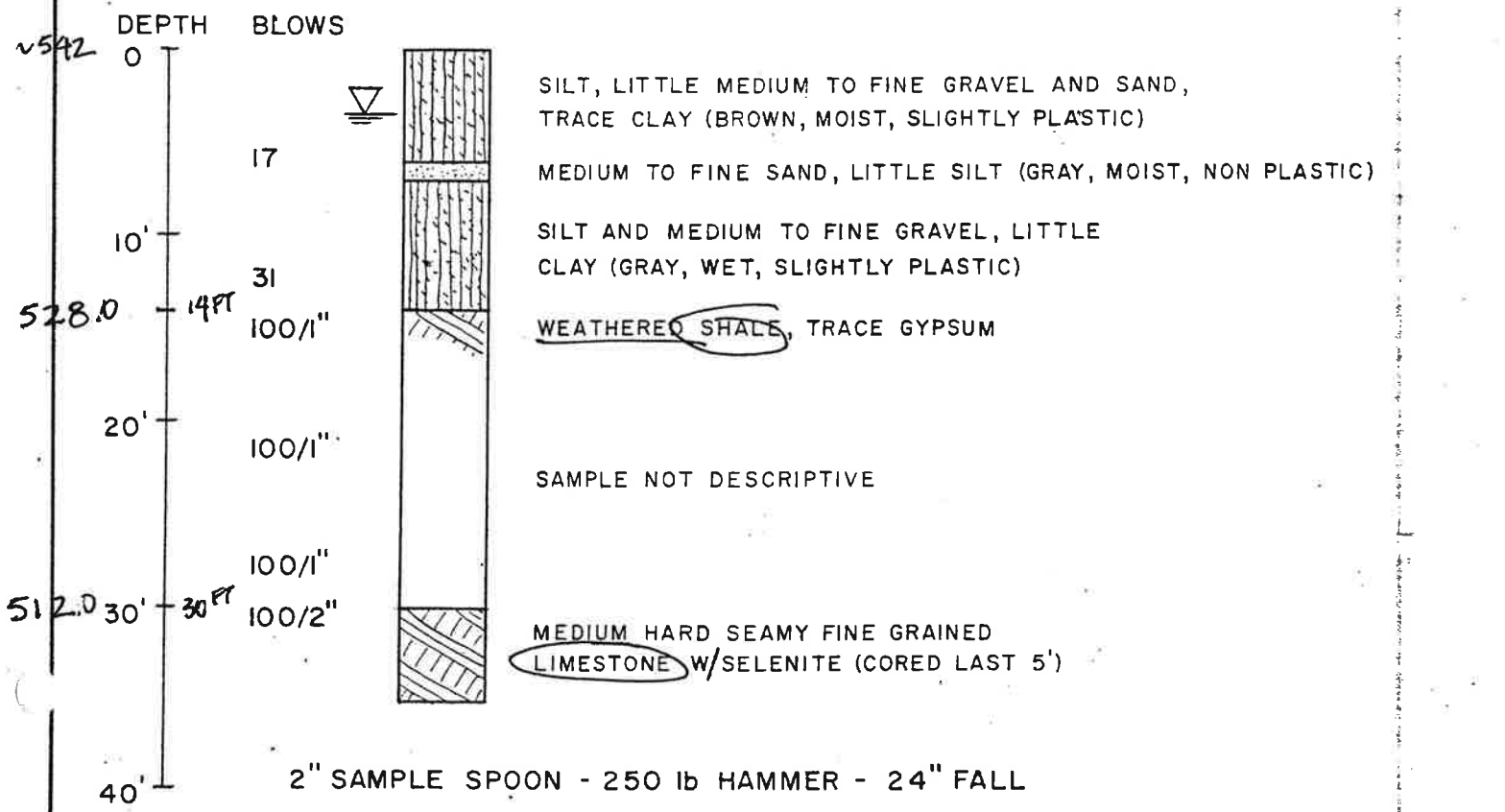
### TEST HOLE A-1



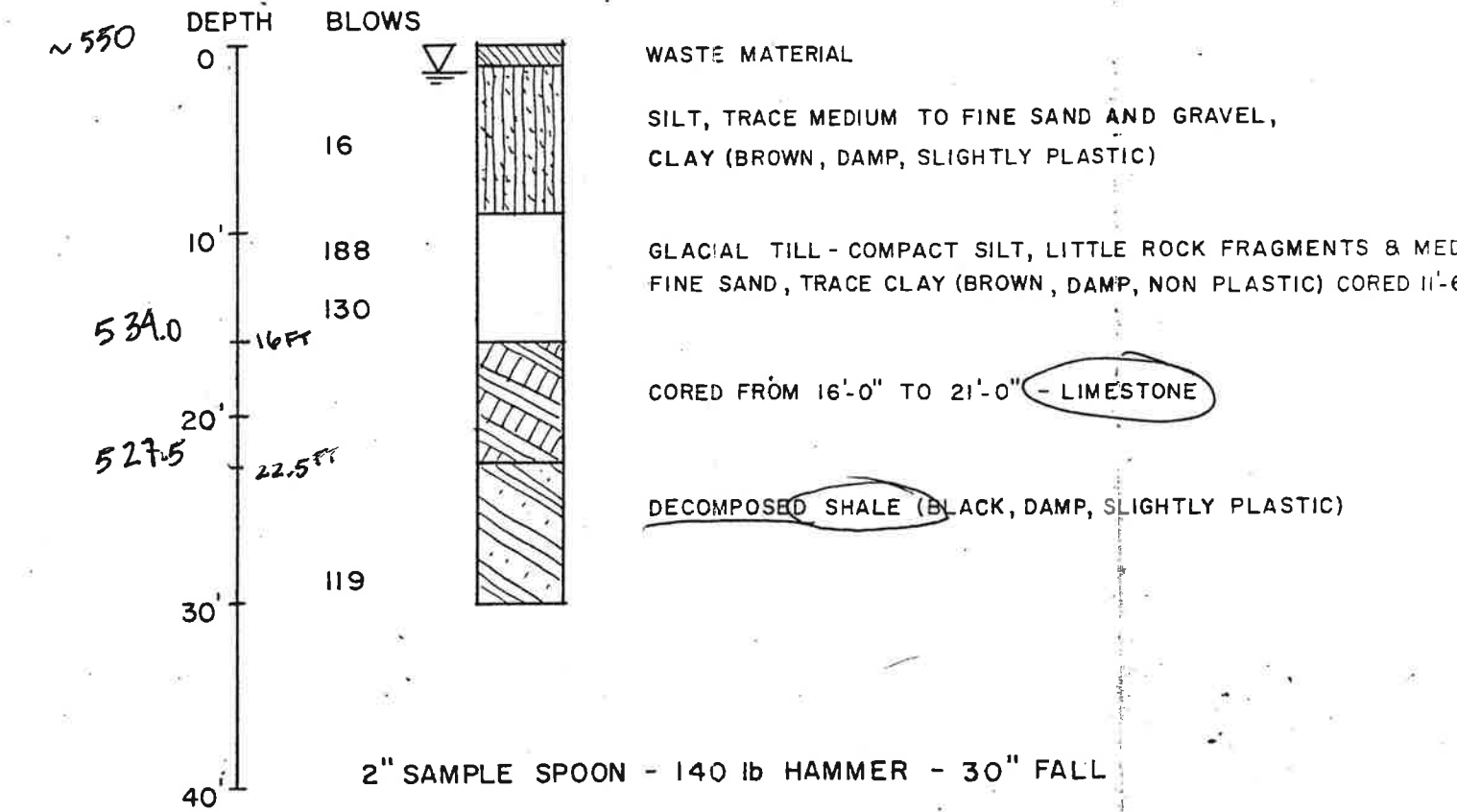
### TEST HOLE B-1



### TEST HOLE A-2



### TEST HOLE B-2



**Chromaga Cell Testing, Ltd. Subsurface Investigations**

5972 COURT ST. RD. • SYRACUSE, N. Y. 13206 • 463.4595

**SUBSURFACE SURVEYS**

JOB NO. L-3825 HOLE NO. TH-5 (69)  
 TITLE PROPOSED SECONDARY TREATMENT PLANT, AUBURN, NEW YORK  
 CLIENT METCALF & EDDY, CONSULTING ENGINEERS, NEW YORK, NEW YORK  
 ELEV. AT GROUND SURFACE \_\_\_\_\_ TECHNICIAN D. SLATER  
 DATE STARTED JULY 28, 1969 COMPLETED JULY 28, 1969  
 GROUND WATER 8'6" BELOW SURFACE AT COMPLETION

BST. 550

DEPTH BELOW SURFACE	C	BLOWS ON SAMPLER		SAMPLE NO.	DEPTH OF SAMPLE	CLASSIFICATION & REMARKS
		0-6"	6"-18" N			
3						
3	3	3-3		1	1'0"-2'6"	LOOSE MEDIUM TO FINE SAND, LITTLE SILT (POSSIBLE FILL) (BROWN, DAMP, NON PLASTIC)
5						
5	7					
5	11	8	9-11	2	5'0"-6'6"	(BROWN, DAMP, NON PLASTIC)
5	21					
5	15					
5	8					9'0"
10	12					
10	14	6	6-17	3	10'-11'6"	COMPACT SILT & FINE SAND, LITTLE MEDIUM TO FINE GRAVEL, TRACE ORGANIC MATTER (POSSIBLE FILL) (DARK BROWN, DAMP, NON PLASTIC)
10	25					
10	38					
10	78					
15	106=6"					14'6"
						535.5
						THIN BEDDED, GRAY, LIMESTONE, MEDIUM HARD (SKANEATELES FORMATION)
						19'6"
20						BORING TERMINATED AT 19'6"

NOTE: CORE DRILLED FROM 14'6" TO 19'6" REC. 33" (55%)

NOTE: N = NO. BLOWS TO DRIVE 2" SPOON 12" WITH 140 LB. WT. 30" PER BLOW  
 C = NO. BLOWS TO DRIVE 2 1/4" CASING 12" WITH 200 LB. WT. 24" PER BLOW

WATERWAYS  
DIVISION

**Geological Soil Testing, Inc. Subsurface Investigation**

5972 COURT ST. RD. • SYRACUSE, N. Y. 13206 • 463.4595

SUBSURFACE SURVEYS

JOB NO. TR 3810

HOLE NO. TH-4 (69)

TITLE PROPOSED SECONDARY TREATMENT PLANT, AUBURN, NEW YORK

CLIENT METCALF & EDDY, CONSULTING ENGINEERS, NEW YORK, NEW YORK

ELEV. AT GROUND SURFACE \_\_\_\_\_ TECHNICIAN D. SLATER

DATE STARTED JULY 23, 1969 COMPLETED JULY 23, 1969

GROUND WATER 4'6" BELOW SURFACE AT COMPLETION

EST.  
54p

DEPTH BELOW SURFACE	BLOWS ON SAMPLER		SAMPLE NO.	DEPTH OF SAMPLE	CLASSIFICATION & REMARKS
	C	6" - 18" N			
10 15 17 21				1'0"-2'6"	MISCELLANEOUS FILL CONSISTING OF: SILT SAND, GRAVEL, CINDERS, ETC. (BROWN, BLACK, DAMP, NON PLASTIC)
5' 49 53 108		7	10-7	2	5'0"-6'6" (BROWN, BLACK, DAMP, NON PLASTIC) 6'5"
10' 50=5"			3	10'-10'5"	VERY DENSE GLACIAL TILL CONSISTING OF: MEDIUM TO FINE SAND, SOME SILT & MEDIUM TO FINE GRAVEL, ROCK FRAGMENTS (GRAY, WET, NON PLASTIC)
15' 532.5					13'6"
					THIN BEDDED, GRAY, LIMESTONE, MEDIUM HARD (SKANEATELES FORMATION)
20' 18'6"					BORING TERMINATED AT 18'6"
					NOTE: CORE DRILLED FROM 13'6" TO 18'6" REC. 42" (70%)

NOTE: N = NO BLOWS TO DRIVE 2" SPOON 12" WITH 140 LB. WT. 30" PER BLOW

C = NO. BLOWS TO DRIVE 2 1/2" CASING 12" WITH 250 LB. WT. 24" PER BLOW



# Onondaga Soil Testing, Inc. *Subsurface Investigation*

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SURFACE SURVEYS

JOB NO. W-3819 HOLE NO. TH-3 (69)

TITLE PROPOSED SECONDARY TREATMENT PLANT, AUBURN, NEW YORK

CLIENT METCALF & EDDY, CONSULTING ENGINEERS, NEW YORK, NEW YORK

ELEV. AT GROUND SURFACE TECHNICIAN D. SLATER

DATE STARTED JULY 28, 1969 COMPLETED JULY 28, 1969

GROUND WATER 2'3" BELOW SURFACE AT COMPLETION

EST. 548

DEPTH BELOW SURFACE	BLOWS ON SAMPLER		SAMPLE NO.	DEPTH OF SAMPLE	CLASSIFICATION & REMARKS
	0.6"	6"-18" N			
0					
4					
9	8	8-8	1	1'0"-2'6"	FIRM SILT, SOME MEDIUM TO FINE SAND, LITTLE MEDIUM TO FINE GRAVEL (BROWN, GRAY, DAMP, NON PLASTIC)
11					
100					
				544.0	4'0"
					THIN BEDDED, GRAY, LIMESTONE, MEDIUM HARD (SKANEATELES FORMATION)
					9'0"
					BORING TERMINATED AT 9'0"
					NOTE: CORE DRILLED FROM 4'0" TO 9'0"
					REC. 3'0" (5%)

NOTE: N - NO BLOWS TO DRIVE 2" SPOON 12" WITH 140 LB. WT. 30" PER BLOW  
C - NO BLOWS TO DRIVE 2 1/2" CASING 12" WITH 250 LB. WT. 24" PER BLOW



# Onondaga Soil Testing, Inc. *Subsurface Investigation*

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## SURFACE SURVEYS

JOB NO. 11-3119 HOLE NO. TH-2 (69)

TITLE PROPOSED SECONDARY TREATMENT PLANT, AUBURN, NEW YORK

CLIENT METCALF & EDDY, CONSULTING ENGINEERS, NEW YORK, NEW YORK

ELEV. AT GROUND SURFACE TECHNICIAN D. SLATER

DATE STARTED JULY 23, 1969 COMPLETED JULY 23, 1969

GROUND WATER 1'2" BELOW SURFACE AT COMPLETION

EST. 548

BLOWS BELOW SURFACE	BLOWS ON SAMPLER		SAMPLE NO.	DEPTH OF SAMPLE	CLASSIFICATION & REMARKS
	0-6"	6"-18" N			
11					
17	6	7-7	1	1'0"-2'6"	FIRM, MEDIUM TO FINE SAND, LITTLE SILT MEDIUM TO FINE GRAVEL (POSSIBLE BILL) (BROWN, DAMP, NON PLASTIC)
128					3'6"
					5495 THIN BEDDED, GRAY, LIMESTONE, MEDIUM HARD (SKANEATELES FORMATION)
					8'6"
					BORING TERMINATED AT 8'6"
					NOTE: CORE DRILLED FROM 3'6" TO 8'6" REC. 43" (71.6%)

NOTE: N = NO. BLOWS TO DRIVE 2" SPOON 12" WITH 140 LB. WT. 30" PER BLOW  
C = NO. BLOWS TO DRIVE 2 1/2" CASING 12" WITH 200 LB. WT. 24" PER BLOW

HOLE NO. TW-1(69)

AT SECONDARY TREATMENT PLANT, ALBANY, NEW YORK  
 WAST & EDDY, CONSULTING ENGINEERS, NEW YORK, NEW YORK  
 AT GROUND SURFACE TECHNICIAN D. SLATER

EST 546

DATE STARTED JULY 23, 1969 COMPLETED JULY 23, 1969  
 GROUND WATER 5'1" BELOW SURFACE AT COMPLETION

BLOWS ON SAMPLER		SAMPLE NO	DEPTH OF SAMPLE	CLASSIFICATION & REMARKS
0-6"	6"-18" N			
17	15-14	1	1'0"-2'6"	MISCELLANEOUS FILL CONSISTING OF: SILT, SAND, GRAVEL, CINDERS, ETC. (BROWN, DAMP, NON PLASTIC) 4'6"
			541.5	THIN BEDDED, GRAY, LIMESTONE, MEDIUM HARD (SKANEATELES FORMATION) 9'6"
				BORING TERMINATED AT 9'6"
				NOTE: CORE DRILLED FROM 4'6" TO 9'6" REC. 43" (71.6%)

NOTE: 30 BLOWS TO DRIVE 2' SPEC. 12" WITH 140 LB. WT. 30" PER BLOW  
 40 BLS. SPEC. 12" WITH 250 LB. WT. 24" PER BLOW

CHRONOLOGICAL  
SOILS

**Chronolog Soil Testing, Inc.** *Subsurface Investigation*

5972 COURT ST. RD. • SYRACUSE, N. Y. 13206 • 463.4595

SURFACE SURVEYS

JOB NO. K-3576 HOLE NO. TH-3 (68)

TITLE SECONDARY SEWAGE TREATMENT PLANT, AUBURN, NEW YORK

CLIENT DEPARTMENT OF ENGINEERING, AUBURN, NEW YORK

ELEV. AT GROUND SURFACE TECHNICIAN R. BUSH

DATE STARTED NOVEMBER 26, 1968 COMPLETED NOVEMBER 26, 1968

GROUND WATER 0'6" BELOW SURFACE AT COMPLETION

EST. 576

SURFACE	C	BLOWS ON SAMPLER		SAMPLE NO.	DEPTH OF SAMPLE	CLASSIFICATION & REMARKS
		0-6"	6"-18" N			
						TOP SOIL 1'0"
	5	6		1	1'0"-2'6"	SOFT SILT, SOME MEDIUM TO FINE GRAVEL LITTLE FINE SAND (BROWN, MOIST, PLASTIC) 4'0"
	21	108		2	5'0"-6'6"	GLACIAL TILL CONSISTING OF: SILT, COARSE TO FINE GRAVEL, LITTLE CLAY, TRACE FINE SAND, BOULDER FRAGMENTS (BROWN, MOIST, SLIGHTLY PLASTIC)
	44	86		3	10'-11'6"	(BROWN, MOIST, NON PLASTIC)
		93=6"		4	15'-15'6"	(GRAY, DAMP, NON PLASTIC)
		141=6"		5	20'-20'6"	(GRAY, DAMP, NON PLASTIC)
		175=4"		6	25'-25'4"	(GRAY, WET, NON PLASTIC)
		200=2"		7	30'-30'2"	(GRAY, DAMP, NON PLASTIC) 30'2" BORING TERMINATED AT 30'2"

ALL BELOW 546

NOTE: N = NO. BLOWS TO DRIVE 1" SPOON 12" WITH 140 LB. WT. 30" PER BLOW

JOB NO. K-3576 HOLE NO. TH-2 (68)

TITLE SECONDARY SEWAGE TREATMENT PLANT, AUBURN, NEW YORK

CLIENT DEPARTMENT OF ENGINEERING, AUBURN, NEW YORK

ELEV. AT GROUND SURFACE TECHNICIAN R. BUSH

DATE STARTED NOVEMBER 25, 1968 COMPLETED NOVEMBER 25, 1968

GROUND WATER 3'6" BELOW SURFACE AT COMPLETION-0'2" BELOW SURFACE  
12 HOURS AFTER COMPLETION

EST. 577

C	BLOWS ON SAMPLER		SAMPLE NO.	DEPTH OF SAMPLE	CLASSIFICATION & REMARKS
	0-6"	6"-18" N			
	5	9	1	1'0"-2'6"	TOP SOIL 1'0" SOFT SILT, TRACE MEDIUM TO FINE GRAVEL FINE SAND, ORGANIC MATTER (BROWN, DAMP, SLIGHTLY PLASTIC) 4'0"
	31	150	2	5'0"-6'6"	DENSE SILT, SOME COARSE TO FINE GRAVEL LITTLE FINE SAND, BOULDER FRAGMENTS (BROWN, MOIST, NON PLASTIC)
	41	99	3	10'-11'6"	DENSE SANDY SILT, FINE TO MEDIUM SAND (BROWN, MOIST, NON PLASTIC)
	125	150=3"	4	15'-15'9"	13'6" GLACIAL TILL CONSISTING OF: DENSE SILT SOME FINE TO MEDIUM GRAVEL AND SAND, SHALE FRAGMENTS (GRAY, DAMP, NON PLASTIC)
	122	150=4"	5	20'-21'10"	(GRAY, DAMP, NON PLASTIC)
		200=3"	6	25'-25'3"	(GRAY, WET, NON PLASTIC)
		250=2"	7	30'-30'2"	(GRAY, DAMP, NON PLASTIC) 30'2" BORING TERMINATED AT 30'2"

POW  
P100A  
547

Onondaga Soil Testing, Inc. Subsurface Investigation

5972 COURT ST. RD. • SYRACUSE, N. Y. 13208 • 463-4295

SURFACE SURVEYS

JOB NO. K-3576 HOLE NO. TH-1 (68)

TITLE SECONDARY SEWAGE TREATMENT PLANT, AUBURN, NEW YORK

CLIENT DEPARTMENT OF ENGINEERING, AUBURN, NEW YORK

ELEV. AT GROUND SURFACE TECHNICIAN D. ROWE

DATE STARTED OCTOBER 29, 1968 COMPLETED NOVEMBER 4, 1968

GROUND WATER 12'7" BELOW SURFACE AT COMPLETION- 14'2" BELOW SURFACE  
48 HOURS AFTER COMPLETION

PAGE 1 OF 2

C	BLOWS ON SAMPLER		SAMPLE NO.	DEPTH OF SAMPLE	CLASSIFICATION & REMARKS
	0-6"	0"-18" N			
14					TOP SOIL 0'4"
28	12	50	1	1'0"-2'6"	SEE NOTE "A" 3'0"
65					VERY DENSE FINE TO MEDIUM SAND, SOME SILT, LITTLE FINE GRAVEL (GRAY, DAMP, NON PLASTIC)
	65	142	2	5'0"-6'6"	(GRAY, DAMP, NON PLASTIC)
					BOULDERS NOTED
	70	345	3	10'-11'6"	(GRAY, DAMP, NON PLASTIC)
	140	450	4	15'-16'6"	(GRAY, DAMP, NON PLASTIC) 18'6"
					VERY DENSE SILT, LITTLE FINE SAND, VARVES STIFF CLAY (GRAY, DAMP, NON PLASTIC)
		200	5	20'-20'6"	24'0"
		150=2"	6	25'-25'2"	VERY DENSE GLACIAL TILL CONSISTING OF: SILT, LITTLE SAND AND GRAVEL (GRAYISH BROWN, DAMP, NON PLASTIC)
		100=4"	7	30'-30'4"	(GREYISH BROWN, DAMP, NON PLASTIC) 30'4"
	(250# HAMMER)				BORING TERMINATED AT 30'4"

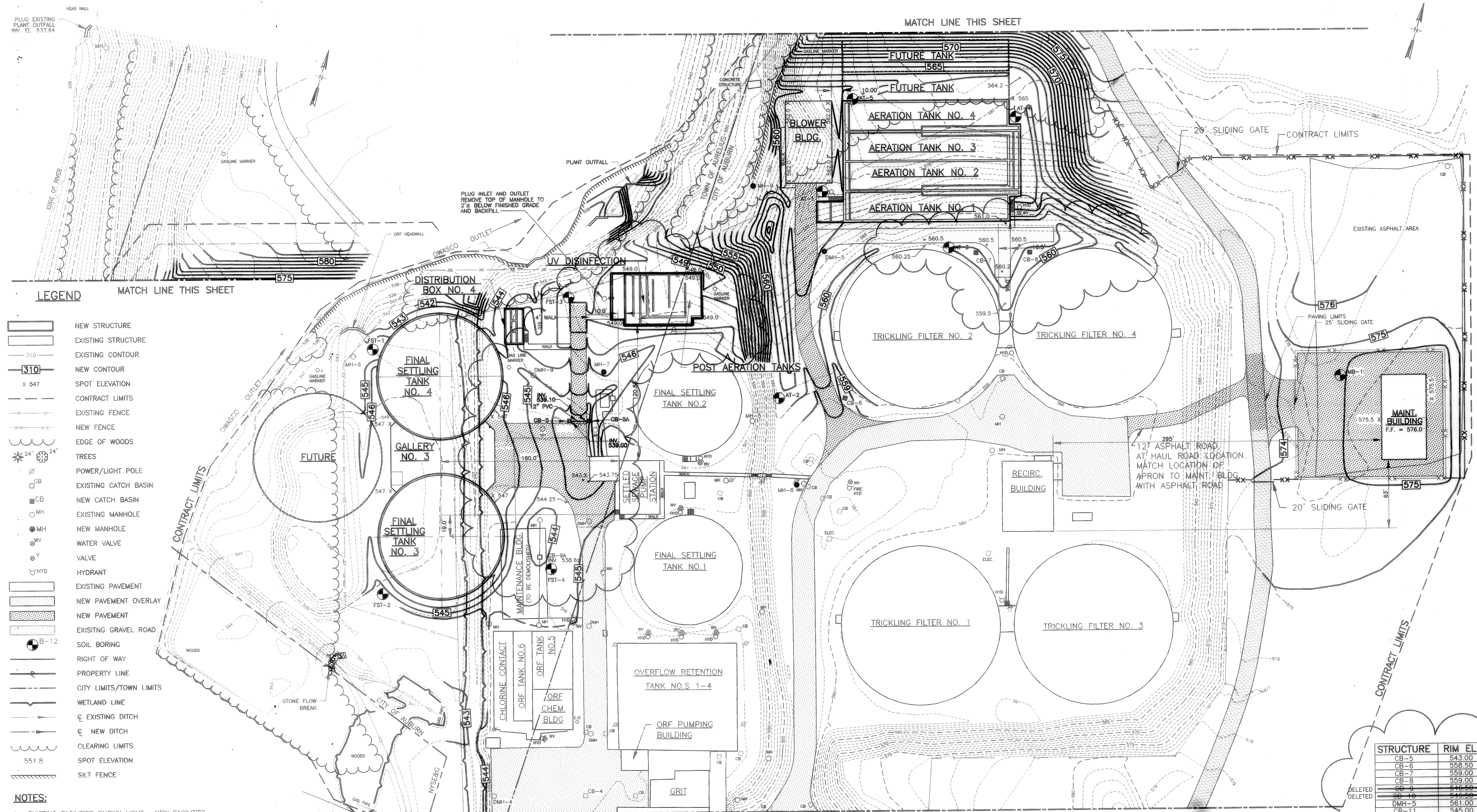
NOTE: N = NO. BLOWS TO DRIVE 2" SPOON 12" WITH 140 LB. WT. 30" PER BLOW

200L  
5E10N  
546





MATCH LINE THIS SHEET



LEGEND MATCH LINE THIS SHEET

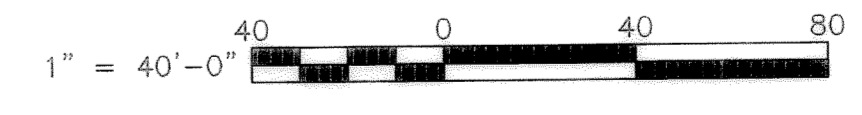
- NEW STRUCTURE
- EXISTING STRUCTURE
- EXISTING CONTOUR
- NEW CONTOUR
- x 547 SPOT ELEVATION
- CONTRACT LIMITS
- EXISTING FENCE
- NEW FENCE
- EDGE OF WOODS
- \* 24 \* 24 \* TREES
- o POWER/LIGHT POLE
- CB EXISTING CATCH BASIN
- CB NEW CATCH BASIN
- MH EXISTING MANHOLE
- MH NEW MANHOLE
- w WATER VALVE
- v VALVE
- h HYDRANT
- EXISTING PAVEMENT
- NEW PAVEMENT OVERLAY
- NEW PAVEMENT
- EXISTING GRAVEL ROAD
- B-12 SOIL BORING
- RIGHT OF WAY
- PROPERTY LINE
- CITY LIMITS/TOWN LIMITS
- WETLAND LINE
- EXISTING DITCH
- NEW DITCH
- CLEARING LIMITS
- 551.8 SPOT ELEVATION
- SILT FENCE

- NOTES:**
- EXISTING FACILITIES SHOWN LIGHT. NEW FACILITIES SHOWN HEAVY.
  - SEE SHEET G-4 FOR EROSION CONTROL DETAILS.
  - INSTALL RIP-RAP ON NEW SIDE SLOPES FROM FACE OF PLANT OUTFALL HEADWALL TO EDGE OF OWASCO OUTLET AT EL. 537.
  - ALL AREAS PAVED UNDER PHASE I SHALL RECEIVE NEW PAVEMENT OVERLAY, FROM BRADLEY STREET PAVING LIMITS AT THE SOUTH, TO THE EAST PAVING LIMITS ON ACCESS ROADS LEADING TO ALLEN STREET, ALSO TO THE NORTH NEAR THE RECIRCULATION BUILDING AND OVERFLOW RETENTION TANK NOS. 5 AND 6.

MATCH LINE SHEET G-4

PLAN SCALE: 1" = 40'-0"

RECORD DRAWING  
 THESE DRAWINGS HAVE BEEN REVISED TO REFLECT MAJOR CHANGES, IF ANY, WHICH OCCURRED DURING CONSTRUCTION. REVISIONS ARE BASED UPON INFORMATION SUPPLIED BY CONTRACTOR.  
 DATE: 7/1/99 PER: [Signature]



STRUCTURE	RIM EL.
CB-5	543.00
CB-6	558.50
CB-7	559.00
CB-8	559.00
CB-9	576.50
CB-10	576.50
DMH-5	561.00
CB-11	545.00
CB-12	545.00
CB-13	545.50
MH-7	546.00
MH-8	558.00
MH-9	558.00
CB-9A	543.50
CB-5A	543.00

**NOTES:**  
 Underground facilities, structures, and utilities have been plotted from available surveys and records, and therefore their locations must be considered approximate only. There may be others, the existence of which is presently not known.  
 It is a violation of New York State Education Law for any person, unless acting under the direction of a licensed professional engineer, to alter an item on this drawing in any way. If an item is altered, the altering engineer shall affix to the item his/her seal and the notation "altered by" followed by his/her signature and the date of such alteration, and a specific description of the alteration.

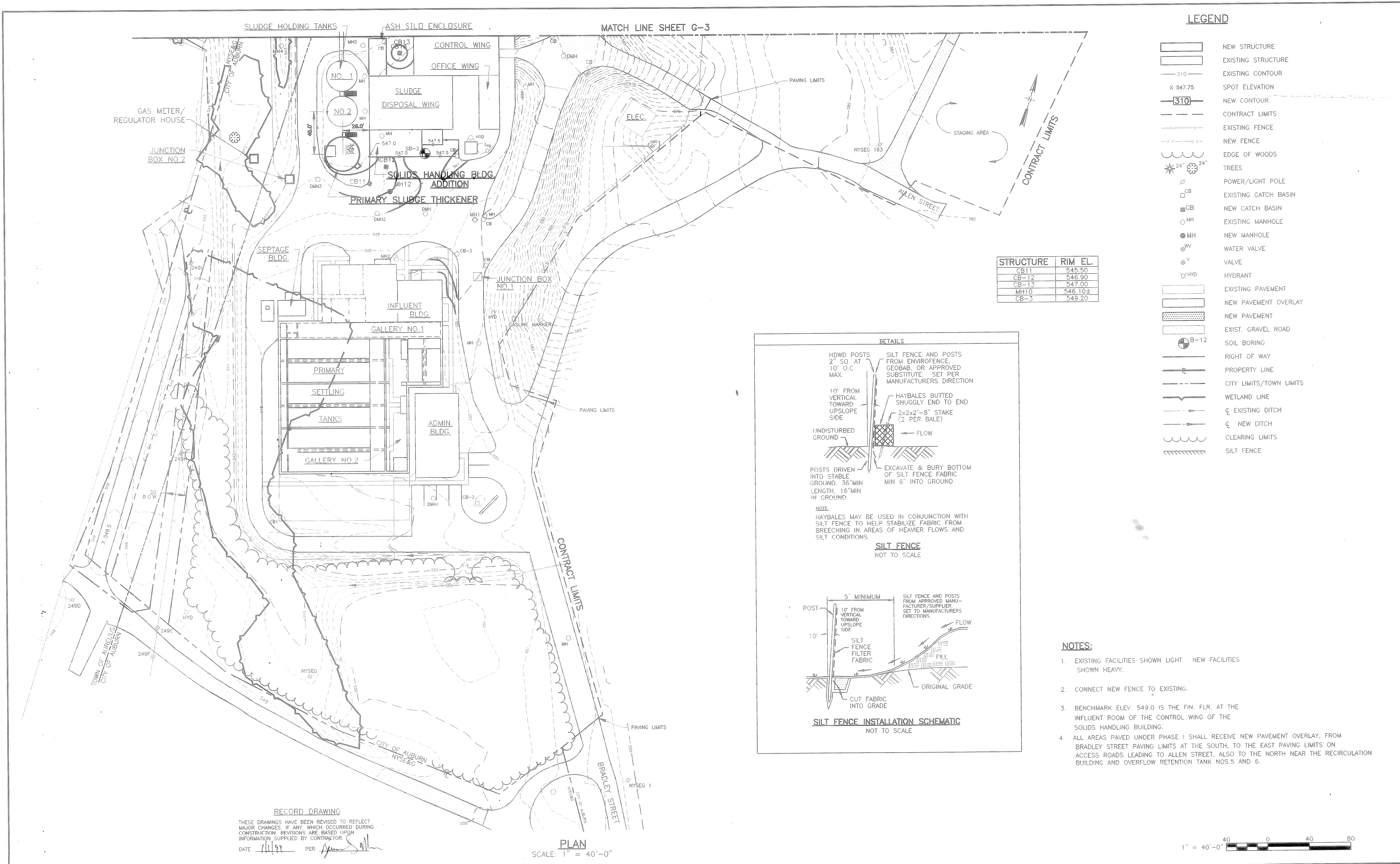
ISSUE NO.	DATE	CHECKED	DESIGNER	APPROVED	DATE
3	FOR RECORD	KMD	3/97		
2	FOR CONSTRUCTION	KMD	8/94	RWS	
1	FOR APPROVAL	KMD	6/94	RWS	
PROJECT SUPERVISOR		DEPARTMENT SUPERVISOR			



**Stearns & Wheeler**  
 ENVIRONMENTAL ENGINEERS & SCIENTISTS

CITY OF AUBURN, NEW YORK			
WATER POLLUTION CONTROL PLANT			
SITE PLAN NORTH			
JOB NO.	2743	CONTRACT	79-5
SHEET	G-3		

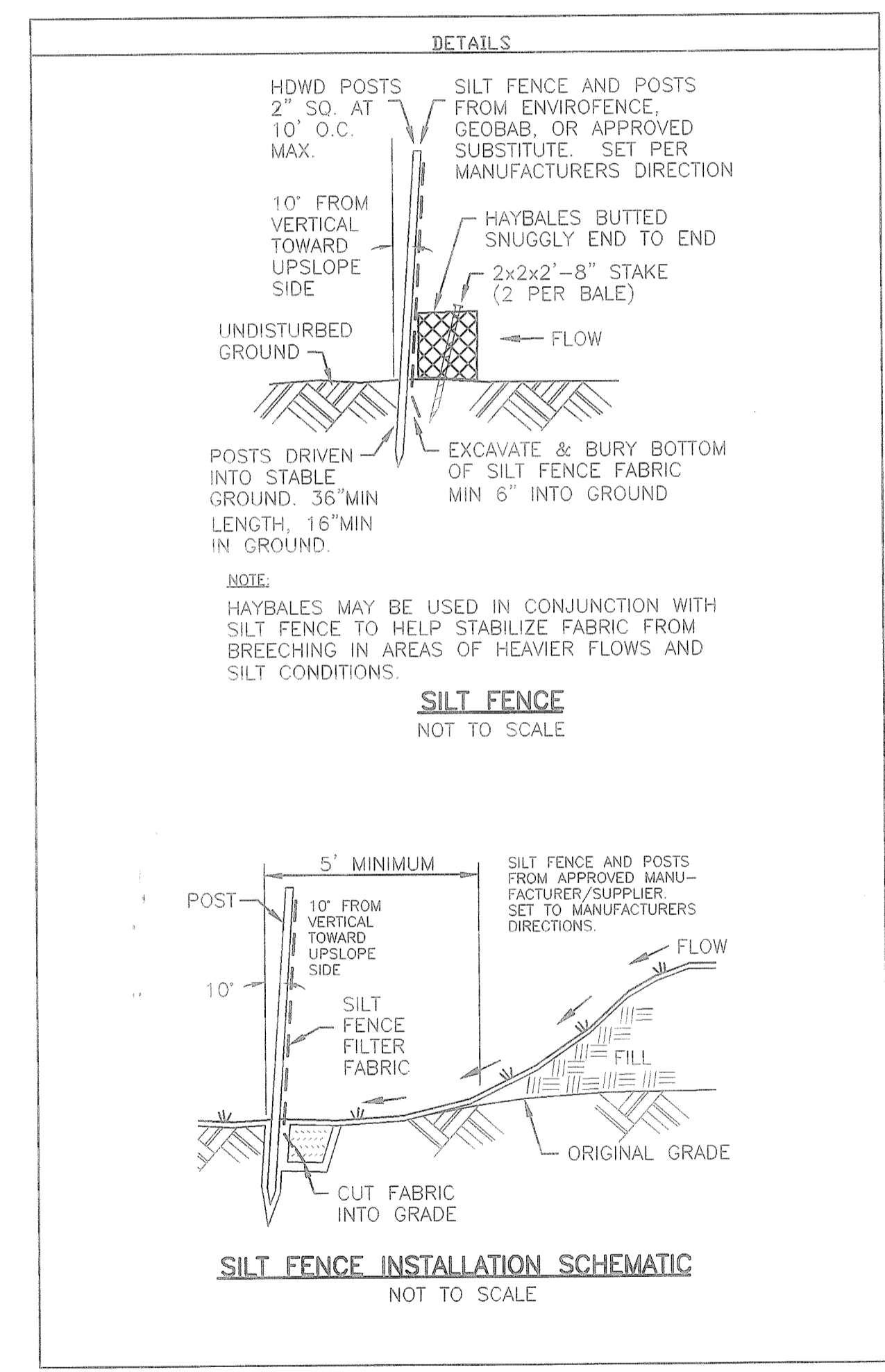




**LEGEND**

- NEW STRUCTURE
- EXISTING STRUCTURE
- EXISTING CONTOUR
- SPOT ELEVATION
- NEW CONTOUR
- CONTRACT LIMITS
- EXISTING FENCE
- NEW FENCE
- EDGE OF WOODS
- TREES
- POWER/LIGHT POLE
- EXISTING CATCH BASIN
- NEW CATCH BASIN
- EXISTING MANHOLE
- NEW MANHOLE
- WATER VALVE
- VALVE
- HYDRANT
- EXISTING PAVEMENT
- NEW PAVEMENT OVERLAY
- NEW PAVEMENT
- EXIST. GRAVEL ROAD
- SOIL BORING
- RIGHT OF WAY
- PROPERTY LINE
- CITY LIMITS/TOWN LIMITS
- WETLAND LINE
- EXISTING DITCH
- NEW DITCH
- CLEARING LIMITS
- SILT FENCE

STRUCTURE	RIM EL.
CB-11	545.50
CB-12	546.90
CB-13	547.00
MH10	546.10±
CB-3	549.20



**NOTES:**

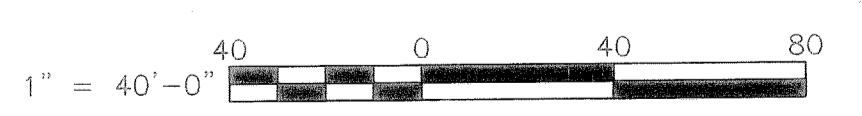
- EXISTING FACILITIES SHOWN LIGHT. NEW FACILITIES SHOWN HEAVY.
- CONNECT NEW FENCE TO EXISTING.
- BENCHMARK ELEV. 549.0 IS THE FIN. FLR. AT THE INFLUENT ROOM OF THE CONTROL WING OF THE SOLIDS HANDLING BUILDING.
- ALL AREAS PAVED UNDER PHASE I SHALL RECEIVE NEW PAVEMENT OVERLAY, FROM BRADLEY STREET PAVING LIMITS AT THE SOUTH, TO THE EAST PAVING LIMITS ON ACCESS ROADS LEADING TO ALLEN STREET, ALSO TO THE NORTH NEAR THE RECIRCULATION BUILDING AND OVERFLOW RETENTION TANK NOS. 5 AND 6.

**RECORD DRAWING**

THESE DRAWINGS HAVE BEEN REVISED TO REFLECT MAJOR CHANGES, IF ANY, WHICH OCCURRED DURING CONSTRUCTION. REVISIONS ARE BASED UPON INFORMATION SUPPLIED BY CONTRACTOR.

DATE: 7/1/99 PER: [Signature]

**PLAN**  
SCALE: 1" = 40'-0"



**NOTES:**

Underground facilities, structures, and utilities have been plotted from available surveys and records, and therefore their locations must be considered approximate only. There may be others, the existence of which is presently not known.

It is a violation of New York State Education Law for any person, unless acting under the direction of a licensed professional engineer, to alter an item on this drawing in any way. If an item is altered, the altering engineer shall affix to the item his/her seal and the notation "altered by" followed by his/her signature and the date of such alteration, and a specific description of the alteration.

ISSUE NO.	DATE	CHECKED	DESIGNER	APPROVED	DATE
3	FOR RECORD				
	JTJ	3/97			
2	FOR CONSTRUCTION				
	WDL/RWS	8/94	RWS		
1	FOR APPROVAL				
	KMD	6/94	KWB	RWS	OCH 6/28/94
	DRAWN	DATE	CHECKED	DESIGNER	APPROVED
	PROJECT SUPERVISOR	DEPARTMENT SUPERVISOR			
	ISSUE NO.	DRAWN	DATE	CHECKED	DESIGNER
					APPROVED
					DATE



**Stearns & Wheeler**  
ENVIRONMENTAL ENGINEERS & SCIENTISTS


CITY OF AUBURN, NEW YORK			
WATER POLLUTION CONTROL PLANT			
SITE PLAN SOUTH			
JOB NO.	2743	CONTRACT	79-5
SHEET			G-4

# Stearns & Wheler, LLC

Environmental Engineers and Scientists

One Remington Park Drive  
 Cazenovia, NY 13035  
 Tel: (315) 655-8161  
 Fax: (315) 655-4180  
[www.stearnswheler.com](http://www.stearnswheler.com)

## LETTER OF TRANSMITTAL

<b>To:</b> City of Auburn Memorial City Hall 24 South Street Auburn, NY 13021	<b>Date:</b> September 29, 2005	<b>File No.:</b> ----
	<b>Attn:</b> Mr. Frank DeOrio	
<b>Re:</b> Auburn WWTP		

We are sending you the following items:  Attached  Under separate cover via

- Shop Drawings     Prints     Plans     Samples     Specifications  
 Copy of Letter     Change Order     Invoices     Other

COPIES	DATE	NO.	DESCRIPTION
1	--	--	Soil Borings Phase I WWTP
1	--	--	Soil Borings Phase II WWTP

**These are transmitted:**

- |  |   |  |
|--|---|--|
| <input type="checkbox"/> For approval            | <input type="checkbox"/> Approved as submitted    | <input type="checkbox"/> Resubmit ____ copies for approval   |
| <input type="checkbox"/> For your use            | <input type="checkbox"/> Approved as noted        | <input type="checkbox"/> Submit ____ copies for distribution |
| <input checked="" type="checkbox"/> As requested | <input type="checkbox"/> Returned for corrections | <input type="checkbox"/> Return ____ corrected prints        |
| <input type="checkbox"/> For review and comment  | <input type="checkbox"/> For bids due             | <input type="checkbox"/> For review and remittance           |

**REMARKS:**

cc:

Signed: Bruce G. Munn  
 Bruce G. Munn, P.E., BCEE  
 Senior Associate

*If enclosures are not as noted, kindly notify us at once.*



# TEST BORING LOG

FISHER ROAD  
EAST SYRACUSE, N.Y. 13057

PROJECT Waste Water Treatment Plant  
LOCATION Auburn, New York

HOLE NO. SB-1

DATE STARTED 4/6/94 DATE COMPLETED 4/6/94

SURF. EL.

JOB NO. 93285

N — NO. OF BLOWS TO DRIVE SAMPLER 12" W/140# HAMMER FALLING  
30" — ASTM D-1586, STANDARD PENETRATION TEST

GROUND WATER DEPTH  
WHILE DRILLING Dry

C — NO. OF BLOWS TO DRIVE CASING 12" W/ # HAMMER FALLING  
% OR — % CORE RECOVERY

BEFORE CASING REMOVED Added Water To Core

AFTER CASING REMOVED

CASING TYPE - HOLLOW STEM AUGER TO 7.0',  
NX CORE TO 20.0'

SHEET 1 OF 1

COPY

DEPTH	SAMPLE DEPTH	SAMPLE NUMBER	C	SAMPLE DRIVE RECORD PER 6"	N	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
5.0	0.5'-	1		9		ASPHALT	0.2'
	2.0'			10/10	20	Brown moist medium dense fine to coarse GRAVEL and fine to coarse SAND	3.0'
10.0	5.0'-	2		3/3		Brown moist hard SILT and fine SAND, trace organics, trace clay	
	6.1'			50-.1'		Top of Rock	7.0'
	7.0'-	R-1	Rec	NX Core		Gray thin bedded LIMESTONE, moderately hard, slightly weathered, close fractured (2"-12")	
15.0	10.0'			3.0' 3-4MPF			
				100%			
	10.0'-	R-2	Rec				
20.0	15.0'			5.0' 2-3MPF			13.5'
				100%			
	RQD	10'-13.5'		- 89%		Black-gray very thinly interbedded LIMESTONE and SHALE, moderatly soft, highly weathered, very close fractures (<1")	
20.0	RQD	13.5'-15'		- 0%			
	15.0'-	R-3	Rec				
	20.0'			5.0' 2-3MPF			
				100%			
				RQD - 0%			
						Bottom of Boring	20.0'
						Note: Boring wad backfilled with cuttings to surface.	





# TEST BORING LOG

FISHER ROAD  
EAST SYRACUSE, N.Y. 13057

PROJECT Waste Water Treatment Plant  
LOCATION Auburn, New York

HOLE NO. MB-1

DATE STARTED 4/6/94 DATE COMPLETED 4/6/94

SURF. EL.

JOB NO. 93285

N — NO. OF BLOWS TO DRIVE SAMPLER 12" W/140# HAMMER FALLING  
30" — ASTM D-1586, STANDARD PENETRATION TEST

GROUND WATER DEPTH  
WHILE DRILLING 10.8'

C — NO. OF BLOWS TO DRIVE CASING 12" W/ # HAMMER FALLING  
"/OR — % CORE RECOVERY

BEFORE CASING  
REMOVED 9.0'

AFTER CASING  
REMOVED Hole caved @  
6.0' - Dry

CASING TYPE - HOLLOW STEM AUGER

SHEET 1 OF 1

DEPTH	SAMPLE DEPTH	SAMPLE NUMBER	C	SAMPLE DRIVE RECORD PER 6"	N	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
	1.0'-	1		7/11		ASPHALT	0.5'
5.0	3.0'			20/16	31	Brown moist hard to very stiff SILT, some fine to coarse gravel, little fine to coarse sand	4.0'
	3.0'-	2		2/10			
10.0	5.0'			8/2	18	Brown-black moist stiff SILT, trace clay, trace roots, trace gravel	5.0'
	5.0'-	3		4/6			
	7.0'			7/8	13		
	7.0'-	4		7/8			
10.0	9.0'			9/4	17	Brown moist stiff SILT, little clay, trace brick fragments, trace fine to coarse sand	7.5'
	9.0'-	5		8/9			
	11.0'			23/36	32		
15.0	11.0'-	6		11/13		Red-brown moist hard SILT, some clay	10.0'
	13.0'			10/10	23		
	13.0'-	7		15/13			
	15.0'			12/12	25		
						Brown wet medium dense fine SAND, little silt	14.5'
						Red-brown moist very stiff SILT, some clay	
						Bottom of Boring	15.0'
Note: Boring was backfilled to surface with cuttings.							





# TEST BORING LOG

FISHER ROAD  
EAST SYRACUSE, N.Y. 13057

PROJECT Waste Water Treatment Plant  
LOCATION Auburn, New York

HOLE NO. AT-2

SURF. EL.

DATE STARTED 4/1/94 DATE COMPLETED 4/1/94

JOB NO. 93285

N — NO. OF BLOWS TO DRIVE SAMPLER 12" W/140# HAMMER FALLING  
30" — ASTM D-1586, STANDARD PENETRATION TEST

GROUND WATER DEPTH  
WHILE DRILLING 15.0'

C — NO. OF BLOWS TO DRIVE CASING 12" W/ # HAMMER FALLING  
%/OR — % CORE RECOVERY

BEFORE CASING REMOVED Added Water To Core

AFTER CASING REMOVED

CASING TYPE - HOLLOW STEM AUGER TO 4.0', 4" FLUSH  
JOINT CASING TO 22.0', NX CORE TO 37.0'

SHEET 1 OF 1

DEPTH	SAMPLE DEPTH	SAMPLE NUMBER	C	SAMPLE DRIVE RECORD PER 6"	N	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
5.0	0.0'-	1		2/2		Brown moist soft SILT, some clay, trace roots, trace fine gravel	5.0'
	2.0'			2/8	4		
10.0	5.0'-	2		50-.2'		Brown moist hard SILT and fine SAND, trace fine gravel, trace clay, trace medium to coarse sand	10.0'
	5.2'						
15.0	10.0'-	3		50-.4'			15.0'
	10.4'						
15.0	WL						
20.0	15.0'-	4		50-.4'		Brown wet hard SILT and fine SAND	20.0'
	15.4'						
25.0	20.0'-	5		75		Gray thin bedded LIMESTONE, slightly weathered, hard, moderately close fractures (4")	25.0'
	20.5'						
	22.0'-	R-1	Rec	NX Core			
	27.0'		4.4'				
30.0				89%		Top of Rock	30.0'
				RQD - 50%			
	27.0'-	R-2	Rec				
	32.0'		5.0'				
35.0				100%		Gray thin bedded LIMESTONE, highly weathered, hard, very close fractured (4")	35.0'
				RQD - 70%			
	32.0'-	R-3	Rec				
	37.0'		3.9'				
40.0				78%		Black soft LIMESTONE, highly weathered	40.0'
				RQD - 7%			
						Bottom of Boring	37.0'

# TEST BORING LOG

 FISHER ROAD  
 EAST SYRACUSE, N.Y. 13057

PROJECT Waste Water Treatment Plant

LOCATION Auburn, New York

DATE STARTED 4/5/94

DATE COMPLETED 4/5/94

HOLE NO. AT-3

SURF. EL.

JOB NO. 93285

 N — NO. OF BLOWS TO DRIVE SAMPLER 12" W/140# HAMMER FALLING  
 30" — ASTM D-1586, STANDARD PENETRATION TEST

 C — NO. OF BLOWS TO DRIVE CASING 12" W/ # HAMMER FALLING  
 "/OR — % CORE RECOVERY

 GROUND WATER DEPTH  
 WHILE DRILLING Dry

 BEFORE CASING REMOVED Added Water  
 To Core

 AFTER CASING  
 REMOVED

 CASING TYPE - HOLLOW STEM AUGER TO 12.0', 4" FLUSH  
 JOINT CASING TO 13.5', NX CORE TO 40.0'

SHEET 1 OF 1

DEPTH	SAMPLE DEPTH	SAMPLE NUMBER	C	SAMPLE DRIVE RECORD PER 6"	N	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
5.0	0.0'-	1		2/4		Brown moist stiff SILT and fine SAND, trace fine to medium gravel	
	2.0'			10/9	14		
10.0	5.0'-	2		14/50-.4'		Gray dry hard SILT, trace fine to coarse sand, trace fine gravel	5.5'
	5.9'						
15.0	10.0'-	3		57		Top of Rock Gray thin bedded LIMESTONE, slightly weathered, hard, moderately close fractured (2"-12")	12.5'
	10.5'						
	13.5'-	R-1	Rec	NX Core			
20.0	18.5'			4.8'			
				96%			
				RQD - 90%			
25.0	18.5'-	R-2	Rec			Note: Soil filled void from 24.5' to 25.0'.	
	23.5'			4.0'			
				80%			
30.0				RQD - 70%			
	23.5'-	R-3	Rec				
	28.5'			5.0'			
35.0				100%		Note: Soil filled void from 33.7' to 35.2' and 37.8' to 38.2'.	
				RQD - 82%			
	28.5'-	R-4	Rec				
40.0	33.5'			2.8'		Gray thin bedded LIMESTONE, highly weathered (cobble sized pieces), hard, close fractured (1"-4")	29.0'
				56%			
				RQD - 10%			
40.0	33.5'-	R-5	Rec			Gray thin bedded LIMESTONE, slightly weathered, hard, moderately close fractured (1"-4")	33.5'
	38.5'			4.2'			
				84%			
40.0				RQD - 47%			
	38.5'-	R-6	Rec				
	40.0'			0'			

Bottom of Boring

40.0'



# TEST BORING LOG

FISHER ROAD  
EAST SYRACUSE, N.Y. 13057

PROJECT Waste Water Treatment Plant  
LOCATION Auburn, New York

HOLE NO. AT-4

DATE STARTED 4/11/94 DATE COMPLETED 4/12/94

SURF. EL.

JOB NO. 93285

N — NO. OF BLOWS TO DRIVE SAMPLER 12" W/140# HAMMER FALLING  
30" — ASTM D-1586, STANDARD PENETRATION TEST

GROUND WATER DEPTH  
WHILE DRILLING 5.0'

C — NO. OF BLOWS TO DRIVE CASING 12" W/ # HAMMER FALLING  
%R — % CORE RECOVERY

BEFORE CASING Added Water  
REMOVED To Core

AFTER CASING  
REMOVED

CASING TYPE - HOLLOW STEM AUGER TO 33.0', NX CORE  
TO 40.0'

SHEET 1 OF 1

DEPTH	SAMPLE DEPTH	SAMPLE NUMBER	C	SAMPLE DRIVE RECORD PER 6"	N	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
5.0' ▼	0.0'-1.5'	1		1/2		Brown moist medium stiff SILT, some clay, trace fine sand	5.0'
				2	4		
10.0	5.0'-6.5'	2		4/6		Brown wet very stiff SILT, little clay, little fine to coarse sand, little fine to coarse gravel	10.0'
				10	16		
15.0	10.0'-10.9'	3		12/50-.4'		Brown moist hard SILT, some fine sand, little fine to coarse gravel, trace medium to coarse sand, few cobbles	15.0'
20.0	15.0'-16.2'	4		32/46		Note: Advanced first attempt to 11.0'. Refusal on boulder, offset 5.0' and continued sampling at 10.0'.	20.0'
				50-.2'			
25.0	20.0'-20.5'	5		58			25.0'
30.0	25.0'-25.5'	6		61			30.0'
35.0	30.0'-30.8'	7		49/50-.3'		Top of Rock Gray thin bedded LIMESTONE, hard, moderately close fractured (1"-4")	33.0'
40.0	33.0'-35.0'	R-1	Rec	NX Core		Note: Soil filled void from 34.0' to 34.4'.	40.0'
			1.6'	4-5 MPF			
			80%	RQD-80%			
	35.0'-40.0'	R-2	Rec				
			4.8'	5-6 MPF			
			96%				
			RQD	- 47%			

Bottom of Boring

40.0'





# TEST BORING LOG

FISHER ROAD  
EAST SYRACUSE, N.Y. 13057

PROJECT Waste Water Treatment Plant  
 LOCATION Auburn, New York  
 DATE STARTED 4/12/94 DATE COMPLETED 4/12/94

HOLE NO. AT-5  
 SURF. EL.  
 JOB NO. 93285  
 GROUND WATER DEPTH WHILE DRILLING 15.0'  
 BEFORE CASING REMOVED Added Water To Core  
 AFTER CASING REMOVED

N — NO. OF BLOWS TO DRIVE SAMPLER 12" W/140# HAMMER FALLING  
 30" — ASTM D-1586, STANDARD PENETRATION TEST

C — NO. OF BLOWS TO DRIVE CASING 12" W/ # HAMMER FALLING  
 "/OR — % CORE RECOVERY

CASING TYPE - HOLLOW STEM AUGER TO 37.0', NX CORE TO SHEET 1 OF 1  
 40.0'

DEPTH	SAMPLE DEPTH	SAMPLE NUMBER	C	SAMPLE DRIVE RECORD PER 6"	N	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH	
5.0	0.0'-1.5'	1		1/1 3	4	Brown moist soft SILT, little clay, trace roots	4.0'	
10.0	5.0'-6.5'	2		5/17 31	48	Gray-brown moist hard SILT, some fine sand, little fine to coarse gravel, trace medium to coarse sand		
15.0	10.0'-11.5'	3		24/36 31	67			
15.0	WL							
20.0	15.0'-15.4'	4		50-.4'			20.0'	
25.0	20.0'-20.6'	5		46/50-.1'		Brown moist hard SILT, little fine to coarse gravel, trace fine to coarse sand		
30.0	25.0'-25.1'	6	No Rec	50-.1'				
35.0	30.0'-30.2'	7		75-.2'				
40.0	35.0'-35.3'	8		75-.3'		Top of Rock Gray thin bedded LIMESTONE, hard, moderately close fractured (1"-4")	37.0'	
	37.0'-40.0'	R-1	Rec	NX Core				
				3.0'	4-5 MPF			
				100%	RQD-72%			

Bottom of Boring

40.0'



# TEST BORING LOG

FISHER ROAD  
EAST SYRACUSE, N.Y. 13057

PROJECT Waste Water Treatment Plant  
LOCATION Auburn, New York  
DATE STARTED 4/13/94 DATE COMPLETED 4/14/94

HOLE NO. FST-1

SURF. EL.

JOB NO. 93285

N — NO. OF BLOWS TO DRIVE SAMPLER 12" W/140# HAMMER FALLING  
30" — ASTM D-1586, STANDARD PENETRATION TEST

GROUND WATER DEPTH  
WHILE DRILLING 5.0'

C — NO. OF BLOWS TO DRIVE CASING 12" W/ # HAMMER FALLING  
"/OR — % CORE RECOVERY

BEFORE CASING REMOVED Added Water To Core

AFTER CASING REMOVED

CASING TYPE - HOLLOW STEM AUGER TO 15.0', NX CORE TO 45.0' SHEET 1 OF 2

DEPTH	SAMPLE DEPTH	SAMPLE NUMBER	C	SAMPLE DRIVE RECORD PER 6"	N	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
5.0	0.0'-	1		2/2		Brown moist medium stiff SILT and fine SAND, trace roots	5.0'
	1.5'			3	5		
10.0	5.0'-	2		4/6		Brown-gray wet medium dense fine SAND, some silt	7.0'
	6.5'			13	19		
15.0	10.0'-	3		32/49		Gray moist hard SILT, little fine to coarse gravel, little fine sand, trace medium to coarse sand	13.5'
	11.2'			50-.2'			
20.0	14.0'-	4		50-.1'		Gray hard very dense weathered LIMESTONE Top of Rock	15.0'
	14.1'						
25.0	15.0'-	R-1	Rec	NX Core		Gray-black thin bedded LIMESTONE, slightly weathered, moderately hard, close fractured (1"-4")	
	20.0'			5.0' 5-6 MPF			
30.0	20.0'-	R-2	Rec				
	25.0'			4.85' 5-6 MPF			
35.0	20.0'-			100%			
	25.0'			RQD - 55%			
40.0	25.0'-	R-3	Rec				
	30.0'			5.1' 5-6 MPF			
45.0	30.0'-	R-4	Rec				
	35.0'			5.0' 5-6 MPF			
45.0	30.0'-			100%			
	35.0'			RQD - 73%			
45.0	35.0'-	R-5	Rec			Black LIMESTONE, very soft, highly weathered, about 75% of recovery is decomposed rock-silt, clay and limestone fragments	36.0'
	40.0'			4.1' 2-5 MPF			
45.0	35.0'-			82%			
	40.0'			RQD - 0%			





# TEST BORING LOG

FISHER ROAD  
EAST SYRACUSE, N.Y. 13057

PROJECT Waste Water Treatment Plant  
LOCATION Auburn, New York

HOLE NO. FST-2

DATE STARTED 4/13/94 DATE COMPLETED 4/13/94

SURF. EL.

JOB NO. 93285

N — NO. OF BLOWS TO DRIVE SAMPLER 12" W/140# HAMMER FALLING  
30" — ASTM D-1586, STANDARD PENETRATION TEST

GROUND WATER DEPTH  
WHILE DRILLING 3.0'

C — NO. OF BLOWS TO DRIVE CASING 12" W/  
" / OR — % CORE RECOVERY # HAMMER FALLING

BEFORE CASING Added Water  
REMOVED To Core

AFTER CASING  
REMOVED

CASING TYPE - HOLLOW STEM AUGER TO 15.5', NX CORE  
TO 45.0'

SHEET 1 OF 2

DEPTH	SAMPLE DEPTH	SAMPLE NUMBER	C	SAMPLE DRIVE RECORD PER 6"	N	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
WL ▼	0.0'-	1		WH/2		Brown moist soft SILT and fine SAND	3.0'
	1.5'			2	4		
5.0	5.0'-	2		4/6		Brown wet medium dense fine to coarse GRAVEL, little silt, little fine to coarse sand	8.0'
	6.5'			10	16		
10.0	10.0'-	3		10/12		Brown-red moist very stiff CLAY, some silt	14.5'
	11.5'			16	28		
15.0	15.0'-	4		68		Gray dry hard SILT, little weathered shale, little clay Top of Rock	15.5'
	15.5'						
20.0	15.5'-	R-1	Rec	NX Core		Black very soft highly weathered LIMESTONE, Much of core is decomposed into silt, clay and fine gravel sized limestone fragments	
	20.0'			2.8' 3-4MPF			
25.0				93%			
				RQD - 0%			
25.0	20.0'-	R-2	Rec				
	25.0'			4.2' 3-4MPF			
30.0				84%			
				RQD - 0%			
30.0	25.0'-	R-3	Rec				
	30.0'			1.2' 3-4 MPF			
35.0				24%			
				RQD - 0%			
35.0	30.0'-	R-4	No				
	35.0'		Rec				
40.0	35.0'-	R-5	Rec			Gray very thinly bedded LIMESTONE, highly weathered moderately soft, very close fractured (<1")	35.0'
	40.0'			4.6' 2-3MPF			
40.0				92%			
				RQD - 0%			









# TEST BORING LOG

FISHER ROAD  
EAST SYRACUSE, N.Y. 13057

PROJECT Waste Water Treatment Plant  
 LOCATION Auburn, New York  
 DATE STARTED 4/7/94 DATE COMPLETED 4/8/94  
 N — NO. OF BLOWS TO DRIVE SAMPLER 12" W/140# HAMMER FALLING  
 30" — ASTM D-1586, STANDARD PENETRATION TEST  
 C — NO. OF BLOWS TO DRIVE CASING 12" W/ # HAMMER FALLING  
 "/OR — % CORE RECOVERY

HOLE NO. FST-4  
 SURF. EL.  
 JOB NO. 93285  
 GROUND WATER DEPTH WHILE DRILLING Dry  
 BEFORE CASING REMOVED Added Water To Core  
 AFTER CASING REMOVED
















CASING TYPE - HOLLOW STEM AUGER TO 16.0', NX CORE TO 46.0' SHEET 1 OF 2

DEPTH	SAMPLE DEPTH	SAMPLE NUMBER	C	SAMPLE DRIVE RECORD PER 6"	N	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
5.0	1.0'-	1		5/15		Brown moist hard SILT and fine to coarse SAND, few boulders	5.0'
	2.5'			31	46		
10.0	5.0'-	2		3/3		Brown moist loose fine SAND and SILT, little brick	10.5'
	6.5'			4	7		
15.0	10.0'-	3		11/8		Gray moist medium dense fine SAND and SILT, trace fine to medium gravel	15.0'
	11.5'			8	16		
20.0	15.0'-	4		31/68		Gray dry hard SILT and fine GRAVEL Top of Rock Black moist SILT and CLAY with weathered limestone fragments	17.5'
	16.0'						
	16.0'-	R-1	Rec	NX Core			
	21.0'			3.9' 3-4 MPF			
25.0				78%		Black-gray very thinly interbedded LIMESTONE and SHALE, weathered, moderately soft, close fractures (1"-4")	21.5'
				RQD-8%			
	21.0'-	R-2	Rec				
	26.0'			5.0' 4-5 MPF			
30.0				100%		Gray thin bedded LIMESTONE, slightly weathered, moderately hard, moderately close fractures (2"-12")	28.5'
				RQD-75%			
	26.0'-	R-3	Rec				
	31.0'			4.9' 4-5 MPF			
35.0				98%		Note: RQD from 26'-28.5' = 100% RQD from 28.5'-31' = 0%	31.0'
	31.0'-	R-4	Rec				
	36.0'			5.1' 4-5 MPF			
40.0				100%		Gray thin bedded LIMESTONE, slightly weathered, moderately hard, moderately close fractured (2"-1 2")	
				RQD-70%			
	36.0'-	R-5	Rec				
	41.0'			4.5' 4-5 MPF			
				90%			
				RQD-65%			





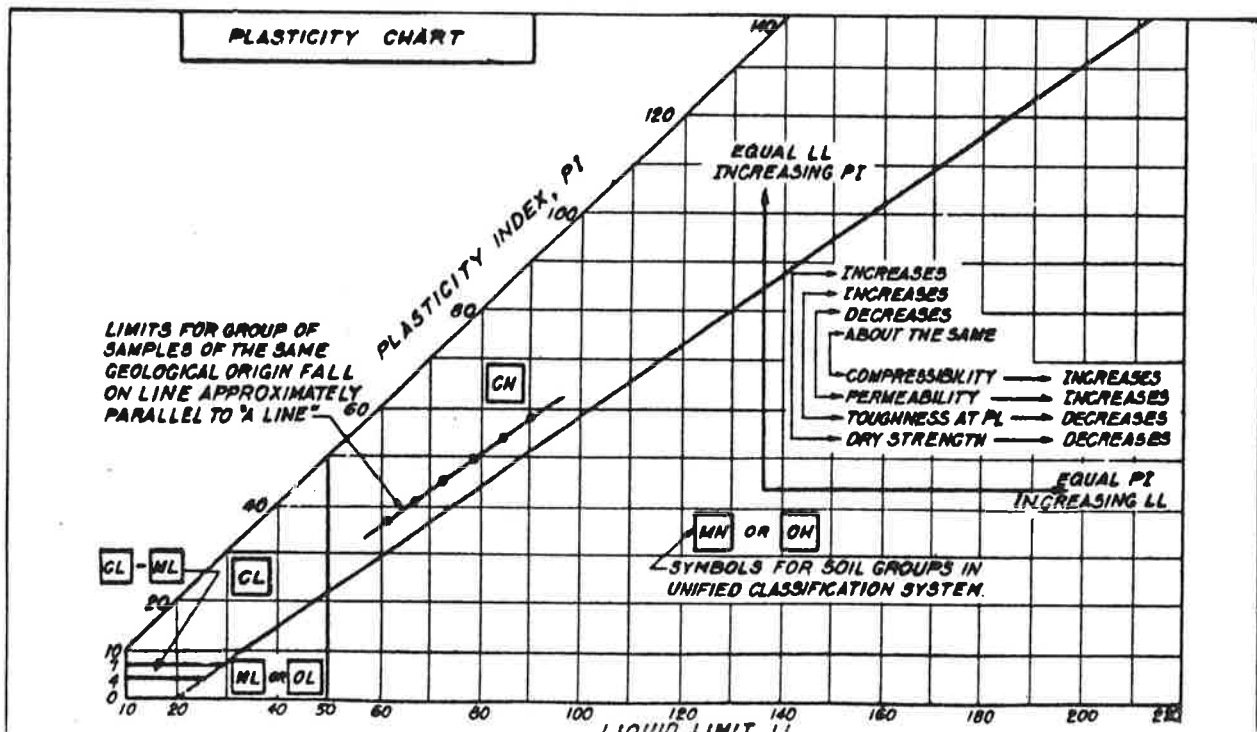
# UNIFIED CLASSIFICATION SYSTEM

MAJOR DIVISIONS		GROUP SYMBOLS	TYPICAL NAMES
<b>COARSE GRAINED SOILS</b> (More than 50% of material is LARGER than No. 200 sieve size)	<b>GRAVELS</b> (More than 50% of coarse fraction is LARGER than the No. 4 sieve size)	<b>CLEAN GRAVELS</b> (Little or no fines)	 GW Well graded gravels, gravel - sand mixtures, little or no fines.
		 GP Poorly graded gravels or gravel - sand mixtures, little or no fines.	
		<b>GRAVELS WITH FINES</b> (Appreciable amt. of fines)	 GM Silty gravels, gravel - sand - silt mixtures.
		 GC Clayey gravels, gravel - sand - clay mixtures.	
	<b>SANDS</b> (More than 50% of coarse fraction is SMALLER than the No. 4 sieve size)	<b>CLEAN SANDS</b> (Little or no fines)	 SW Well graded sands, gravelly sands, little or no fines.
		 SP Poorly graded sands or gravelly sands, little or no fines.	
		<b>SANDS WITH FINES</b> (Appreciable amt. of fines)	 SM Silty sands, sand-silt mixtures.
		 SC Clayey sands, sand-clay mixtures.	
		<b>SILTS AND CLAYS</b> (Liquid limit LESS than 50)	 ML Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
			 CL Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
 OL Organic silts and organic silty clays of low plasticity.			
<b>SILTS AND CLAYS</b> (Liquid limit GREATER than 50)	 MH Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.		
	 CH Inorganic clays of high plasticity, fat clays.		
 OH Organic clays of medium to high plasticity, organic silts.			
<b>HIGHLY ORGANIC SOILS</b>		 Pt Peat and other highly organic soils.	

**BOUNDARY CLASSIFICATIONS:** Soils possessing characteristics of two groups are designated by combinations of group symbols.

## PARTICLE SIZE LIMITS

SILT OR CLAY	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		
	No. 200	No. 40	No. 10	No. 4	1/2 in.	3 in.	(12 in.)
	U.S. STANDARD SIEVE SIZE						



## GENERAL NOTES

1. Soil boring logs, notes and other data shown are the results of personal observations and interpretations made by Parratt-Wolff, Inc.

Exploration records prepared by our drilling foreman in the field form the basis of all logs, and samples of subsurface materials retained by the driller are observed by technical personnel in our laboratory to check field classifications.

2. Explanation of the classifications and terms:

a. Bedrock — Natural solid mineral matter occurring in great thickness and extent in its natural location. It is classified according to geological type and structure (joints, bedding, etc.) and described as solid, weathered, broken or fragmented depending on its condition.

b. Soils — Sediments or other unconsolidated accumulations of particles produced by the physical and chemical disintegration of rocks and which may or may not contain organic matter.

### PENETRATION RESISTANCE

#### COHESIONLESS SOILS

Blows Per Ft.	Relative Density
0 to 4	Very Loose
4 to 10	Loose
10 to 30	Medium Dense
30 to 50	Dense
Over 50	Very Dense

#### COHESIVE SOILS

Blows Per Ft.	Consistency
0 to 2	Very Soft
2 to 4	Soft
4 to 8	Medium Stiff
8 to 15	Stiff
15 to 30	Very Stiff
Over 30	Hard

#### Size Component Terms

Boulder .....	Larger than 8 inches
Cobble .....	8 inches to 3 inches
Gravel — coarse .....	3 inches to 1 inch
— medium .....	1 inch to 3/8 inch
— fine .....	3/8 inch to 4.76 mm
Sand — coarse .....	4.76 mm to 2.00 mm (#10 sieve)
— medium .....	2.00 mm to 0.42 mm (#40 sieve)
— fine .....	0.42 mm to 0.074 mm (#200 sieve)
Silt and Clay .....	Finer than 0.074 mm

#### Proportion By Weight

Major component is shown with all letters capitalized.

Minor component percentage terms of total sample are:

and . . . 35 to 50 percent  
 some . . 20 to 35 percent  
 little . . 10 to 20 percent  
 trace . . 1 to 10 percent

c. Gradation Terms — The terms coarse, medium and fine are used to describe gradation of Sand and Gravel.

d. The terms used to describe the various soil components and proportions are arrived at by visual estimates of the recovered soil samples. Other terms are used when the recovered samples are not truly representative of the natural materials, such as soil containing numerous cobbles and boulders which cannot be sampled, thinly stratified soils, organic soils, and fills.

e. Ground water — The measurement was made during exploration work or immediately after completion, unless otherwise noted. The depth recorded is influenced by exploration methods, soil type and weather conditions during exploration. Where no water was observed it is so indicated. It is anticipated that the ground water will rise during periods of wet weather. In addition, perched ground water above the water levels indicated (or above the bottom of the hole where no ground water is indicated) may be encountered at changes in soil strata or top of rock.

# A BRIEF DESCRIPTION OF THE UNIFIED SOIL SYSTEM

The Unified Classification System is an engineering soil classification that is an outgrowth of the Air-Field classification developed by Casagrande.

The system incorporates the textural characteristics of a soil into the engineering classification. All soils are classified into fifteen groups, each group being designated by two letters. These letters are as follows: G—gravel, S—sand, M—Non plastic or low plasticity fines, C—plastic fines, Pt—peat, humus and swamp soils, O—organic, W—well graded, P—poorly graded, L—low liquid limit, H—high liquid limit.

## **GW and SW Groups**

These groups comprise well graded gravelly and sandy soils which contain less than 5% of non plastic fines passing a #200 sieve. Fines which are present must not noticeably change the strength characteristics of the coarse grain fraction and must not interfere with its free draining characteristics. In areas subject to frost action the material should not contain more than about 3% of soil grains smaller than .02 millimeters in size.

## **GP and SP Groups**

These groups are poorly graded gravels and sands containing less than 5% non plastic fines. They may consist of uniform gravels, uniform sands, or non uniform mixtures of very coarse material and very fine sand with intermediate sizes lacking. Materials of this latter type are sometimes referred to as skip graded, cap graded, or step graded.

## **GM and SM Groups**

In general, these groups include gravels or sands which contain more than 12% of fines having little or no plasticity. The plasticity index and liquid limit of a soil in either of these groups plot below the "A" line on a plasticity chart. Gradation is not important and both low grade and poorly graded materials are included. Some sands and gravels in these groups may have a binder composed of natural cementing agents so proportioned that the mixture shows negligible swelling or shrinkage. Thus, the dry strength is provided by a small amount of soil binder or dry cementation of calcareous materials or iron oxide. A fine fraction of non cemented materials may be composed of silts or rock flour types having little or no plasticity, and the mixture will exhibit no dry strength.

## **GC and SC Groups**

These groups comprise gravelly or sandy soils with more than 12% of fines which exhibit either low or high plasticity. The plasticity index and liquid limit of a soil in either of these groups plot above the "A" line on the plasticity chart. Gradation of these materials is not important. Plasticity of the binder fraction has more influence on the behavior of the soils than does the variation in gradation. A fine fraction is generally composed of clays.

## **ML and MH Groups**

These groups include predominantly silty materials and micaceous or diatomaceous soils. An arbitrary division between the two groups has been established with a liquid limit of 50. Soils in these groups are sandy silts, clayey silts or organic silts with relatively low plasticity. Also included are loessial soils and rock flours. Micaceous and diatomaceous soils generally fall within the MH group, but may extend into the ML group when their liquid limit is less than 50. The same is true for certain types of kaolin clays and some illite clays having relatively low plasticity.

## **CL and CH Groups**

The CL and CH groups embrace clays with low and high liquid limits respectively. They are primarily inorganic clays. Low plasticity clays are classified as CL and are usually lean clays, sandy clays, and silty clays. The medium plasticity and high plasticity clays are classified as CH. These include fat clays, gumbo clays, certain volcanic clays and bentonite.

## **OL and OH Groups**

The soils in these groups are characterized by the presence of organic matter including organic silts and clays. They have a plasticity range that corresponds with the ML and MH groups.

## **Pt Group**

Highly organic soils which are very compressible have undesirable construction characteristics and are classified in one group with the symbol Pt. Peat, humus and swamp soils with a highly organic texture are typical of the group. Particles of leaves, grass, branches of bushes and other fibrous vegetable matter are common components of these soils.

## **Borderline Classification**

Soils in the GW, SW, GP and SP groups are non plastic materials having less than 5% passing the #200 sieve, while GM, SM, GC, and SC soils have more than 12% passing the #200 sieve. When these coarse grain materials contain between 5% and 12% of fines they are classified as borderline, and are designated by the dual symbol such as GW-GM. Similarly coarse grain soils which have less than 5% passing the #200 sieve, but which are not free draining or in which the fine fraction exhibits plasticity are also classed as borderline and are given a dual symbol. Still another type of borderline classification occurs when a liquid limit of a fine grain soil is less than 29 and the plasticity index lies in the range of four to seven. These limits are indicated by the shaded area on the plasticity chart.

## **Silty and Clayey**

In the Unified System, these terms are used to describe soils whose Atterberg limits plot below and above the "A" line on the plasticity chart. The adjectives silty and clayey are used to describe soils whose limits plot close to the "A" line.

# SOIL SAMPLING - METHODS

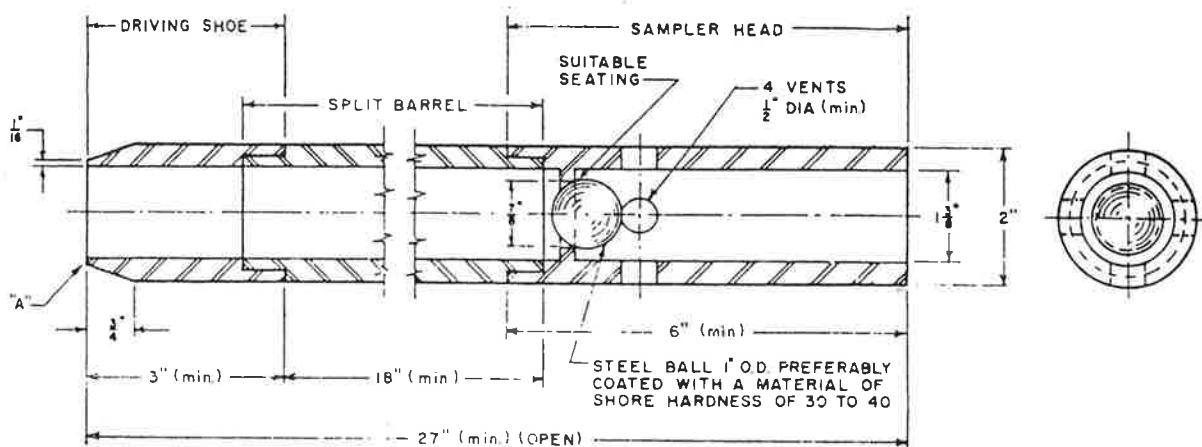


Table of Metric Equivalents.

In.	Mm	Cm	In.	Mm	Cm
1/16 (16 gage)	1.5	...	2	...	5.08
1/2	12.7	...	3	...	7.62
3/4	19.0	1.90	6	...	15.24
7/8	22.2	2.22	18	...	45.72
1-3/8	34.9	3.49	27	68.58	
1-1/2	38.1	3.81			

Fig. 1 — Standard Split Barrel Sampler Assembly

Note 1 — Split barrel may be 1-1/2 in. inside diameter provided it contains a liner of 16-gage wall thickness.

Note 2 — Core retainers in the driving shoe to prevent loss of sample are permitted.

Note 3 — The corners at A may be slightly rounded.

### 3. Procedure

3.1 Clear out the hole to sampling elevation using equipment that will ensure that the material to be sampled is not disturbed by the operation. In saturated sands and silts withdraw the drill bit slowly to prevent loosening of the soil around the hole. Maintain the water level in the hole at or above ground water level.

3.2 In no case shall a bottom-discharge bit be permitted. (Side-discharge bits are permissible.) The process of jetting through an open-tube sampler and then sampling when the desired depth is reached shall not be permitted. Where casing is used, it may not be driven below sampling elevation. Record any loss of circulation or excess pressure in drilling fluid during advancing of holes.

3.3 With the sampler resting on the bottom of the hole, drive the sampler with blows from the 140-lb (63.5 kg) hammer falling 30 in. (0.76 m) until either 18 in. (0.45 m) have been penetrated or 100 blows have been applied.

3.4 Repeat this operation at intervals not longer than 5 ft (1.5 m) in homogeneous strata and at every change of strata.

3.5 Record the number of blows required to effect each 6 in. (0.15 m) of penetration or fractions thereof. The first 6 in. (0.15 m) is considered to be a seating drive. The number of blows required for the second and third 6 in. (0.15 m) of penetration added is termed the penetration resistance, *N*. If the sampler is driven less than 18 in. (0.45 m), the penetration resistance is that for the last 1 ft (0.30 m) of penetration (if less than 1 ft (0.30 m) is penetrated, the logs shall state the number of blows and the fraction of 1 ft (0.30 m) penetrated).

3.6 Bring the sampler to the surface and open. Describe carefully typical samples of soils recovered as to composition, structure, consistency, color, and condition; then put into jars without ramming. Seal them with wax or hermetically seal to prevent evaporation of the soil moisture. Affix labels to the jar

or make notations on the covers (or both) bearing job designation, boring number, sample number, depth penetration record, and length of recovery. Protect samples against extreme temperature changes.

### 4. Report

4.1 Data obtained in borings shall be recorded in the field and shall include the following:

- 4.1.1 Name and location of job,
- 4.1.2 Date of boring — start, finish,
- 4.1.3 Boring number and coordinate, if available,
- 4.1.4 Surface elevation, if available,
- 4.1.5 Sample number and depth,
- 4.1.6 Method of advancing sampler, penetration and recovery lengths,
- 4.1.7 Type and size of sampler,
- 4.1.8 Description of soil,
- 4.1.9 Thickness of layer,
- 4.1.10 Depth to water surface; to loss of water; to artesian head; time at which reading was made,
- 4.1.11 Type and make of machine,
- 4.1.12 Size of casing, depth of cased hole,
- 4.1.13 Number of blows per 6 in. (0.15 m)
- 4.1.14 Names of crewmen, and
- 4.1.15 Weather, remarks.

<sup>1</sup>Under the standardization procedure of the Society, this method is under the jurisdiction of the ASTM Committee D-18 on Soil and Rock for Engineering Purposes. A list of members may be found in the ASTM Year Book.

Current edition accepted October 20, 1967. Originally issued, 1958. Replaces D-1586-64T.

AUBURN WWTP  
PHASE II

~~BGM~~  
~~ES~~  
~~AMH~~

2793.11



**TEST BORINGS  
WASTE WATER TREATMENT PLANT  
AUBURN, NEW YORK**



FISHER RD., EAST SYRACUSE, N.Y. 13057  
TELEPHONE AREA CODE 315/437-1429  
800/782-7260 FAX 315/437-1770

April 22, 1994

Mr. Brad Smith  
Stearns and Wheler  
One Remington Park Drive  
Cazenovia, New York 13035

RE: 93285  
Waste Water Treatment Plant  
Auburn, New York  
Job #2743

Dear Brad:

Enclosed are the logs for eleven test borings made for you for the above project.

Soil samples and rock cores for these borings have already been delivered to your office under separate cover.

The borings were made at points located by you and were drilled in accordance with your instructions.

Note that at all locations cored, the driller reported that he did not lose circulation water.

Thank you for this opportunity to work with you.

Very truly yours,

PARRATT - WOLFF, INC.

A handwritten signature in cursive script that reads 'William H. Morrow'. The signature is written in dark ink and is positioned above the typed name.

William H. Morrow  
WHM/blo  
encs:

## Split barrel sampling

The following excerpts are from "Standard Method for penetration test and split-barrel sampling of soils."<sup>1</sup> (ASTM designation: D-1586-67 AASHO Designation: T-206-70.)

### 1. Scope

1.1 This method describes a procedure for using a split-barrel sampler to obtain representative samples of soil for identification purposes and other laboratory tests, and to obtain a measure of the resistance of the soil to penetration of the sampler.

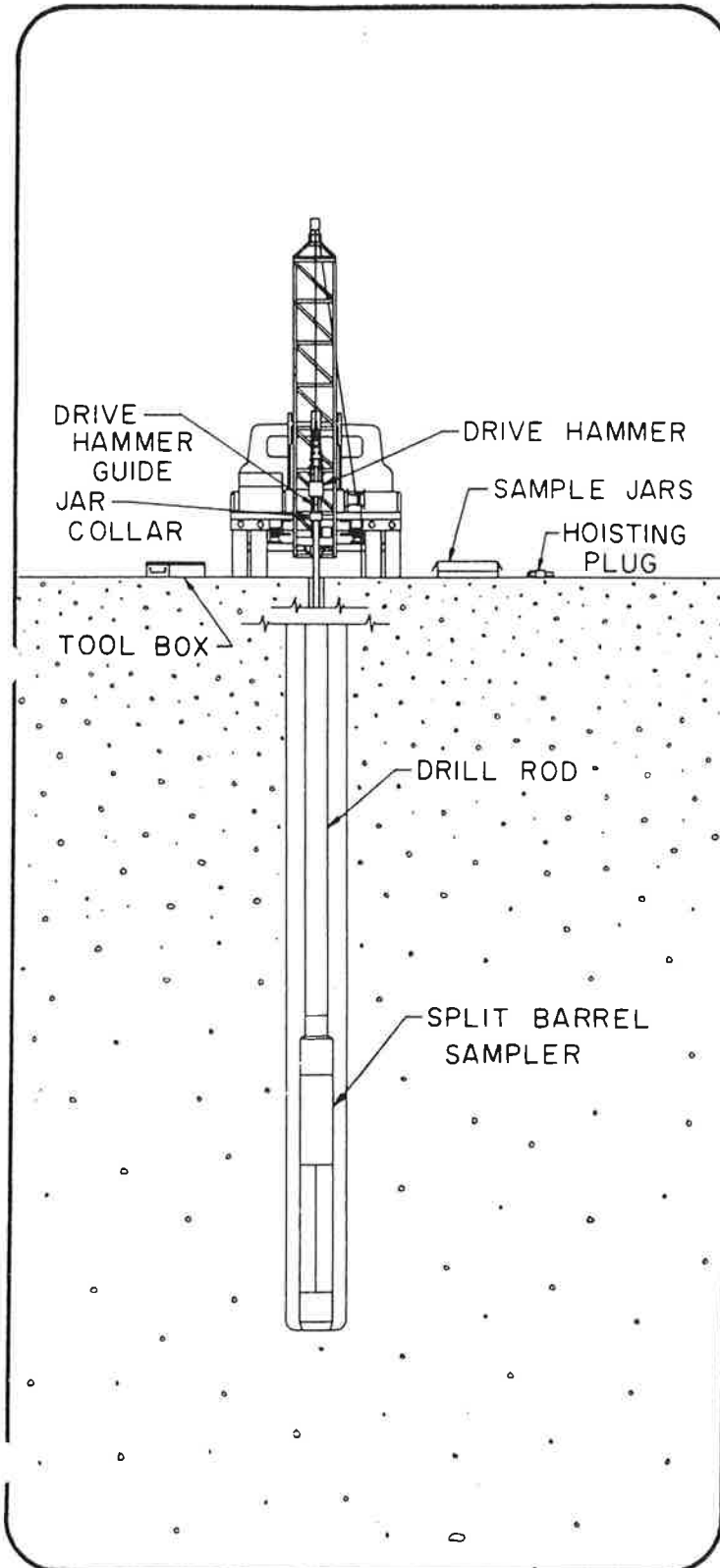
### 2. Apparatus

2.1 Drilling Equipment — Any drilling equipment shall be acceptable that provides a reasonably clean hole before insertion of the sampler to ensure that the penetration test is performed on undisturbed soil, and that will permit the driving of the sampler to obtain the sample and penetration record in accordance with the procedure described in 3. Procedure. To avoid "whips" under the blows of the hammer, it is recommended that the drill rod have stiffness equal to or greater than the A-rod. An "A" rod is a hollow drill rod or "steel" having an outside diameter of 1-5/8 in. or 41.2 mm and an inside diameter of 1-1/8 in. or 28.5 mm, through which the rotary motion of drilling is transferred from the drilling motor to the cutting bit. A stiffer drill rod is suggested for holes deeper than 50 ft (15m). The hole shall be limited in diameter to between 2-1/4 and 6 in. (57.2 and 152mm).

2.2 Split-Barrel Sampler — The sampler shall be constructed with the dimensions indicated (in Fig. 1.) The drive shoe shall be of hardened steel and shall be replaced or repaired when it becomes dented or distorted. The coupling head shall have four 1/2-in. (12.7-mm) (minimum diameter) vent ports and shall contain a ball check valve. If sizes other than the 2-in. (50.8-mm) sampler are permitted, the size shall be conspicuously noted on all penetration records.

2.3 Drive Weight Assembly — The assembly shall consist of a 140-lb (63.5-kg) weight, a driving head, and a guide permitting a free fall of 30 in. (0.76 m). Special precautions shall be taken to ensure that the energy of the falling weight is not reduced by friction between the drive weight and the guides.

2.4 Accessory Equipment — Labels, data sheets, sample jars, paraffin, and other necessary supplies should accompany the sampling equipment.







# TEST BORING LOG

FISHER ROAD  
EAST SYRACUSE, N.Y. 13057

PROJECT Waste Water Treatment Plant  
LOCATION Auburn, New York

HOLE NO. SB-1

DATE STARTED 4/6/94 DATE COMPLETED 4/6/94

SURF. EL.

JOB NO. 93285

N — NO. OF BLOWS TO DRIVE SAMPLER 12" W/140# HAMMER FALLING  
30" — ASTM D-1586, STANDARD PENETRATION TEST

GROUND WATER DEPTH  
WHILE DRILLING Dry

C — NO. OF BLOWS TO DRIVE CASING 12" W/ # HAMMER FALLING  
"/OR — % CORE RECOVERY

BEFORE CASING REMOVED Added Water To Core

AFTER CASING REMOVED

CASING TYPE - HOLLOW STEM AUGER TO 7.0',  
NX CORE TO 20.0'

SHEET 1 OF 1

DEPTH	SAMPLE DEPTH	SAMPLE NUMBER	C	SAMPLE DRIVE RECORD PER 6"	N	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
	0.5'-	1		9		ASPHALT	0.2'
	2.0'			10/10	20	Brown moist medium dense fine to coarse GRAVEL and fine to coarse SAND	
5.0							3.0'
	5.0'-	2		3/3		Brown moist hard SILT and fine SAND, trace organics, trace clay Top of Rock	7.0'
	6.1'			50-.1'			
	7.0'-	R-1	Rec	NX Core			
10.0	10.0'		3.0'	3-4MPF		Gray thin bedded LIMESTONE, moderately hard, slightly weathered, close fractured (2"-12")	
			100%				
	10.0'-	R-2	Rec			Black-gray very thinly interbedded LIMESTONE and SHALE, moderatly soft, highly weathered, very close fractures (<1")	13.5'
	15.0'		5.0'	2-3MPF			
				100%			
15.0	RQD	10'-13.5'		- 89%			
	RQD	13.5'-15'		- 0%			
	15.0'-	R-3	Rec				
	20.0'		5.0'	2-3MPF			
20.0			100%			Bottom of Boring	20.0'
			RQD	- 0%			
Note: Boring wad backfilled with cuttings to surface.							



# TEST BORING LOG

FISHER ROAD  
EAST SYRACUSE, N.Y. 13057

PROJECT Waste Water Treatment Plant  
LOCATION Auburn, New York

HOLE NO. MB-1  
SURF. EL.

DATE STARTED 4/6/94 DATE COMPLETED 4/6/94

JOB NO. 93285

N — NO. OF BLOWS TO DRIVE SAMPLER 12" W/140# HAMMER FALLING  
30" — ASTM D-1586, STANDARD PENETRATION TEST

GROUND WATER DEPTH  
WHILE DRILLING 10.8'

C — NO. OF BLOWS TO DRIVE CASING 12" W/ # HAMMER FALLING  
" / OR — % CORE RECOVERY

BEFORE CASING  
REMOVED 9.0'

AFTER CASING  
REMOVED Hole caved @  
6.0' - Dry

CASING TYPE - HOLLOW STEM AUGER

SHEET 1 OF 1

DEPTH	SAMPLE DEPTH	SAMPLE NUMBER	C	SAMPLE DRIVE RECORD PER 6"	N	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
5.0	1.0'	1		7/11		ASPHALT	0.5'
	3.0'			20/16	31	Brown moist hard to very stiff SILT, some fine to coarse gravel, little fine to coarse sand	4.0'
	3.0'	2		2/10			
	5.0'			8/2	18	Brown-black moist stiff SILT, trace clay, trace roots, trace gravel	5.0'
5.0'	3		4/6				
10.0	7.0'			7/8	13	Brown moist stiff SILT, little clay, trace brick fragments, trace fine to coarse sand	7.5'
	7.0'	4		7/8			
	9.0'			9/4	17	Brown moist very stiff SILT, little clay, little fine sand, trace fine gravel	10.0'
	9.0'	5		8/9			
15.0	11.0'			23/36	32	Red-brown moist hard SILT, some clay	10.8'
	11.0'	6		11/13			
	13.0'			10/10	23	Brown wet medium dense fine SAND, little silt	14.5'
	13.0'	7		15/13			
	15.0'			12/12	25	Red-brown moist very stiff SILT, some clay	
						Bottom of Boring	15.0'
Note: Boring was backfilled to surface with cuttings.							



# TEST BORING LOG

FISHER ROAD  
EAST SYRACUSE, N.Y. 13057

PROJECT Waste Water Treatment Plant  
LOCATION Auburn, New York

HOLE NO. AT-1  
SURF. EL.

DATE STARTED 4/6/94 DATE COMPLETED 4/6/94

JOB NO. 93285

N — NO. OF BLOWS TO DRIVE SAMPLER 12" W/140# HAMMER FALLING  
30" — ASTM D-1586, STANDARD PENETRATION TEST

GROUND WATER DEPTH  
WHILE DRILLING 10.0'

C — NO. OF BLOWS TO DRIVE CASING 12" W/ # HAMMER FALLING  
"OR — % CORE RECOVERY

BEFORE CASING  
REMOVED

AFTER CASING  
REMOVED

CASING TYPE - HOLLOW STEM AUGER

SHEET 1 OF 1

DEPTH	SAMPLE DEPTH	SAMPLE NUMBER	C	SAMPLE DRIVE RECORD PER 6"	N	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
5.0	0.0'-	1		4/8		Brown moist very stiff SILT, little fine gravel, trace fine to coarse sand	5.0'
	2.0'			13/14	21		
10.0	5.0'-	2		11/15		Brown moist very stiff SILT and fine SAND, trace coarse gravel, trace medium to coarse sand	9.0'
	6.5'			13	28		
15.0	10.0'-	3		50-.4'		Gray wet hard SILT and fine SAND, little fine gravel, trace medium to coarse sand	19.5'
	10.4'						
20.0	15.0'-	4		40/50-.4'		Bottom of Boring	19.5'
	15.9'						
						Note: Apparent top of rock at 19.5'.	



# TEST BORING LOG

FISHER ROAD  
EAST SYRACUSE, N.Y. 13057

PROJECT Waste Water Treatment Plant  
LOCATION Auburn, New York

HOLE NO. AT-2

DATE STARTED 4/1/94 DATE COMPLETED 4/1/94

SURF. EL.

JOB NO. 93285

N — NO. OF BLOWS TO DRIVE SAMPLER 12" W/140# HAMMER FALLING  
30" — ASTM D-1586, STANDARD PENETRATION TEST

GROUND WATER DEPTH  
WHILE DRILLING 15.0'

C — NO. OF BLOWS TO DRIVE CASING 12" W/ # HAMMER FALLING  
"OR — % CORE RECOVERY

BEFORE CASING REMOVED Added Water To Core

AFTER CASING REMOVED

CASING TYPE - HOLLOW STEM AUGER TO 4.0', 4" FLUSH  
JOINT CASING TO 22.0', NX CORE TO 37.0'

SHEET 1 OF 1

DEPTH	SAMPLE DEPTH	SAMPLE NUMBER	C	SAMPLE DRIVE RECORD PER 6"	N	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
5.0	0.0'-	1		2/2		Brown moist soft SILT, some clay, trace roots, trace fine gravel	5.0'
	2.0'			2/8	4		
10.0	5.0'-	2		50-.2'		Brown moist hard SILT and fine SAND, trace fine gravel, trace clay, trace medium to coarse sand	10.0'
	5.2'						
15.0	10.0'-	3		50-.4'		Brown wet hard SILT and fine SAND	15.0'
	10.4'						
15.0	WL						
20.0	15.0'-	4		50-.4'		Brown wet hard SILT and fine SAND	20.0'
	15.4'						
25.0	20.0'-	5		75		Gray thin bedded LIMESTONE, slightly weathered, hard, moderately close fractures (4")	22.0'
	20.5'						
	22.0'-	R-1	Rec	NX Core			
	27.0'		4.4'	89%	RQD - 50%		
30.0	27.0'-	R-2	Rec			Gray thin bedded LIMESTONE, highly weathered, hard, very close fractured (4")	32.0'
	32.0'		5.0'	100%	RQD - 70%		
35.0	32.0'-	R-3	Rec			Black soft LIMESTONE, highly weathered	36.0'
	37.0'		3.9'	78%	RQD - 7%		
40.0						Bottom of Boring	37.0'



# TEST BORING LOG

FISHER ROAD  
EAST SYRACUSE, N.Y. 13057

PROJECT Waste Water Treatment Plant  
LOCATION Auburn, New York

HOLE NO. AT-3

DATE STARTED 4/5/94 DATE COMPLETED 4/5/94

SURF. EL.

JOB NO. 93285

N — NO. OF BLOWS TO DRIVE SAMPLER 12" W/140# HAMMER FALLING  
30" — ASTM D-1586, STANDARD PENETRATION TEST

GROUND WATER DEPTH  
WHILE DRILLING Dry

C — NO. OF BLOWS TO DRIVE CASING 12" W/ # HAMMER FALLING  
"/OR — % CORE RECOVERY

BEFORE CASING REMOVED Added Water To Core

AFTER CASING REMOVED

CASING TYPE - HOLLOW STEM AUGER TO 12.0', 4" FLUSH  
JOINT CASING TO 13.5', NX CORE TO 40.0'

SHEET 1 OF 1

DEPTH	SAMPLE DEPTH	SAMPLE NUMBER	C	SAMPLE DRIVE RECORD PER 6"	N	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
5.0	0.0'-	1		2/4		Brown moist stiff SILT and fine SAND, trace fine to medium gravel	
	2.0'			10/9	14		
10.0	5.0'-	2		14/50-.4'		Gray dry hard SILT, trace fine to coarse sand, trace fine gravel	5.5'
	5.9'						
15.0	10.0'-	3		57		Top of Rock Gray thin bedded LIMESTONE, slightly weathered, hard, moderately close fractured (2"-12")	12.5'
	10.5'						
	13.5'-	R-1	Rec	NX Core			
20.0	18.5'			4.8'			
				96%			
				RQD - 90%			
25.0	18.5'-	R-2	Rec			Note: Soil filled void from 24.5' to 25.0'.	
	23.5'			4.0'			
				80%			
30.0	23.5'-	R-3	Rec				
	28.5'			5.0'			
				100%			
35.0	28.5'-	R-4	Rec			Gray thin bedded LIMESTONE, highly weathered (cobble sized pieces), hard, close fractured (1"-4")	29.0'
	33.5'			2.8'			
				56%			
40.0	33.5'-	R-5	Rec			Gray thin bedded LIMESTONE, slightly weathered, hard, moderately close fractured (1"-4") Note: Soil filled void from 33.7' to 35.2' and 37.8' to 38.2'.	33.5'
	38.5'			4.2'			
				84%			
40.0	38.5'-	R-6	Rec				
	40.0'			0'			

Bottom of Boring

40.0'



# TEST BORING LOG

FISHER ROAD  
EAST SYRACUSE, N.Y. 13057

PROJECT Waste Water Treatment Plant  
LOCATION Auburn, New York

HOLE NO. AT-4  
SURF. EL.

DATE STARTED 4/11/94 DATE COMPLETED 4/12/94

JOB NO. 93285

N — NO. OF BLOWS TO DRIVE SAMPLER 12" W/140# HAMMER FALLING  
30" — ASTM D-1586, STANDARD PENETRATION TEST

GROUND WATER DEPTH  
WHILE DRILLING 5.0'

C — NO. OF BLOWS TO DRIVE CASING 12" W/ # HAMMER FALLING  
"/OR — % CORE RECOVERY

BEFORE CASING REMOVED Added Water To Core

AFTER CASING REMOVED

CASING TYPE - HOLLOW STEM AUGER TO 33.0', NX CORE TO 40.0'

SHEET 1 OF 1

DEPTH	SAMPLE DEPTH	SAMPLE NUMBER	C	SAMPLE DRIVE RECORD PER 6"	N	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
5.0	0.0'-1.5'	1		1/2		Brown moist medium stiff SILT, some clay, trace fine sand	5.0'
				2	4		
10.0	5.0'-6.5'	2		4/6		Brown wet very stiff SILT, little clay, little fine to coarse sand, little fine to coarse gravel	10.0'
				10	16		
15.0	10.0'-10.9'	3		12/50-.4'		Brown moist hard SILT, some fine sand, little fine to coarse gravel, trace medium to coarse sand, few cobbles	15.0'
20.0	15.0'-16.2'	4		32/46		Note: Advanced first attempt to 11.0'. Refusal on boulder, offset 5.0' and continued sampling at 10.0'.	20.0'
				50-.2'			
25.0	20.0'-20.5'	5		58			25.0'
30.0	25.0'-25.5'	6		61			30.0'
35.0	30.0'-30.8'	7		49/50-.3'		Top of Rock Gray thin bedded LIMESTONE, hard, moderately close fractured (1"-4")	33.0'
40.0	33.0'-35.0'	R-1	Rec	NX Core		Note: Soil filled void from 34.0' to 34.4'.	40.0'
				1.6' 4-5 MPF			
				80% RQD-80%			
	35.0'-40.0'	R-2	Rec				
				4.8' 5-6 MPF			
				96%			
				RQD - 47%			

Bottom of Boring

40.0'



# TEST BORING LOG

FISHER ROAD  
EAST SYRACUSE, N.Y. 13057

PROJECT Waste Water Treatment Plant  
LOCATION Auburn, New York

HOLE NO. AT-5  
SURF. EL.

DATE STARTED 4/12/94 DATE COMPLETED 4/12/94

JOB NO. 93285

N — NO. OF BLOWS TO DRIVE SAMPLER 12" W/140# HAMMER FALLING  
30" — ASTM D-1586, STANDARD PENETRATION TEST

GROUND WATER DEPTH  
WHILE DRILLING 15.0'

C — NO. OF BLOWS TO DRIVE CASING 12" W/ # HAMMER FALLING  
"/OR — % CORE RECOVERY

BEFORE CASING REMOVED Added Water To Core  
AFTER CASING REMOVED

CASING TYPE - HOLLOW STEM AUGER TO 37.0', NX CORE TO 40.0' SHEET 1 OF 1

DEPTH	SAMPLE DEPTH	SAMPLE NUMBER	C	SAMPLE DRIVE RECORD PER 6"	N	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
5.0	0.0'-1.5'	1		1/1 3	4	Brown moist soft SILT, little clay, trace roots	4.0'
10.0	5.0'-6.5'	2		5/17 31	48	Gray-brown moist hard SILT, some fine sand, little fine to coarse gravel, trace medium to coarse sand	
15.0	10.0'-11.5'	3		24/36 31	67		
20.0	15.0'-15.4'	4		50-.4'			20.0'
25.0	20.0'-20.6'	5		46/50-.1'		Brown moist hard SILT, little fine to coarse gravel, trace fine to coarse sand	
30.0	25.0'-25.1'	6	No Rec	50-.1'			
35.0	30.0'-30.2'	7		75-.2'			
40.0	35.0'-35.3'	8		75-.3'		Top of Rock Gray thin bedded LIMESTONE, hard, moderately close fractured (1"-4")	37.0'
	37.0'-40.0'	R-1	Rec	NX Core			
				3.0' 4-5 MPF			
				100% RQD-72%			

Bottom of Boring

40.0'



# TEST BORING LOG

FISHER ROAD  
EAST SYRACUSE, N.Y. 13057

PROJECT Waste Water Treatment Plant  
LOCATION Auburn, New York

HOLE NO. FST-1

DATE STARTED 4/13/94 DATE COMPLETED 4/14/94

SURF. EL.

JOB NO. 93285

N — NO. OF BLOWS TO DRIVE SAMPLER 12" W/140# HAMMER FALLING  
30" — ASTM D-1586, STANDARD PENETRATION TEST

GROUND WATER DEPTH  
WHILE DRILLING 5.0'

C — NO. OF BLOWS TO DRIVE CASING 12" W/ # HAMMER FALLING  
"OR — % CORE RECOVERY

BEFORE CASING REMOVED Added Water To Core

AFTER CASING REMOVED

CASING TYPE - HOLLOW STEM AUGER TO 15.0', NX CORE TO 45.0' SHEET 1 OF 2

DEPTH	SAMPLE DEPTH	SAMPLE NUMBER	C	SAMPLE DRIVE RECORD PER 6"	N	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
5.0' ▼	0.0'-1.5'	1		2/2 3	5	Brown moist medium stiff SILT and fine SAND, trace roots	5.0'
	5.0'-6.5'	2		4/6 13	19		
10.0	10.0'-11.2'	3		32/49 50-.2'		Gray moist hard SILT, little fine to coarse gravel, little fine sand, trace medium to coarse sand	13.5'
	14.0'-14.1'	4		50-.1'			
15.0	14.1'-15.0'					Gray hard very dense weathered LIMESTONE Top of Rock	15.0'
	15.0'-20.0'	R-1	Rec	NX Core 5.0' 5-6 MPF 100%			
20.0	20.0'-25.0'	R-2	Rec	4.85' 5-6 MPF 97%		Gray-black thin bedded LIMESTONE, slightly weathered, moderately hard, close fractured (1"-4")	
				RQD - 55%			
25.0	25.0'-30.0'	R-3	Rec	5.1' 5-6 MPF 100%			
				RQD - 73%			
30.0	30.0'-35.0'	R-4	Rec	5.0' 5-6 MPF 100%			
				RQD - 87%			
35.0	35.0'-40.0'	R-5	Rec	4.1' 2-5 MPF 82%		Black LIMESTONE, very soft, highly weathered, about 75% of recovery is decomposed rock-silt, clay and limestone fragments	36.0'
	40.0'			RQD - 0%			







# TEST BORING LOG

FISHER ROAD  
EAST SYRACUSE, N.Y. 13057

PROJECT Waste Water Treatment Plant  
LOCATION Auburn, New York

HOLE NO. FST-2  
SURF. EL.

DATE STARTED 4/13/94 DATE COMPLETED 4/13/94

JOB NO. 93285

N — NO. OF BLOWS TO DRIVE SAMPLER 12" W/140# HAMMER FALLING  
30" — ASTM D-1586, STANDARD PENETRATION TEST

GROUND WATER DEPTH  
WHILE DRILLING 3.0'

C — NO. OF BLOWS TO DRIVE CASING 12" W/ # HAMMER FALLING  
" / OR — % CORE RECOVERY

BEFORE CASING REMOVED Added Water To Core

AFTER CASING REMOVED

CASING TYPE - HOLLOW STEM AUGER TO 15.5', NX CORE TO 45.0'

SHEET 1 OF 2

DEPTH	SAMPLE DEPTH	SAMPLE NUMBER	C	SAMPLE DRIVE RECORD PER 6"	N	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
WL ▼	0.0'-	1		WH/2		Brown moist soft SILT and fine SAND	3.0'
	1.5'			2	4		
5.0						Brown wet medium dense fine to coarse GRAVEL, little silt, little fine to coarse sand	
10.0	5.0'-	2		4/6		Brown-red moist very stiff CLAY, some silt	8.0'
	6.5'			10	16		
15.0	10.0'-	3		10/12		Gray dry hard SILT, little weathered shale, little clay Top of Rock	14.5'
	11.5'			16	28		
20.0	15.0'-	4		68		Black very soft highly weathered LIMESTONE, Much of core is decomposed into silt, clay and fine gravel sized limestone fragments	15.5'
	15.5'						
	20.0'	R-1	Rec	NX Core			
25.0	20.0'-			2.8'	3-4MPF		
	25.0'	R-2	Rec	93%			
				RQD - 0%			
30.0	20.0'-			4.2'	3-4MPF		
	25.0'	R-2	Rec	84%			
				RQD - 0%			
35.0	25.0'-	R-3	Rec				
	30.0'			1.2'	3-4 MPF		
				24%			
40.0	30.0'-	R-4	No			Gray very thinly bedded LIMESTONE, highly weathered moderately soft, very close fractured (<1")	35.0'
	35.0'		Rec				
40.0	35.0'-	R-5	Rec				
	40.0'			4.6'	2-3MPF		
				92%			
				RQD - 0%			





# TEST BORING LOG

FISHER ROAD  
EAST SYRACUSE, N.Y. 13057

PROJECT Waste Water Treatment Plant  
 LOCATION Auburn, New York  
 DATE STARTED 4/6/94 DATE COMPLETED 4/11/94

HOLE NO. FST-3  
 SURF. EL.  
 JOB NO. 93285

N — NO. OF BLOWS TO DRIVE SAMPLER 12" W/140# HAMMER FALLING  
 30" — ASTM D-1586, STANDARD PENETRATION TEST

C — NO. OF BLOWS TO DRIVE CASING 12" W/ # HAMMER FALLING  
 "/OR — % CORE RECOVERY

GROUND WATER DEPTH  
 WHILE DRILLING 10.0'  
 BEFORE CASING REMOVED Added Water To Core  
 AFTER CASING REMOVED

CASING TYPE - HOLLOW STEM AUGER TO 5.0', 4" FLUSH  
 JOINT CASING TO 13.5', NX CORE TO 45.0'

SHEET 1 OF 2

DEPTH	SAMPLE DEPTH	SAMPLE NUMBER	C	SAMPLE DRIVE RECORD PER 6"	N	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
5.0	0.0'-	1		2/18		Brown moist hard SILT and fine SAND, trace fine to coarse sand, trace fine gravel	
	2.0'			15/27	33		
10.0	5.0'-	2	No	50-.1'			10.0'
	5.1'		Rec				
15.0	10.0'-	3		10/20		Brown wet dense fine to coarse SAND and fine to coarse GRAVEL, some silt	
	11.5'			13	33		
20.0	13.5'-	R-1	Rec	NX Core		Gray hard LIMESTONE	13.5'
	18.5'		3.8'	2-5 MPF			
25.0				76%		Black soft SILT and CLAY with fragments of limestone rock	
				RQD-9%			
30.0	18.5'-	R-2	Rec				
	23.5'		2.0'	2 MPF			
35.0				40%			
				RQD-0%			
40.0	23.5'-	R-3					
	28.3'		3.0'	2-3 MPF			
45.0				60%			
				RQD-0%			
50.0	28.5'-	R-4	Rec				
	33.5'		1.6'	2-3 MPF			
55.0				32%			
				RQD-0%			
60.0	33.5'-	R-5	Rec				
	38.5'		2.3'	2-3 MPF			
65.0				46%			
				RQD-0%			
70.0	38.5'-	R-6	Rec				39.0'
	43.5'		3.5'	3-5 MPF			





# TEST BORING LOG

FISHER ROAD  
EAST SYRACUSE, N.Y. 13057

PROJECT Waste Water Treatment Plant  
 LOCATION Auburn, New York  
 DATE STARTED 4/7/94 DATE COMPLETED 4/8/94  
 N — NO. OF BLOWS TO DRIVE SAMPLER 12" W/140# HAMMER FALLING  
 30" — ASTM D-1586, STANDARD PENETRATION TEST  
 C — NO. OF BLOWS TO DRIVE CASING 12" W/ # HAMMER FALLING  
 "/OR — % CORE RECOVERY

HOLE NO. FST-4  
 SURF. EL.  
 JOB NO. 93285  
 GROUND WATER DEPTH  
 WHILE DRILLING Dry  
 BEFORE CASING REMOVED Added Water To Core  
 AFTER CASING REMOVED

CASING TYPE - HOLLOW STEM AUGER TO 16.0', NX CORE TO 46.0' SHEET 1 OF 2

DEPTH	SAMPLE DEPTH	SAMPLE NUMBER	C	SAMPLE DRIVE RECORD PER 6"	N	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
5.0	1.0'-	1		5/15		Brown moist hard SILT and fine to coarse SAND, few boulders	5.0'
	2.5'			31	46		
10.0	5.0'-	2		3/3		Brown moist loose fine SAND and SILT, little brick	10.5'
	6.5'			4	7		
15.0	10.0'-	3		11/8		Gray moist medium dense fine SAND and SILT, trace fine to medium gravel	15.0'
	11.5'			8	16		
20.0	15.0'-	4		31/68		Gray dry hard SILT and fine GRAVEL Top of Rock	16.0'
	16.0'						
	16.0'-	R-1	Rec	NX Core			
	21.0'			3.9' 3-4 MPF			
25.0				78%		Black moist SILT and CLAY with weathered limestone fragments	17.5'
				RQD-8%			
	21.0'-	R-2	Rec				
	26.0'			5.0' 4-5 MPF			
30.0				100%		Black-gray very thinly interbedded LIMESTONE and SHALE, weathered, moderately soft, close fractures (1"-4")	21.5'
				RQD-75%			
	26.0'-	R-3	Rec				
35.0	26.0'-					Gray thin bedded LIMESTONE, slightly weathered, moderately hard, moderately close fractures (2"-12")	28.5'
	31.0'			4.9' 4-5 MPF			
				98%			
40.0						Note: RQD from 26'-28.5' = 100% RQD from 28.5'-31' = 0%	31.0'
	31.0'-	R-4	Rec				
	36.0'			5.1' 4-5 MPF			
				100%			
40.0				RQD-70%		Gray thin bedded LIMESTONE, slightly weathered, moderately hard, moderately close fractured (2"-1 2")	31.0'
	36.0'-	R-5	Rec				
	41.0'			4.5' 4-5 MPF			
				90%			
				RQD-65%			





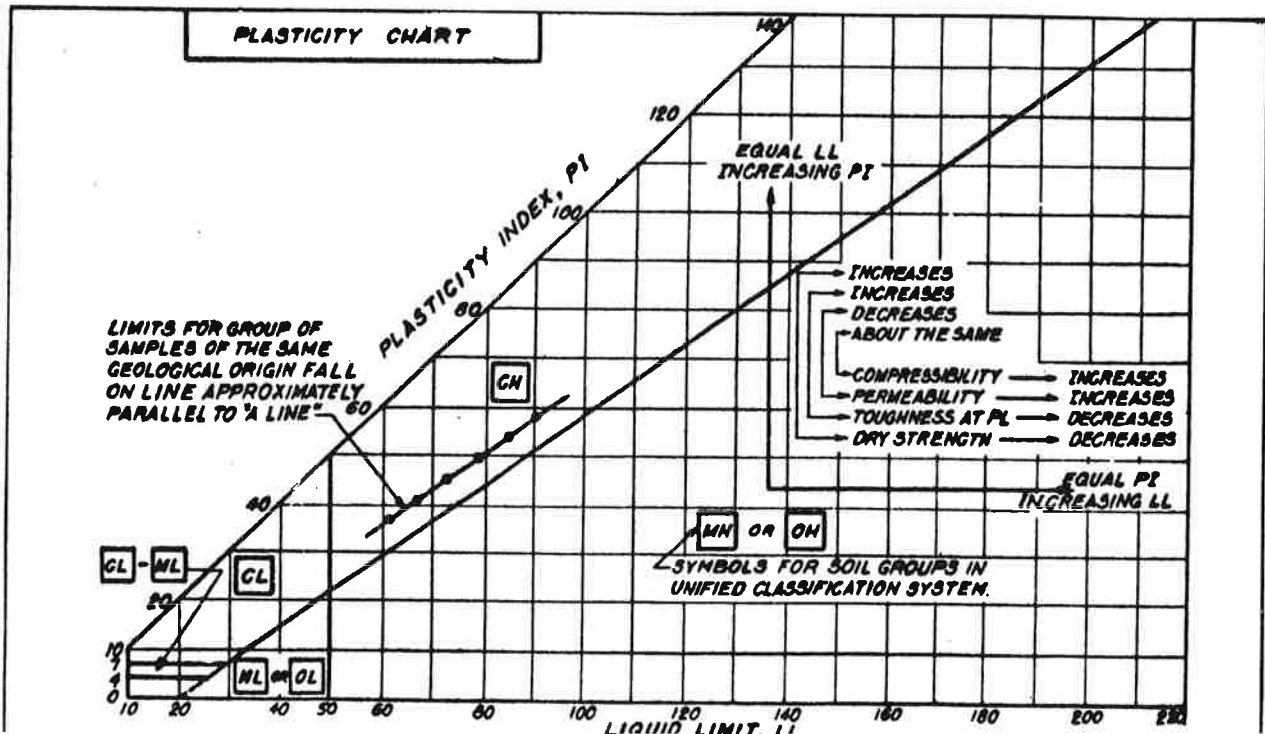
# UNIFIED CLASSIFICATION SYSTEM

MAJOR DIVISIONS		GROUP SYMBOLS	TYPICAL NAMES
<b>COARSE GRAINED SOILS</b> (More than 50% of material is LARGER than No. 200 sieve size)	<b>GRAVELS</b> (More than 50% of coarse fraction is LARGER than the No. 4 sieve size)	<b>CLEAN GRAVELS</b> (Little or no fines)	GW Well graded gravels, gravel - sand mixtures, little or no fines.
		GP Poorly graded gravels or gravel - sand mixtures, little or no fines.	
		<b>GRAVELS WITH FINES</b> (Appreciable amt. of fines)	GM Silty gravels, gravel - sand - silt mixtures.
		GC Clayey gravels, gravel - sand - clay mixtures.	
	<b>SANDS</b> (More than 50% of coarse fraction is SMALLER than the No. 4 sieve size)	<b>CLEAN SANDS</b> (Little or no fines)	SW Well graded sands, gravelly sands, little or no fines.
		SP Poorly graded sands or gravelly sands, little or no fines.	
		<b>SANDS WITH FINES</b> (Appreciable amt. of fines)	SM Silty sands, sand-silt mixtures.
		SC Clayey sands, sand-clay mixtures.	
<b>FINE GRAINED SOILS</b> (More than 50% of material is SMALLER than No. 200 sieve size)	<b>SILTS AND CLAYS</b> (Liquid limit LESS than 50)	ML Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.	
		CL Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.	
		OL Organic silts and organic silty clays of low plasticity.	
	<b>SILTS AND CLAYS</b> (Liquid limit GREATER than 50)	MH Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.	
		CH Inorganic clays of high plasticity, fat clays.	
		OH Organic clays of medium to high plasticity, organic silts.	
		Pt Peat and other highly organic soils.	

**BOUNDARY CLASSIFICATIONS:** Soils possessing characteristics of two groups are designated by combinations of group symbols.

## PARTICLE SIZE LIMITS

SILT OR CLAY	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		
	No. 200	No. 40	No. 10	No. 4	3/8 in.	3 in.	(12 in.)
	U.S. STANDARD SIEVE SIZE						



## GENERAL NOTES

1. Soil boring logs, notes and other data shown are the results of personal observations and interpretations made by Parratt-Wolff, Inc.

Exploration records prepared by our drilling foreman in the field form the basis of all logs, and samples of subsurface materials retained by the driller are observed by technical personnel in our laboratory to check field classifications.

2. Explanation of the classifications and terms:

a. **Bedrock** — Natural solid mineral matter occurring in great thickness and extent in its natural location. It is classified according to geological type and structure (joints, bedding, etc.) and described as solid, weathered, broken or fragmented depending on its condition.

b. **Soils** — Sediments or other unconsolidated accumulations of particles produced by the physical and chemical disintegration of rocks and which may or may not contain organic matter.

### PENETRATION RESISTANCE

<i>COHESIONLESS SOILS</i>		<i>COHESIVE SOILS</i>	
Blows Per Ft.	Relative Density	Blows Per Ft.	Consistency
0 to 4	Very Loose	0 to 2	Very Soft
4 to 10	Loose	2 to 4	Soft
10 to 30	Medium Dense	4 to 8	Medium Stiff
30 to 50	Dense	8 to 15	Stiff
Over 50	Very Dense	15 to 30	Very Stiff
		Over 30	Hard

#### *Size Component Terms*

Boulder .....	Larger than 8 inches	
Cobble .....	8 inches to 3 inches	
Gravel — coarse .....	3 inches to 1 inch	
— medium .....	1 inch to 3/8 inch	
— fine .....	3/8 inch to 4.76 mm	
Sand — coarse .....	4.76 mm to 2.00 mm	(#10 sieve)
— medium .....	2.00 mm to 0.42 mm	(#40 sieve)
— fine .....	0.42 mm to 0.074 mm	(#200 sieve)
Silt and Clay .....	Finer than 0.074 mm	

#### *Proportion By Weight*

Major component is shown with all letters capitalized.

Minor component percentage terms of total sample are:

and . . . 35 to 50 percent  
 some . . 20 to 35 percent  
 little . . 10 to 20 percent  
 trace . . 1 to 10 percent

c. **Gradation Terms** — The terms coarse, medium and fine are used to describe gradation of Sand and Gravel.

d. The terms used to describe the various soil components and proportions are arrived at by visual estimates of the recovered soil samples. Other terms are used when the recovered samples are not truly representative of the natural materials, such as soil containing numerous cobbles and boulders which cannot be sampled, thinly stratified soils, organic soils, and fills.

e. **Ground water** — The measurement was made during exploration work or immediately after completion, unless otherwise noted. The depth recorded is influenced by exploration methods, soil type and weather conditions during exploration. Where no water was observed it is so indicated. It is anticipated that the ground water will rise during periods of wet weather. In addition, perched ground water above the water levels indicated (or above the bottom of the hole where no ground water is indicated) may be encountered at changes in soil strata or top of rock.

# A BRIEF DESCRIPTION OF THE UNIFIED SOIL SYSTEM

The Unified Classification System is an engineering soil classification that is an outgrowth of the Air-Field classification developed by Casagrande.

The system incorporates the textural characteristics of a soil into the engineering classification. All soils are classified into fifteen groups, each group being designated by two letters. These letters are as follows: G—gravel, S—sand, M—Non plastic or low plasticity fines, C—plastic fines, Pt—peat, humus and swamp soils, O—organic, W—well graded, P—poorly graded, L—low liquid limit, H—high liquid limit.

## **GW and SW Groups**

These groups comprise well graded gravelly and sandy soils which contain less than 5% of non plastic fines passing a #200 sieve. Fines which are present must not noticeably change the strength characteristics of the coarse grain fraction and must not interfere with its free draining characteristics. In areas subject to frost action the material should not contain more than about 3% of soil grains smaller than .02 millimeters in size.

## **GP and SP Groups**

These groups are poorly graded gravels and sands containing less than 5% non plastic fines. They may consist of uniform gravels, uniform sands, or non uniform mixtures of very coarse material and very fine sand with intermediate sizes lacking. Materials of this latter type are sometimes referred to as skip graded, cap graded, or step graded.

## **GM and SM Groups**

In general, these groups include gravels or sands which contain more than 12% of fines having little or no plasticity. The plasticity index and liquid limit of a soil in either of these groups plot below the "A" line on a plasticity chart. Gradation is not important and both low grade and poorly graded materials are included. Some sands and gravels in these groups may have a binder composed of natural cementing agents so proportioned that the mixture shows negligible swelling or shrinkage. Thus, the dry strength is provided by a small amount of soil binder or dry cementation of calcareous materials or iron oxide. A fine fraction of non-cemented materials may be composed of silts or rock flour types having little or no plasticity, and the mixture will exhibit no dry strength.

## **GC and SC Groups**

These groups comprise gravelly or sandy soils with more than 12% of fines which exhibit either low or high plasticity. The plasticity index and liquid limit of a soil in either of these groups plot above the "A" line on the plasticity chart. Gradation of these materials is not important. Plasticity of the binder fraction has more influence on the behavior of the soils than does the variation in gradation. A fine fraction is generally composed of clays.

## **ML and MH Groups**

These groups include predominantly silty materials and micaceous or diatomaceous soils. An arbitrary division between the two groups has been established with a liquid limit of 50. Soils in these groups are sandy silts, clayey silts or organic silts with relatively low plasticity. Also included are loessial soils and rock flours. Micaceous and diatomaceous soils generally fall within the MH group, but may extend into the ML group when their liquid limit is less than 50. The same is true for certain types of kaolin clays and some illite clays having relatively low plasticity.

## **CL and CH Groups**

The CL and CH groups embrace clays with low and high liquid limits respectively. They are primarily inorganic clays. Low plasticity clays are classified as CL and are usually lean clays, sandy clays, and silty clays. The medium plasticity and high plasticity clays are classified as CH. These include fat clays, gumbo clays, certain volcanic clays and bentonite.

## **OL and OH Groups**

The soils in these groups are characterized by the presence of organic matter including organic silts and clays. They have a plasticity range that corresponds with the ML and MH groups.

## **Pt Group**

Highly organic soils which are very compressible have undesirable construction characteristics and are classified in one group with the symbol Pt. Peat, humus and swamp soils with a highly organic texture are typical of the group. Particles of leaves, grass, branches of bushes and other fibrous vegetable matter are common components of these soils.

## **Borderline Classification**

Soils in the GW, SW, GP and SP groups are non plastic materials having less than 5% passing the #200 sieve, while GM, SM, GC, and SC soils have more than 12% passing the #200 sieve. When these coarse grain materials contain between 5% and 12% of fines they are classified as borderline, and are designated by the dual symbol such as GW-GM. Similarly coarse grain soils which have less than 5% passing the #200 sieve, but which are not free draining or in which the fine fraction exhibits plasticity are also classed as borderline and are given a dual symbol. Still another type of borderline classification occurs when a liquid limit of a fine grain soil is less than 29 and the plasticity index lies in the range of four to seven. These limits are indicated by the shaded area on the plasticity chart.

## **Silty and Clayey**

In the Unified System, these terms are used to describe soils whose Atterberg limits plot below and above the "A" line on the plasticity chart. The adjectives silty and clayey are used to describe soils whose limits plot close to the "A" line.

# SOIL SAMPLING - METHODS

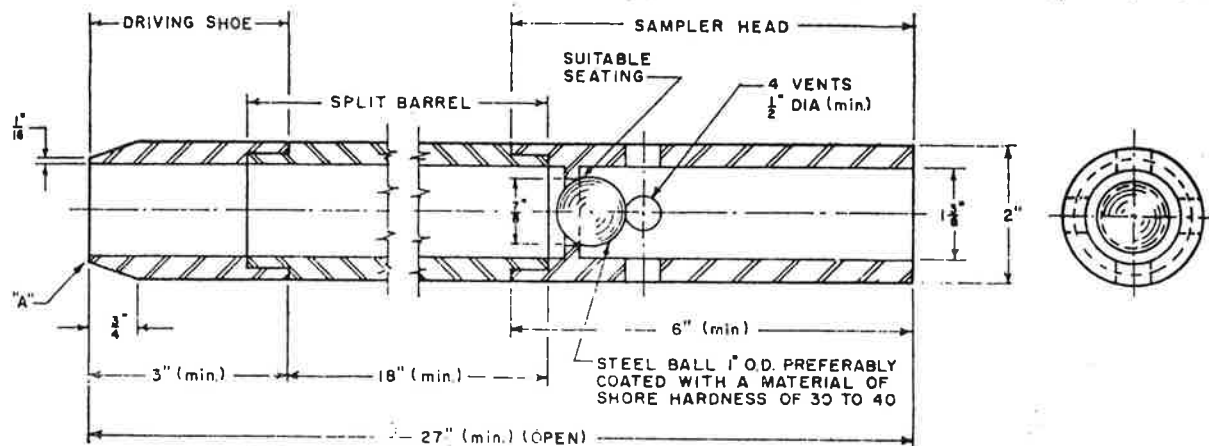


Table of Metric Equivalents.

In.	Mm	Cm	In.	Mm	Cm
1/16 (16 gage)	1.5	...	2	...	5.08
1/2	12.7	...	3	...	7.62
3/4	19.0	1.90	6	...	15.24
7/8	22.2	2.22	18	...	45.72
1-3/8	34.9	3.49	27	68.58	
1-1/2	38.1	3.81			

Fig. 1 — Standard Split Barrel Sampler Assembly

Note 1 — Split barrel may be 1-1/2 in. inside diameter provided it contains a liner of 16-gage wall thickness.

Note 2 — Core retainers in the driving shoe to prevent loss of sample are permitted.

Note 3 — The corners at A may be slightly rounded.

### 3. Procedure

3.1 Clear out the hole to sampling elevation using equipment that will ensure that the material to be sampled is not disturbed by the operation. In saturated sands and silts withdraw the drill bit slowly to prevent loosening of the soil around the hole. Maintain the water level in the hole at or above ground water level.

3.2 In no case shall a bottom-discharge bit be permitted. (Side-discharge bits are permissible.) The process of jetting through an open-tube sampler and then sampling when the desired depth is reached shall not be permitted. Where casing is used, it may not be driven below sampling elevation. Record any loss of circulation or excess pressure in drilling fluid during advancing of holes.

3.3 With the sampler resting on the bottom of the hole, drive the sampler with blows from the 140-lb (63.5 kg) hammer falling 30 in. (0.76 m) until either 18 in. (0.45 m) have been penetrated or 100 blows have been applied.

3.4 Repeat this operation at intervals not longer than 5 ft (1.5 m) in homogeneous strata and at every change of strata.

3.5 Record the number of blows required to effect each 6 in. (0.15 m) of penetration or fractions thereof. The first 6 in. (0.15 m) is considered to be a seating drive. The number of blows required for the second and third 6 in. (0.15 m) of penetration added is termed the penetration resistance,  $N$ . If the sampler is driven less than 18 in. (0.45 m), the penetration resistance is that for the last 1 ft (0.30 m) of penetration (if less than 1 ft (0.30 m) is penetrated, the logs shall state the number of blows and the fraction of 1 ft (0.30 m) penetrated).

3.6 Bring the sampler to the surface and open. Describe carefully typical samples of soils recovered as to composition, structure, consistency, color, and condition; then put into jars without ramming. Seal them with wax or hermetically seal to prevent evaporation of the soil moisture. Affix labels to the jar

or make notations on the covers (or both) bearing job designation, boring number, sample number, depth penetration record, and length of recovery. Protect samples against extreme temperature changes.

### 4. Report

4.1 Data obtained in borings shall be recorded in the field and shall include the following:

- 4.1.1 Name and location of job,
- 4.1.2 Date of boring — start, finish,
- 4.1.3 Boring number and coordinate, if available,
- 4.1.4 Surface elevation, if available,
- 4.1.5 Sample number and depth,
- 4.1.6 Method of advancing sampler, penetration and recovery lengths,
- 4.1.7 Type and size of sampler,
- 4.1.8 Description of soil,
- 4.1.9 Thickness of layer,
- 4.1.10 Depth to water surface; to loss of water; to artesian head; time at which reading was made,
- 4.1.11 Type and make of machine,
- 4.1.12 Size of casing, depth of cased hole,
- 4.1.13 Number of blows per 6 in. (0.15 m)
- 4.1.14 Names of crewmen, and
- 4.1.15 Weather, remarks.

<sup>1</sup>Under the standardization procedure of the Society, this method is under the jurisdiction of the ASTM Committee D-18 on Soil and Rock for Engineering Purposes. A list of members may be found in the ASTM Year Book.

Current edition accepted October 20, 1967. Originally issued, 1958. Replaces D-1586-64T.

Auburn WWTP  
PHASE II

BGM  
ES  
AMH

2743.11



**TEST BORINGS  
WASTE WATER TREATMENT PLANT  
AUBURN, NEW YORK**



FISHER RD., EAST SYRACUSE, N.Y. 13057  
TELEPHONE AREA CODE 315/437-1429  
800/782-7260 FAX 315/437-1770

April 22, 1994

Mr. Brad Smith  
Stearns and Wheler  
One Remington Park Drive  
Cazenovia, New York 13035

RE: 93285  
Waste Water Treatment Plant  
Auburn, New York  
Job #2743

Dear Brad:

Enclosed are the logs for eleven test borings made for you for the above project.

Soil samples and rock cores for these borings have already been delivered to your office under separate cover.

The borings were made at points located by you and were drilled in accordance with your instructions.

Note that at all locations cored, the driller reported that he did not lose circulation water.

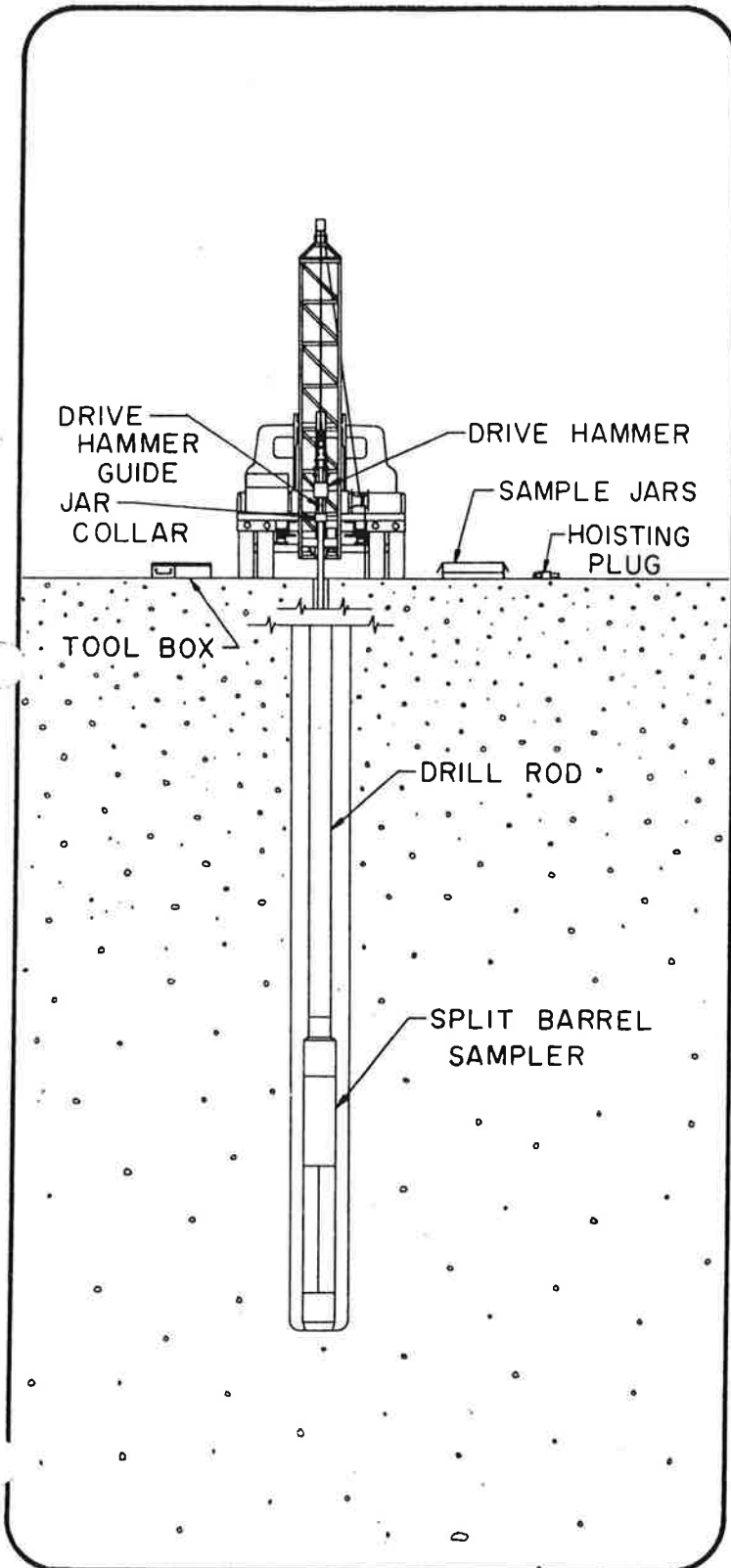
Thank you for this opportunity to work with you.

Very truly yours,

PARRATT - WOLFF, INC.

A handwritten signature in cursive script that reads 'William H. Morrow'. The signature is written in dark ink and is positioned above the typed name.

William H. Morrow  
WHM/blo  
encs:



## Split barrel sampling

The following excerpts are from "Standard Method for penetration test and split-barrel sampling of soils,"<sup>1</sup> (ASTM designation: D-1586-67 AASHTO Designation: T-206-70.)

### 1. Scope

1.1 This method describes a procedure for using a split-barrel sampler to obtain representative samples of soil for identification purposes and other laboratory tests, and to obtain a measure of the resistance of the soil to penetration of the sampler.

### 2. Apparatus

2.1 Drilling Equipment — Any drilling equipment shall be acceptable that provides a reasonably clean hole before insertion of the sampler to ensure that the penetration test is performed on undisturbed soil, and that will permit the driving of the sampler to obtain the sample and penetration record in accordance with the procedure described in 3. Procedure. To avoid "whips" under the blows of the hammer, it is recommended that the drill rod have stiffness equal to or greater than the A-rod. An "A" rod is a hollow drill rod or "steel" having an outside diameter of 1-5/8 in. or 41.2 mm and an inside diameter of 1-1/8 in. or 28.5 mm, through which the rotary motion of drilling is transferred from the drilling motor to the cutting bit. A stiffer drill rod is suggested for holes deeper than 50 ft (15m). The hole shall be limited in diameter to between 2-1/4 and 6 in. (57.2 and 152mm).

2.2 Split-Barrel Sampler — The sampler shall be constructed with the dimensions indicated (in Fig. 1.) The drive shoe shall be of hardened steel and shall be replaced or repaired when it becomes dented or distorted. The coupling head shall have four 1/2-in. (12.7-mm) (minimum diameter) vent ports and shall contain a ball check valve. If sizes other than the 2-in. (50.8-mm) sampler are permitted, the size shall be conspicuously noted on all penetration records.

2.3 Drive Weight Assembly — The assembly shall consist of a 140-lb (63.5-kg) weight, a driving head, and a guide permitting a free fall of 30 in. (0.76 m). Special precautions shall be taken to ensure that the energy of the falling weight is not reduced by friction between the drive weight and the guides.

2.4 Accessory Equipment — Labels, data sheets, sample jars, paraffin, and other necessary supplies should accompany the sampling equipment.