OIL CONTAMINATION STUDY

ROTH STEEL CORP.

HIAWATHA BOULEVARD

SYRACUSE, NEW YORK

OCTOBER 1968

NORBERT E. FALTYN

Consulting Geologist

ENGINEERING GEOLOGY
GEOPHYSICS
SUBSURFACE INVESTIGATION AND REPORTS
LABORATORY TESTING

3545 HOWLETT HILL RD.
CAMILLUS, NEW YORK
OR 9-7471

OCTOBER 28, 1968

ROTH STEEL CORP.
127 OAKWOOD AVE.
SYRACUSE, NEW YORK

ATTN: MR. LEWIS ROTH

DEAR MR. ROTH:

SUBMITTED HEREWITH ARE THREE (3) COPIES OF OUR REPORT ON THE OIL CONTAMINATION STUDY CONDUCTED ON THE HIAWATHA BOULEVARD SITE.

THE TEST BORINGS WERE MADE BY EMPIRE SOILS INVESTIGATIONS, INC. OF GROTON, NEW YORK. THE SOIL SAMPLES HAVE BEEN EXAMINED BY OUR PERSONNEL AND THE DESCRIPTIONS CONTAINED IN THE BORING REPORTS ARE IN GENERAL ACCORD WITH OUR VISUAL CLASSIFICATIONS.

KINDLY ADVISE IF YOU HAVE ANY QUESTIONS OR REQUIRE ADDITIONAL INFORMATION.

SINCERELY YOURS,

Norbert E. Faltyn

NORBERT E. FALTYN
CONSULTING GEOLOGIST

NEF/SF
ENC.

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OIL CONTAMINATION STUDY

HIAWATHA BOULEVARD SITE

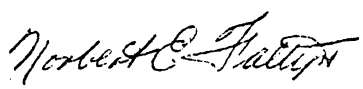
SYRACUSE, NEW YORK

FOR

ROTH STEEL CORP.

SYRACUSE, NEW YORK

BY



NORBERT E. FALTYN
CONSULTING GEOLOGIST

OCTOBER 1968

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OIL CONTAMINATION STUDY
ROTH STEEL CORP.
HIAWATHA BOULEVARD
SYRACUSE, NEW YORK

I. INTRODUCTION

THIS REPRESENTS A FINAL REPORT OF THE CONDITION OF OIL CONTAMINATION ON THE ROTH STEEL CORP. SITE ON HIAWATHA BOULEVARD, SYRACUSE, NEW YORK. AN EVALUATION OF TEST BORING DATA, SITE CONDITIONS, WATER LEVEL READINGS AND CHEMICAL ANALYSES WERE MADE TO APPRAISE THE SITE WITH RESPECT TO THE EXTENT OF WASTE OIL PENETRATION.

II. METHOD OF INVESTIGATION

A. RECONNAISSANCE

THIS PHASE OF THE INVESTIGATION CONSISTED OF A DETAILED SITE INSPECTION INCLUDING A STUDY OF THE PERIPHERAL DRAINAGE PATTERNS.

B. TEST BORINGS

THIRTEEN (13) ADDITIONAL TEST BORINGS WERE MADE OVER THE OIL CONTAMINATED AREA BY EMPIRE SOILS INVESTIGATIONS, INC. OF GROTON, NEW YORK DURING THE PERIOD OF SEPTEMBER 20 THROUGH SEPTEMBER 24, 1968 TO SECURE INFORMATION FOR APPRAISAL OF THE EXTENT OF SUBSURFACE OIL AND TAR. THE BORING OPERATIONS WERE INSPECTED FREQUENTLY AND THE BORING SCHEDULE WAS ADJUSTED IN ACCORD WITH THE ENCOUNTERED CONDITIONS TO ENSURE THAT ADEQUATE INFORMATION WAS RETRIEVED.

CONTINUOUS SAMPLING WAS PERFORMED IN ALL HOLES TO THE DEPTH RANGE OF SEVEN (7) TO NINE (9) FEET TO AFFORD A BASIS FOR A THOROUGH EVALUATION OF SUBSOIL CONDITIONS RELATIVE TO OIL PENETRATION.

THE DRY-SAMPLE BORING METHOD WAS USED TO DRILL THE HOLES.

THROUGH THIS METHOD, DATA ON THE RELATIVE COMPACTNESS AND CONSISTENCY OF THE SUBSOIL MATERIALS ARE OBTAINED BY MEASURING THE PENETRATION RESISTANCE OF A STANDARD SAMPLING SPOON, WHICH IS DRIVEN WITH A STANDARD WEIGHT AND FALL. INFORMATION ON THE TYPES OF MATERIALS PENETRATED AND WATER LEVELS WERE ALSO RECORDED. ALL HOLES WERE ADVANCED BY DRIVING CASING AS NOTED IN THE BORING REPORTS. THE BORING LOGS, AS PREPARED BY THE DRILLING CONTRACTOR, AND A LOCATION PLAN ARE ATTACHED TO THIS REPORT.

DRILLING LOGS FROM PREVIOUS TEST BORINGS OF MAY 9 TO MAY 16, 1966 AND JUNE 6, 1966 WERE ALSO REVIEWED TO OBTAIN DATA ON THE DEGREE OF OIL EXPANSION.

C. CHEMICAL ANALYSES

1. EMISSION SPECTROCHEMICAL ANALYSIS

CHEMICAL ELEMENTS EMIT LIGHT WHEN SUFFICIENT ENERGY IS ADDED TO EXCITE THEIR OUTER ELECTRONS. THE WAVE LENGTHS OF THE EMITTED LIGHT ARE CHARACTERISTIC OF THE ELEMENT. THE UNIQUE WAVE LENGTHS OF LIGHT EMITTED BY EACH ELEMENT PERMITS AN EXTREMELY SENSITIVE METHOD OF QUALITATIVE, AND ALSO QUANTITATIVE ANALYSIS. THE D-C ARC IS USED TO SUPPLY THE ENERGY NEEDED TO EXCITE THE ELECTRONS IN A SAMPLE. USING AN EMISSION SPECTROGRAPH, A PHOTOGRAPH OF THE SPECTRUM OF LIGHT EMITTED BY A SAMPLE CAN BE RECORDED. BY COMPARING THE WAVE LENGTHS OF LIGHT RECORDED ON THE SPECTRUM WITH THE WAVE LENGTH EMITTED BY STANDARD (KNOWN) ELEMENTS, QUALITATIVE IDENTIFICATION OF THE ELEMENTS IN THE SAMPLE CAN BE MADE.

2. INFRARED SPECTROPHOTOMETRY

THE INFRARED SPECTRUM IS OFTEN REFERRED TO AS A "FINGERPRINT" OF THE COMPOUND. AMONG THE PRACTICAL APPLICATIONS OF INFRARED ANALYSIS IS THE QUALITATIVE IDENTIFICATION OF ORGANIC AND INORGANIC COMPOUNDS. IN THE WAVE LENGTH REGION OF THE ELECTROMAGNETIC SPECTRUM CORRESPONDING TO 2.5 TO 50

MICRONS, THE ABSORPTION OF INFRARED RADIATION ARISES PRIMARILY FROM ELEVATION OF THE MOLECULES OF WHICH THE TEST SAMPLE IS COMPOSED TO EXCITED VIBRATIONAL LEVELS. MANY VIBRATIONAL TRANSITIONS WITHIN MOST MOLECULES GIVE RISE TO CHARACTERISTIC INFRARED ABSORPTIONS. EACH INFRARED SPECTRUM IS A COMPOSITE OF THE VIBRATIONAL ABSORPTIONS ARISING FROM ALL CHEMICAL BONDS WITHIN THE ABSORBING MOLECULES.

D. WATER LEVELS

READINGS ON WATER LEVEL WERE RECORDED DURING DRILLING OPERATION. THREE (3) HOLES, NOS. 8, 10 AND 12 WERE LEFT OPEN WITH PERFORATED PIPE TO PROVIDE WATER LEVEL READINGS OVER EXTENDED TIME INTERVAL.

III. SITE DESCRIPTION

A. LOCATION AND TOPOGRAPHY

THE SUBJECT AREA REPRESENTS A TRIANGULAR SHAPED WEDGE OF THE WESTERN PORTION OF THE ROTH STEEL CORP. PROPERTY. THE NORTH SIDE OF THE TRIANGLE EXTENDS A DISTANCE OF APPROXIMATELY 420 FEET EASTWARD FROM THE WESTERN PROPERTY CORNER. THE SOUTHWESTERN SIDE EXTENDS ALONG THE PROPERTY LINE FROM THE WESTERN CORNER APPROXIMATELY 670 FEET SOUTHEASTERLY. THE NORTH-SOUTH LEG MEASURES APPROXIMATELY 535 FEET. THESE BOUNDARIES APPROXIMATE THE OIL AND TAR CONTAMINATED AREA.

THE SITE IS FAIRLY LEVEL WITH THE EXCEPTION OF A SERIES OF SHALLOW DEPRESSIONS IN THE NORTHWEST PORTION OF THE ABOVE TRIANGLE.

B. SOIL CONDITIONS

1. SURFACE

A PORTION OF THE SUBJECT AREA HAS BEEN BACKFILLED BY THE PRESENT OWNERS SINCE THE PRELIMINARY REPORT DATED AUGUST 31, 1966. THE REMAINING UNCOVERED PORTIONS CONTAIN EXTENSIVE SURFACE DEPOSITS OF TAR AND OIL.

COALESCED PONDS OF OIL AND TAR OCCUPY THE DEPRESSED REGIONS AND FLUCTUATE WITH RISING WATER LEVELS. A DITCH EXTENDING ALONG

THE SOUTHWESTERN PROPERTY LINE PERMITS THE PRESENT OIL WASTE DISCHARGE TO FLOW NORTHWARD TO THE NORTHWEST CORNER AND THEN WESTWARD ALONG THE EAST-WEST RAILROAD DITCH. THE LIMITED REGION OF THIS DRAINAGE AREA FILLS RAPIDLY AND PROVIDES A BACK FLOW ONTO THE DEPRESSED LAND OF THE ROTH PROPERTY.

A PREVIOUS DITCH DRAINED DIRECTLY ONTO THE ROTH PROPERTY AND WAS RESPONSIBLE FOR ACCUMULATION OF HYDROCARBONS IN THE IMMEDIATE AREA OF THE DISCHARGE PIPE.

2. SUBSURFACE

DEPOSITS OF OILS AND TAR HAVE BEEN ENCOUNTERED IN RECENT TEST BORINGS #1 TO #4, 7 TO 11 AND 13. THE HYDROCARBONS OCCURRED FROM THE SURFACE TO DEPTHS OF SIX (6) FEET. THE HEAVIEST CONCENTRATION OF ASPHALTIC MATERIAL AND OIL OCCURRED IN A ZONE EXTENDING FROM THE GROUND SURFACE TO A DEPTH OF 3± FEET.

3. SUBSURFACE WATER

GROUND WATER LEVELS WERE OBSERVED AT LEVELS OF 25" TO 45" BELOW EXISTING GRADES, AND REPRESENT A PERCHED WATER TABLE LYING ABOVE AN IMPERMEABLE LAYER. HEAVY CONCENTRATIONS OF OIL OCCURRED IN THE WATER OF SOME OF THE PERMEABLE LAYERS.

C. CHEMICAL ANALYSES

TESTS PERFORMED ON SAMPLES TAKEN FROM THE LOCATIONS OF TEST BORINGS NOS. 7 AND 12 WERE COMPARED WITH THE SAMPLE OBTAINED FROM THE DISCHARGE PIPE LOCATION. RESULTS FROM THE EMISSION SPECTROCHEMICAL AND INFRARED SPECTROPHOTOMETER ANALYSES INDICATE THAT ALL SAMPLES WERE SIMILAR AND, THEREFORE, RELATED TO THE OIL DISCHARGED BY THE ADJACENT PROPERTY OWNER.

IV. CONCLUSIONS

SURFACE DEPOSITS OF HYDROCARBONS CONSISTING LARGELY OF OIL AND TAR WASTES OCCUR OVER WIDE AREAS OF THE SUBJECT SITE. BLEEDING OF OIL

THROUGH RECENTLY PLACED FILL CONTINUES TO PRODUCE UNSTABLE SOIL CONDITIONS.

STANDING PONDS OF OIL ARE CONCENTRATED IN ALL LOW AREAS, RISING WITH WATER LEVELS TO COVER EVER LARGER SURFACE AREAS WITH WASTE OIL FILM.

SEEPAGE FROM THE ADJACENT PROPERTY LINE DITCH CONTINUES TO DISPERSE DIRECTLY INTO THE GROUND WATER WHERE IT PERMEATES A GROWING SUB-SURFACE ZONE.

A SUBSTANTIAL FLOW FROM THE DRAINAGE DITCH REPLENISHES THE OBNOXIOUS OIL PONDS ON THE ROTH PROPERTY.

IT IS APPARENT THAT THE OIL CONTAMINATION HAS INCREASED ITS EXTENT SINCE THE TIME OF THE PRELIMINARY REPORT OF AUGUST 31, 1966.

SUBSURFACE DATA INDICATES LARGE CONCENTRATIONS OF OIL AND TAR FROM THE GROUND SURFACE TO A DEPTH OF 3± FEET. POCKETS OF HYDROCARBONS CONTINUE TO MAXIMUM DEPTHS OF 6 TO 7 FEET.

UTILIZATION OF THE LAND FOR BUILDING PURPOSES IS CONTINGENT ON THE REMOVAL OF THE EXISTING UNSTABLE AREAS COVERED AND INFILTRATED BY WASTE OIL AND TAR TO ADEQUATE DEPTHS TO ENSURE SATISFACTORY PERFORMANCE OF FOUNDATIONS. THE ERRATIC NATURE OF THE SUBSURFACE OIL AND TAR REQUIRES THAT PROPER PRECAUTIONS BE TAKEN IN EXCAVATION TO ENSURE THAT ALL OF THE PETROLEUM ZONES ARE REMOVED.

THE SPREAD OF SURFACE OIL POSSESSES THE DANGER OF CONFLAGRATION COINCIDENT WITH THE PRESENT OPERATIONS OF THE OWNER AND ADDS A NOTE OF URGENCY FOR A PROGRAM OF REMOVAL AND CESSATION OF OIL DISCHARGE.

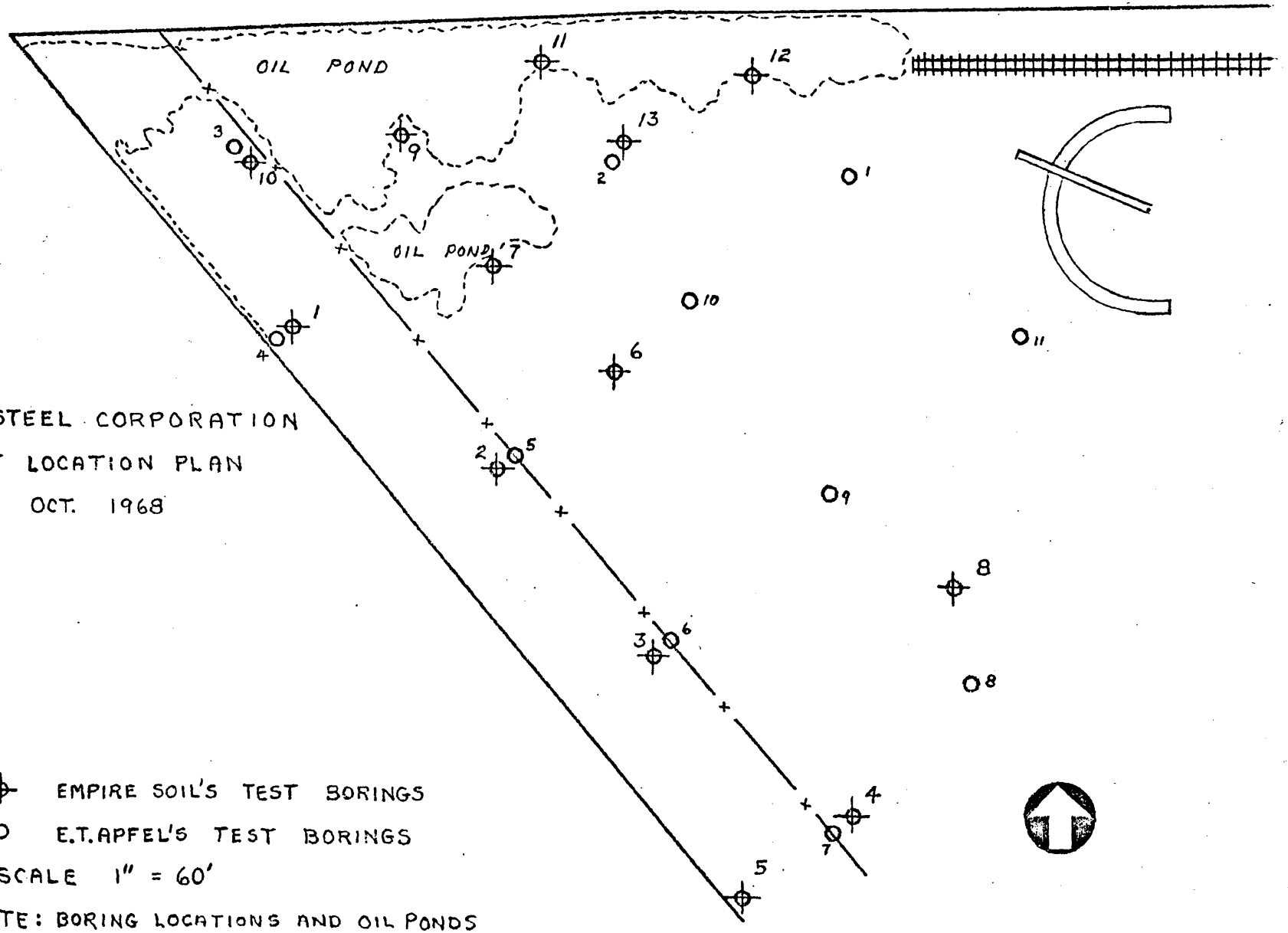
CONTINUATION OF OIL DISCHARGE MAY EVENTUALLY EXPAND WHERE IT MAY INTERFERE DIRECTLY WITH THE FRAGMENTER OPERATION.

V. RECOMMENDATIONS

1. IT IS RECOMMENDED THAT THE ADJACENT PROPERTY OWNER BE REQUESTED TO REMOVE ALL PETROLEUM WASTE PRODUCTS THAT HAVE BEEN DISCHARGED OVER A PERIOD OF YEARS ON THE ROTH PROPERTY, INCLUDING SUBSURFACE DEPOSITS RESULTING FROM BACKFILL AND SEEPAGE.

2. Future construction of buildings on the Roth property will require a removal and replacement program which must ensure that all underlying pockets of tar and oil will be removed. Reference to further details with respect to construction are contained in our preliminary report dated August 31, 1966.

3. A corrective program must also be instituted to prevent any future discharge of oil either onto the adjacent Roth property or into the underlying ground water zone. The solution for the disposal of oil wastes must incorporate adequate fire precautions.



ROTH STEEL CORPORATION

TEST LOCATION PLAN

OCT. 1968

⊕ EMPIRE SOIL'S TEST BORINGS

O E.T. APFEL'S TEST BORINGS

SCALE 1" = 60'

NOTE: BORING LOCATIONS AND OIL PONDS ARE APPROXIMATE

DATE
START 9-20-68
FINISH 9-20-68
SHEET 1 OF 1

EMPIRE SOILS INVESTIGATIONS, INC.
OF
GROTON, N. Y.

BORING LOG

HOLE NO. B-1
GRD. ELEV.
G. W. ELEV.
G. W. DEPTH See Note

PROJECT Roth Steel Compacny
LOCATION Syracuse, New York

DEPTH BELOW GRD. SURF.	SAMPLE NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	BLOWS ON CASING C	MOISTURE	COLOR	CROSS SECTION	SOIL CLASSIFICATION	TEST DATA
0										No Topsoil	
	1	13	52	20	72	20				FILL Very compact to	Water Readings:
						27	Dmp	Br		firm SILT, SAND &	encountered
	2	8	6	12	18	12				GRAVEL, trace ashes	water @ 3.0'
	3	5	3	2	5	10				tar & oil	@ completion
						5	Wet	blk			9-20 10:45 AM
5	4	1	1	1	2	2				FILL Loose SAND &	water @ 3.5'
	5	1	2	5	7	3	Wet	wht		ASHES, little silt, trace	
						3				organics & oil	
	6	3	5	5	10						Note: Slight
										Loose WASTE trace fiber	petroleum odor
										in Sample #4	in Sample #1
										trace glass in Sample #5	
										Bottom of Hole 9.0'	

NOTATION:
M.A. = Mechanical Analysis
w = Water content, dry weight basis
L.L. = Liquid Limit
P.I. = Plasticity index.
qu. = Unconfined compressive strength, tons per sq. ft.
N = No. blows to drive 2 " spoon 12 " with 140 lb. pin wt. falling 30 " per blow.
C = No. blows to drive 2 1/2 " casing 12 " with 300 lb. weight falling 18 " per blow.

SOIL CLASSIFICATIONS Visual by laboratory technician
GROUND WATER READINGS As noted

DATE
START 9-20-68
FINISH 9-20-68
SHEET 1 OF 1

EMPIRE SOILS INVESTIGATIONS, INC.
OF
GROTON, N. Y.

BORING LOG

HOLE NO. B-2
GRD. ELEV.
G. W. ELEV.
G. W. DEPTH See Note

PROJECT Roth Steel Company — LOCATION Syracuse, New York

DEPTH BELOW GND. SURF.	SAMPLE NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	BLOWS ON CASING C	MOISTURE	COLOR	CROSS SECTION	SOIL CLASSIFICATION	TEST DATA
0										No Topsoil	
	1	14	46	22	68	25	Dmp	Br		FILL very compact SAND & ROCK FRAGMENTS,	Water Readings:
						18		Blk		some Tar & Oil	@ completion
	2	9	6	4	10	12	Dmp	Br			9-20 12:00 Noon
	3	2	2	1	3	4	Wet	Wht			water @ 2.5'
5						4				FILL Loose SAND &	casing out
	4	No Recovery				5				ASHES, trace glass, tar &	12:10 PM water
	5	1	1		2	3	Wet	Wht		oil, little silt in sample #3	@ 2.5'
										Loose WASTE, trace organics	Note: Strong Petroleum odor in Sample #1
										Bottom of Hole 7.0'	

NOTATION:
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L.L. = Liquid Limit
P.I. = Plasticity index.
qu. = Unconfined compressive strength, tons per sq. ft.
N = No. blows to drive 2 " spoon 12 " with 140 lb. pin wt. falling 30" per blow.
C = No. blows to drive 2 1/2 casing 12 " with 300 lb. weight falling 24" per blow.

SOIL CLASSIFICATIONS Visual by laboratory technician
GROUND WATER READINGS As noted

DATE .
START 9-20-68
FINISH 9-20-68
SHEET 1 OF 1

EMPIRE SOILS INVESTIGATIONS, INC.
OF
GROTON, N. Y.

BORING LOG

HOLE NO. B-3
GRD. ELEV.
G. W. ELEV.
G. W. DEPTH See Note

PROJECT Roth Steel Company
LOCATION Syracuse, New York

DEPTH BELOW GND. SURF.	SAMPLE NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	BLOWS ON CASING C	MOISTURE	COLOR	CROSS SECTION	SOIL CLASSIFICATION	TEST DATA
0										No Topsoil	
	1	22	50	27	77	26	Mst	Br Blk		FILL very compact to compact SAND & GRAVEL, trace to little ashes, tar & coal, trace wire & wood	Water Readings: encountered water @ 3.0' @ completion 9-20 1:15 PM water @ 3.0' casing out 1:25 PM water @ 3.0'
						20					
	2	14	17	15	32	18					
	3	4	1	1	2	4					
						5	Wet	Blk			
5	4	1	1	1	2	2				FILL Loose CINDERS, trace ashes, wood & gravel	
	5	1	1	1	2	3					
						4					
	6	1	1	2	3		Wet	Wht Gr		Loose WASTE, little organics	
										Bottom of Hole 9.0'	

NOTATION:
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L.L. = Liquid Limit
P.I. = Plasticity Index.
qu. = Unconfined compressive strength, tons per sq. ft.
N = No. blows to drive 2 " spoon 12 " with 140 lb. pin wt. falling 30 " per blow.
C = No. blows to drive 2 1/2" casing 12 " with 300 lb. weight falling 18 " per blow.

SOIL CLASSIFICATIONS Visual by laboratory technician
GROUND WATER READINGS As noted

DATE
START 9-20-68
FINISH 9-20-68
SHEET 1 OF 1

EMPIRE SOILS INVESTIGATIONS, INC.
OF
GROTON, N. Y.

BORING LOG

HOLE NO. B-5
GRD. ELEV.
G. W. ELEV.
G. W. DEPTH See Note

PROJECT Roth Steel Company
LOCATION Syracuse, New York

DEPTH BELOW GND. SURF.	SAMPLE NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	BLOWS ON CASING C	MOISTURE	COLOR	CROSS SECTION	SOIL CLASSIFICATION	TEST DATA
0										N. Topsoil	
	1	6	25	12	37	26	Mst	Br	D	FILL compact to firm SAND & GRAVEL w/ Slt	Water Readings: encountered water @ 3.0'
						18					
	2	14	19	8	27	22		Blk			
	3	6	8	6	14	14		Red		Brick, Cinders, Ashes & Wood	
5						15					
	4	8	10	7	17	18					
	5	7	6		13						
	6	5	4		9		Wet	Wht		Loose WASTE	4:10 PM water @ 3.0'
										Bottom of Hole 8.0'	

NOTATION:
M.A. = Mechanical Analysis
w = Water content, dry weight basis
L.L. = Liquid Limit
P.I. = Plasticity index.
qu. = Unconfined compressive strength, tons per sq. ft.
N = No. blows to drive 2 " spoon 12 " with 140 lb. pin. wt. falling 30" per blow.
C = No. blows to drive 2 1/2 casing 12 " with 300 lb. weight falling 18" per blow.

SOIL CLASSIFICATIONS Visual by laboratory technician
GROUND WATER READINGS As noted

DATE
START 9-23-68
FINISH 9-23-68
SHEET 1 OF 1

EMPIRE SOILS INVESTIGATIONS, INC.

OF

GROTON, N. Y.

BORING LOG

HOLE NO. B-6
GRD. ELEV.
G. W. ELEV.
G. W. DEPTH See Note

PROJECT Roth Steel Company LOCATION Syracuse, New York

DEPTH BELOW GND. SURF.	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	N	BLOWS ON CASING C	MOISTURE	COLOR	CROSS SECTION	SOIL CLASSIFICATION	TEST DATA
0										No Topsoil	
	1	8	15	12	27	16	Mst	Br		FILL firm to very compact to compact SAND, GRAVEL BRICK, WOOD & GLASS	Water Readings encountered water @ 2.5 @ completion 9-23 5:30 PM water @ 2.5'
						12		Blk			
	2	12	17	10	27	14		Red			
	3	26	52	74	126	17					
5						62					
	4	58	46	25	71	97					
	5	18	26		44						
										Bottom of Hole 7.0	casing out 9:1 PM water = 2.
											Note: Slight peat loam color in Sample #1

NOTATION:
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L.L. = Liquid Limit
P.I. = Plasticity index.
qu = Unconfined compressive strength, tons per sq. ft.
N = No. blows to drive 2" spoon 12" with 140 lb. pin wt. falling 30" per blow.
C = No. blows to drive 2 1/2 casing 12" with 300 lb. weight falling 18" per blow.

SOIL CLASSIFICATIONS Visual by laboratory technician
GROUND WATER READINGS As noted

DATE
START 9-23-68
FINISH 9-23-68
SHEET 1 OF 1

EMPIRE SOILS INVESTIGATIONS, INC.
OF
GROTON, N. Y.

BORING LOG

HOLE NO. B-7
GRD. ELEV.
G. W. ELEV.
G. W. DEPTH See Note

PROJECT Roth Steel Company LOCATION Syracuse, New York

DEPTH BELOW GND. SURF.	SAMPLE NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	BLOWS ON CASING C	MOISTURE	COLOR	CROSS SECTION	SOIL CLASSIFICATION	TEST DATA
0										No Topsoi:	
	1	12	32	20	52	25	Mst	Br Blk		FILL very compact to loose SAND , GRAVEL & CINDERS w/ Wood & Oil	Water Readings: encountered water @ 2.0' @ completion 9-23 3:00 PM water @ 2.0' casing out 3:15 PM water @ 2.0' Note: Sligh petroleum odor in Sample #1 Note: Strong odor in Sample#3
						32					
	2	42	36	18	54	36					
	3	25	10	8	18	27					
						15					
5	4	2	3	3	6	8					
	5	2	2		4						
										Bottom of Hole 7.0'	

NOTATION:
M.A. = Mechanical Analysis
w = Water content, dry weight basis
L.L. = Liquid Limit
P.I. = Plasticity index.
qu. = Unconfined compressive strength, tons per sq. ft.
N = No. blows to drive 2 " spoon 12 " with 140 lb. pin wt. falling 30 " per blow.
C = No. blows to drive 2 1/2 casing 12 " with 300 lb. weight falling 18 " per blow.

SOIL CLASSIFICATIONS Visual by laboratory technician
GROUND WATER READINGS As noted

DATE
START 9-24-68
FINISH 9-24-68
SHEET 1 OF 1

EMPIRE SOILS INVESTIGATIONS, INC.
OF
GROTON, N. Y.

BORING LOG

HOLE NO. B-8
GRD. ELEV.
G. W. ELEV.
G. W. DEPTH See Note

PROJECT Roth Steel Company LOCATION Syracuse, New York

DEPTH BELOW GND. SURF.	SAMPLE NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	BLOWS ON CASING C	MOISTURE	COLOR	CROSS SECTION	SOIL CLASSIFICATION	TEST DATA
0										No Topsoil	
	1	10	15	26	41	15	Mst	Br		FILL compact to firm SAND & CINDERS w/ Ashes, Brick, Glass, Wood & Tar	Water Readings: @ completion water @ 3.6' casing out water @ 3.6'
						17		Blk			
	2	14	19	22	41	21		Red			
	3	5	8	10	18	18					
5						18					
	4	11	9	12	21	12					
	5	8	9		17						
										Bottom of Hole 7.0'	

NOTATION:
M.A. = Mechanical Analysis
w = Water content, dry weight basis
L.L. = Liquid Limit
P.I. = Plasticity index.
qu. = Unconfined compressive strength, tons per sq. ft.
N = No. blows to drive 2" spoon 12" with 140 lb. pin wt. falling 30" per blow.
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SOIL CLASSIFICATIONS Visual by laboratory technician
GROUND WATER READINGS As noted

DATE
START 9-23-68
FINISH 9-23-68
SHEET 1 OF 1

EMPIRE SOILS INVESTIGATIONS, INC.
OF
GROTON, N. Y.

BORING LOG

HOLE NO. B-2
GRD. ELEV.
G. W. ELEV.
G. W. DEPTH See Note

PROJECT Roth Steel Company
LOCATION Syracuse, New York

DEPTH BELOW GND. SURF.	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	N	BLOWS ON CASING C	MOISTURE	COLOR	CROSS SECTION	SOIL CLASSIFICATION	TEST DATA
0										N - Topsoil	
	1	8	9	7	16	14	Mst	Br		FILL Firm to loose SAND & CINDERS w/ Brick, Gravel, Glass, Tar & Oil	Water Readings encountered water @ 2.0' @ completion 9-28 2:00 PM water @ 2.0'
						10		Blk			
	2	5	5	6	11	9		Red			
	3	6	5	8	13	8					
5						12					
	4	6	7	9	16	10					
	5	1	1		2	12					
	6	2	6		8		Wet	Wht		Loose WASTE	casing out 2:1[illegible] PM water @ 2.0'
										Bottom of Hole 8.0'	Note: Sample #5 no recovery

NOTATION:
M.A. = Mechanical Analysis
w = Water content, dry weight basis
L.L. = Liquid Limit
P.I. = Plasticity index.
qu. = Unconfined compressive strength, tons per sq. ft.
N = No. blows to drive 2 " spoon 12 " with 140 lb. pin wt. falling 30 " per blow.
C = No. blows to drive 2 1/2 casing 12 " with 300 lb. weight falling 18 " per blow.

SOIL CLASSIFICATIONS Visual by laboratory technician
GROUND WATER READINGS As noted

DATE
START 9-24-68
FINISH 9-24-68
SHEET 1 OF 1

EMPIRE SOILS INVESTIGATIONS, INC.
OF
GROTON, N. Y.

BORING LOG

HOLE NO. B-10
GRD. ELEV.
G. W. ELEV.
G. W. DEPTH See Note

PROJECT Roth Steel Company LOCATION Syracuse, New York

DEPTH BELOW GND. SURF.	SAMPLE NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	BLOWS ON CASING C	MOISTURE	COLOR	CROSS SECTION	SOIL CLASSIFICATION	TEST DATA
0										No Topsoil	
	1	9	25	15	40	17					
						20	Mst	Br		FILL compact to firm SAND & CINDERS w/ Ashes Wood, Nails, Tar & Oil some Silt in Sample #2	Water Readings: encountered water @ 3.0' @ completion 9-24 3:45 PM water @ 3.0' casing out 4:00 PM water @ 3.0' Note: Slight pertoleum odor in Sample #2
	2	9	6	10	16	18		Blk			
	3	12	17	20	37	17					
						24					
5	4	12	10	9	19	27					
	5	2	5	5	10		Wet	Wht		Loose WASTE	
										Bottom of Hole 7.5'	

NOTATION:
M.A. = Mechanical Analysis
w = Water content, dry weight basis
L.L. = Liquid Limit
P.I. = Plasticity index.
qu. = Unconfined compressive strength, tons per sq. ft.
N = No. blows to drive 2 " spoon 12 " with 140 lb. pin wt. falling 30 " per blow.
C = No. blows to drive 2 1/2 " casing 12 " with 300 lb. weight falling 18 " per blow.

SOIL CLASSIFICATIONS Visual by laboratory technician
GROUND WATER READINGS As noted

DATE
START 9-23-68
FINISH 9-23-68
SHEET 1 OF 1

EMPIRE SOILS INVESTIGATIONS, INC.

OF

GROTON, N. Y.

BORING LOG

HOLE NO. B-11
GRD. ELEV.
G. W. ELEV.
G. W. DEPTH See Note

PROJECT Roth Steel Company LOCATION Syracuse, New York

DEPTH BELOW GND. SURF.	SAMPLE NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	BLOWS ON CASING C	MOISTURE	COLOR	CROSS SECTION	SOIL CLASSIFICATION	TEST DATA
0										No Topsoil	
	1	2	4	4	8	8					Water Readings:
						6	Mst	Br		FILL loose SAND &	emcountered
	2	2	2	2	4	5		Blk		CINDERS w/ Wood,	water @ 1.5'
	3	3	4	4	8	5				Leather, Ashes, & Oil	@ completion
						6				Petroleum odor	9-23 12:30 PM
5											water @ 1.4'
	4	3	4	5	9	4					casing out
	5	4	7		11			Wht		Firm WASTE @ 6.5'	water @ 1.5'
										Bottom of Hole 7.0'	

NOTATION:
M.A. = Mechanical Analysis
w = Water content, dry weight basis
L.L. = Liquid Limit
P.I. = Plasticity index.
qu. = Unconfined compressive strength. tons per sq. ft.
N = No. blows to drive 2" spoon 12" with 140 lb. pin wt. falling 30" per blow.
C = No. blows to drive 2 1/2" casing 12" with 300 lb. weight falling 18" per blow.

SOIL CLASSIFICATIONS Visual by laboratory technician
GROUND WATER READINGS As noted

DATE
START 9-24-68
FINISH 9-24-68
SHEET 1 OF 1

EMPIRE SOILS INVESTIGATIONS, INC.
OF
GROTON, N. Y.

BORING LOG

HOLE NO. B-12
GRD. ELEV.
G. W. ELEV.
G. W. DEPTH See Note

PROJECT Roth Steel Company
LOCATION Syracuse, New York

DEPTH BELOW GND. SURF.	SAMPLE NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	BLOWS ON CASING C	MOISTURE	COLOR	CROSS SECTION	SOIL CLASSIFICATION	TEST DATA
0										N. Topsoil	
	1	6	7	9	16	10	Mst	Br Blk		FILL firm to loose SAND & CINDERS w/ Ashes, Wood, & Leather	Water Readings: encountered water @ 3.0' @ completion 9-24 10:00 AM water @ 3.0' casing out water @ 3.0'
						8					
	2	5	6	5	11	6					
	3	1	1	1	2	1	Wet				
						1					
5											
	4	1	1	1	2	1	Wet	Wht		Loose WASTE	
	5	1	1		2						
										Bottom of H le 7.0'	

NOTATION:
M.A. = Mechanical Analysis
w = Water content, dry weight basis
L.L. = Liquid Limit
P.I. = Plasticity index.
qu. = Unconfined compressive strength, tons per sq. ft.
N = No. blows to drive 2 " spoon 12 " with 140 lb. pin wt. falling 30" per blow.
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SOIL CLASSIFICATIONS Visual by laboratory technician
GROUND WATER READINGS as noted

DATE
START 9-23-68
FINISH 9-23-68
SHEET 1 OF 1

EMPIRE SOILS INVESTIGATIONS, INC.
OF
GROTON, N. Y.

BORING LOG

HOLE NO. B-13
GRD. ELEV.
G. W. ELEV.
G. W. DEPTH See Note

PROJECT Roth Steel Company
LOCATION Syracuse, New York

DEPTH BELOW GND. SURF.	SAMPLE NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	BLOWS ON CASING C	MOISTURE	COLOR	CROSS SECTION	SOIL CLASSIFICATION	TEST DATA
0										No Topsoil	
	1	5	12	4	16	12					Water Readings: encountered water @ 3.0' @ completion 9-23 10:00 AM water @ 2.5' casing out 10:15 AM water @ 2.8'
						10	Mst	Br		FILL firm to loose to firm SAND & CINDERS w/ Brick, Wood, Leather & Metal, Tar & Oil Petroleum Odor	
	2	4	3	6	9	8		Blk			
	3	7	6	4	10	9					
5						9					
	4	8	9	9	18	12					
	5	5	6	8	14	10	Wet				
	6	4	6	6	12		Wet	Wht		Firm WASTE	
										Bottom of Hole 9.0'	

NOTATION:
M.A. = Mechanical Analysis
w = Water content, dry weight basis
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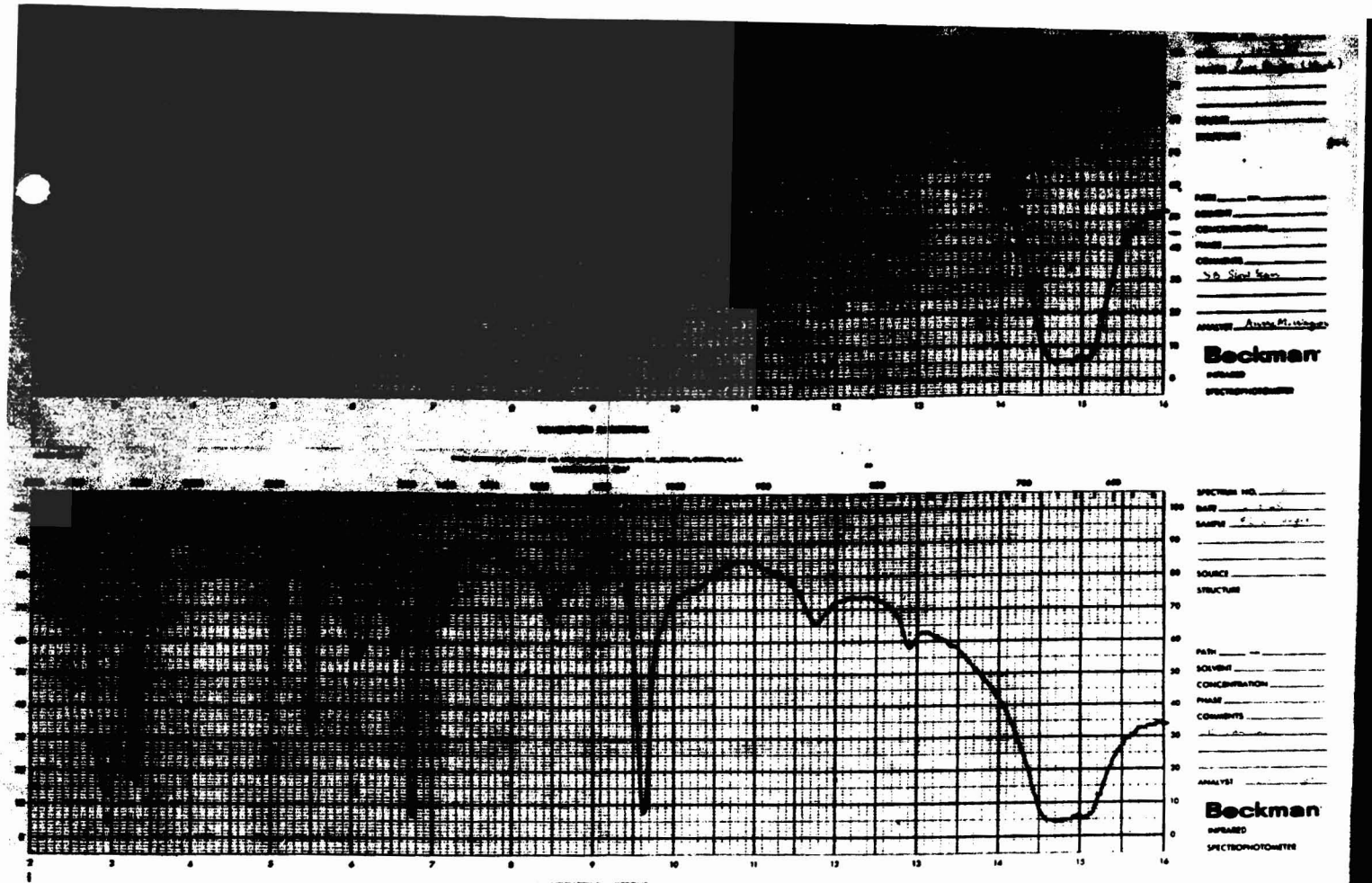
SOIL CLASSIFICATIONS Visual by laboratory technician
GROUND WATER READINGS As noted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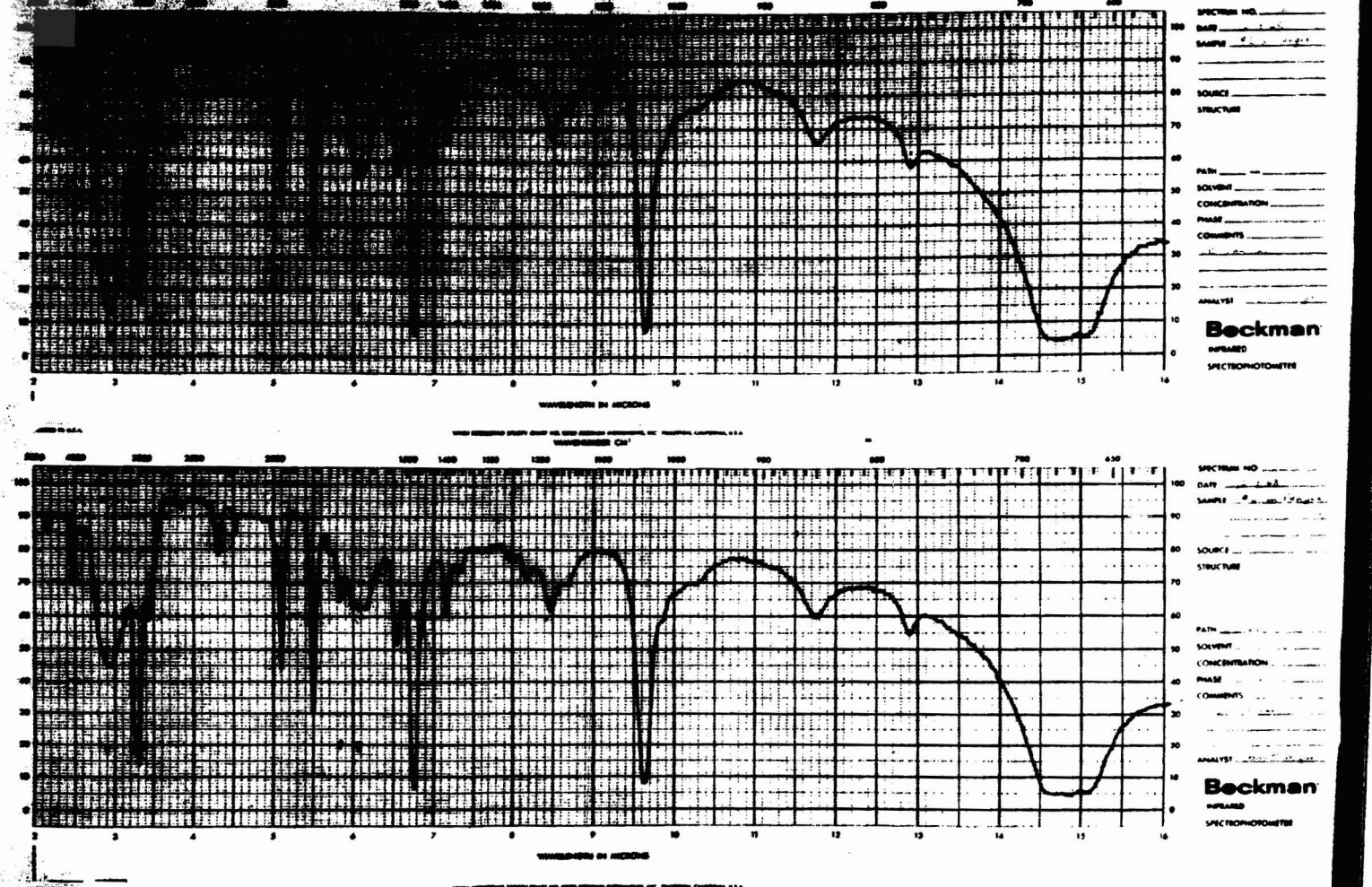
SPECTROPHOTOMETER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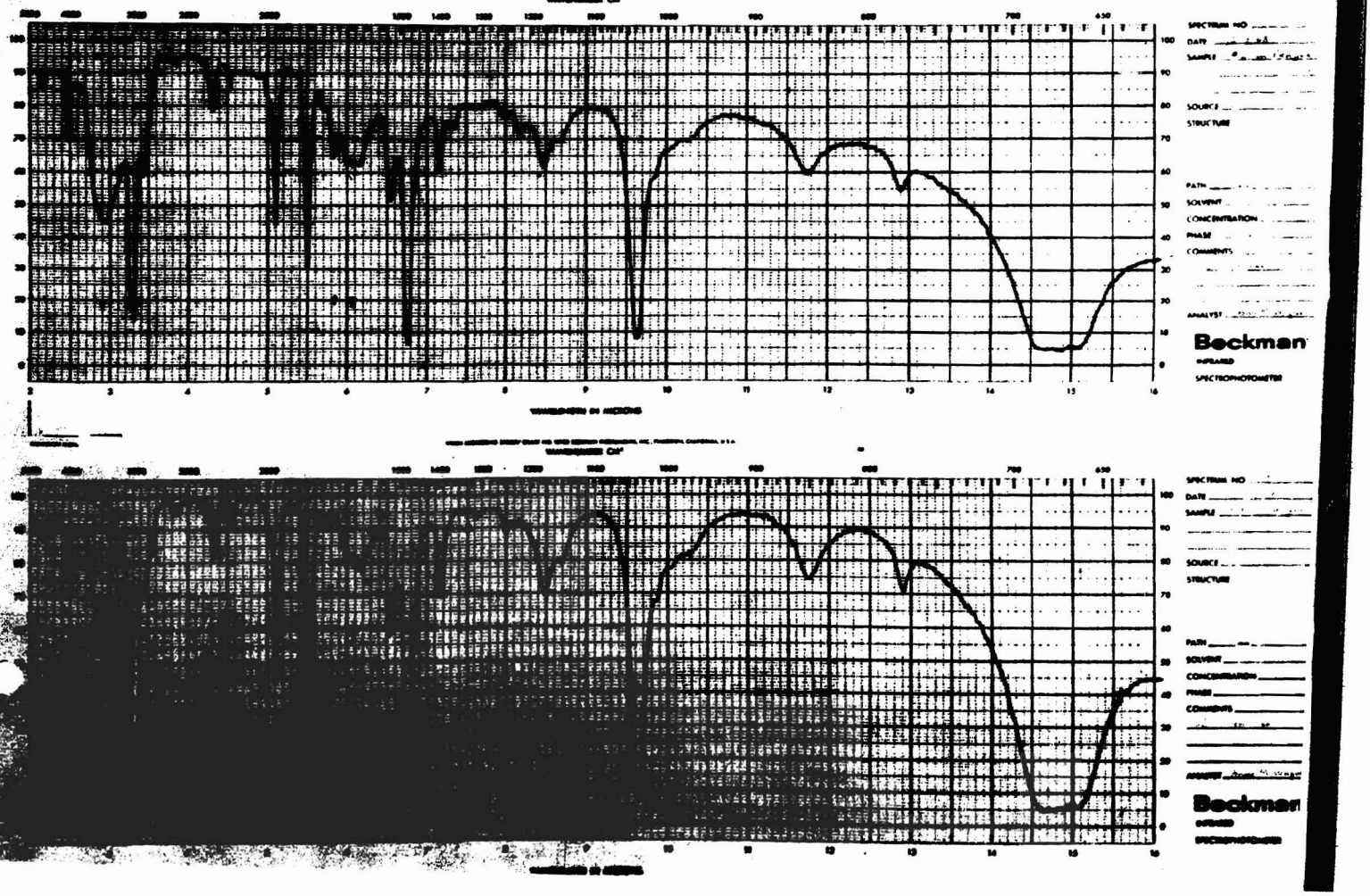
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INFRARED
SPECTROPHOTOMETER

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INFRARED
SPECTROPHOTOMETER

OIL CONTAMINATION STUDY

ROTH STEEL CORP.

HIAWATHA BOULEVARD

SYRACUSE, NEW YORK

OCTOBER 1968

NORBERT E. FALTYN
Consulting Geologist

ENGINEERING GEOLOGY
GEOPHYSICS
SUBSURFACE INVESTIGATION AND REPORTS
LABORATORY TESTING

3545 HOWLETT HILL RD.
CAMILLUS, NEW YORK
OR 9-7471

OCTOBER 28, 1968

ROTH STEEL CORP.
127 OAKWOOD AVE.
SYRACUSE, NEW YORK

ATTN: MR. LEWIS ROTH

DEAR MR. ROTH:

SUBMITTED HEREWITH ARE THREE (3) COPIES OF OUR REPORT ON THE OIL CONTAMINATION STUDY CONDUCTED ON THE HIAWATHA BOULEVARD SITE.

THE TEST BORINGS WERE MADE BY EMPIRE SOILS INVESTIGATIONS, INC. OF GROTON, NEW YORK. THE SOIL SAMPLES HAVE BEEN EXAMINED BY OUR PERSONNEL AND THE DESCRIPTIONS CONTAINED IN THE BORING REPORTS ARE IN GENERAL ACCORD WITH OUR VISUAL CLASSIFICATIONS.

KINDLY ADVISE IF YOU HAVE ANY QUESTIONS OR REQUIRE ADDITIONAL INFORMATION.

SINCERELY YOURS,

Norbert E. Faltyn

NORBERT E. FALTYN
CONSULTING GEOLOGIST

NEF/SF
ENC.