

58-277C

Hwy. # 17

C.P.R. OVERPASS

B 711 A

# TROW, SODERMAN AND ASSOCIATES

SITE INVESTIGATIONS  
AND  
SOIL MECHANICS CONSULTATION

W. A. TROW, M.A.S.C., M.E.I.C., P.ENG.  
L. G. SODERMAN, B.S.C., D.I.C., P.ENG.

884 WILSON AVE., DOWNSVIEW  
ST. 8-5921

Project: C108/J170

February 17, 1958.

Mr. F. C. Brownridge,  
Materials and Testing Engineer,  
Dept. of Highways of Ontario,  
Room 1422, East Block,  
Parliament Buildings,  
Toronto, Ont.

Attention: Mr. A. Rutka

Embankment Approaches - C.P.R. Overpass,  
Rossport, Ontario

Dear Sirs:

Enclosed herewith are the logs of borings made along the southeasterly approach to the proposed C.P.R. Overpass of Hwy. #17, at Rossport, Ontario.

As stated in our letter of Jan. 28, 1958, to De Leuw Cather and Co. of Canada, Ltd., the soil underlying this route is much too soft to support the weight of embankments necessary to clear this railway crossing. In addition the use of stage construction appears unreasonable in view of the slow draining character of the ground. Attention was drawn to the excellent conditions existing approximately 1000 feet to the east of this crossing and it is understood that serious consideration is being given to the relocation of the highway to this more favourable site.

Because of this decision, we have cancelled plans for detailed engineering studies and have limited the laboratory testing program to the minimum necessary to confirm field vane measurements. The results of these tests are summarized in table 1 of this report. The remaining samples will be stored for possible future use.

We trust that this decision is satisfactory to you. Please do not hesitate to contact us if additional clarification is necessary.

Yours very truly,

*W. A. Trow*

WAT/lt

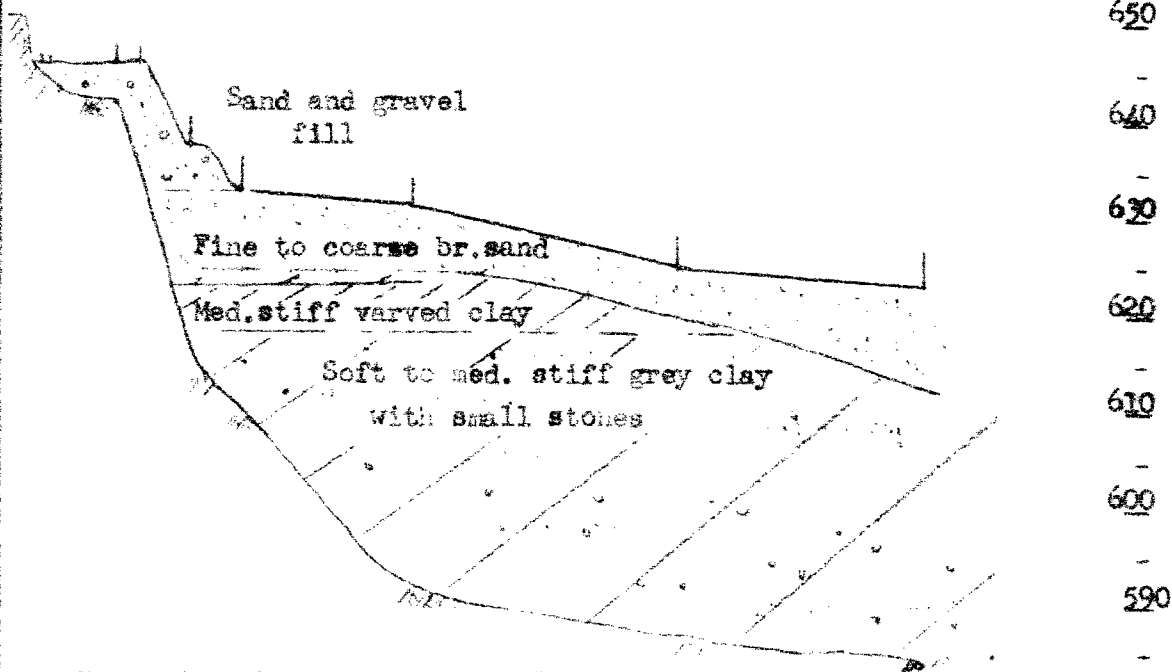
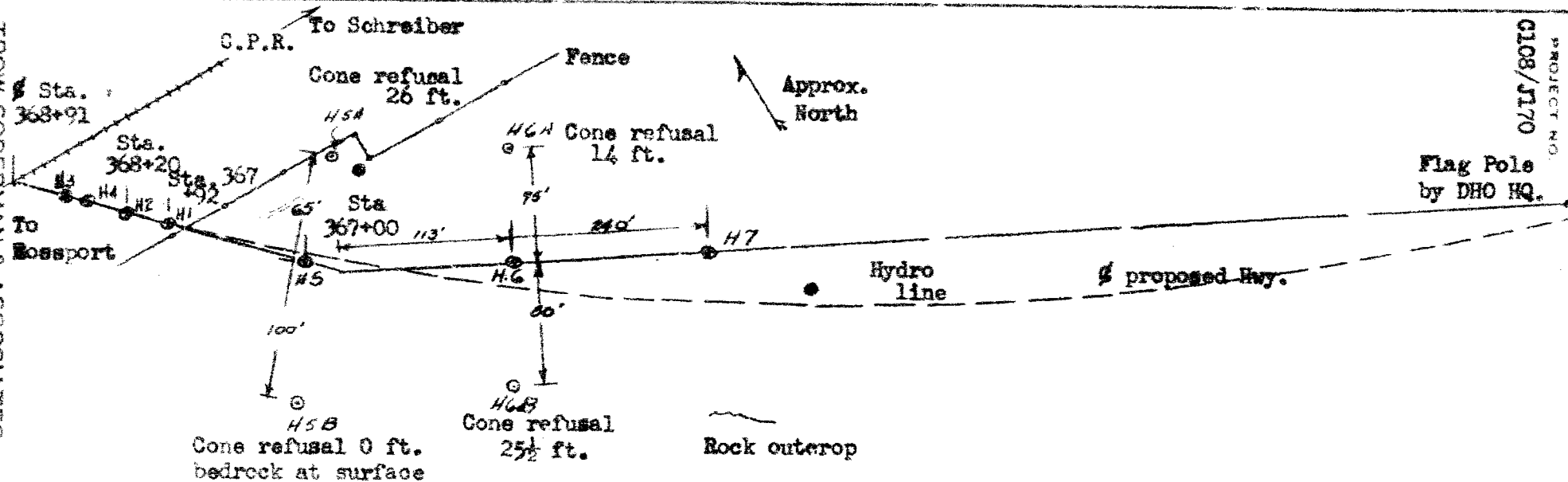
William A. Trow (P.Eng.)

CC: De Leuw Cather & Co. of Canada Ltd.  
Attention: Mr. E. C. Paddock

SUMMARY OF FIELD AND LABORATORY MEASUREMENTS

Elev. Hole: 1	Shearing	Resistance	P.S.F.		Consistency % dry weight			Natural Unit Weight	Hole No.
	Vars			Lab. Qu.	Wn.	L.L.	P.L.	p.c.f.	
630									
626									
622				550	47.3	50.2	18.5	112.0	1
618	407:s=3			390	54.7			107.2	5
	506:s=5.7 528								
	8=8								
614	704:s=3.2								
	616:s=2.5 572:s=4.3				36.7				1
610		550:s=3.6							
	792:s=2.3								
606		704:s=5.3 462:s=5.3		455	41.1			115.5	7
			528:s=8						
602		660:s=4.3		332	50.0	43.2	19.2	104.5	6
		594:s=6.7 572:s=6.5							
598		880:s=3.1 660:s=6							
596				440	33.7			124	5
		638:s=4.8 748							
592		957:s=4							
		638:s=3.6							

LEGEND: Wn - Natural Moisture Content  
 L.L.- Liquid Limit  
 P.L.- Plastic Limit  
 s - sensitivity =  $\frac{\text{undisturbed strength}}{\text{remoulded strength}}$   
 Qu - undrained triaxial test at overburden pressure.

Elev. ft.  
650

640

630

620

610

600

590

SKETCH OF SITE SHOWING BOREHOLE LOCATIONS  
AND ESTIMATED STRATIGRAPHY

Vert. scale 1" = 20 ft.  
Horiz. " 1" = 100 ft.

## TROW SODERMAN AND ASSOCIATES

## SITE INVESTIGATIONS AND SOIL MECHANICS CONSULTATION

PROJECT **Embankment, C.P.R. Overpass**

LOCATION                      Rosport, Ont.

HOLE LOCATION See Dwg.1

HOLE ELEVATION AND DATUM. El. 631.5

BOREHOLE NO. 1

FIELD SUPERVISOR **RP**

DRILLER WL

REF. **WT**

DRAWING NO. 2

LEGEND

- 2 <sup>19</sup> DIA. SPLIT TUBE  
2 <sup>11</sup> SHELBY TUBE  
2 <sup>12</sup> SPLIT TUBE  
2 <sup>11</sup> DIA. CONE  
CASING  
2 <sup>10</sup> SHELBY  
1/2 UNCONFINED COMPRESSION (Qu)  
VANE TEST (C) AND SENSITIVITY (S)  
NATURAL MOISTURE AND  
LIQUIDITY INDEX  
LIQUID LIMIT  
PLASTIC LIMIT



SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET	STRENGTH AND PENETRATION RESISTANCE	
				500	1000 P.S.F. BLOWS/FT.
	Ground surface	631.5	0		
	Loose fine grey sand	<u>W.L.</u> 629.5			
		623.5			
	Soft grey sandy clay	621.5	10		
	Med. stiff grey varved clay				
		617			
	Med. stiff grey clay with gravel and grits and fine partings of med. sand at irregular intervals		20		
		608.5			
	Dense sand.		30		
	Refusal to casing 23.5 ft.; refusal to cone at 26.3 ft.)				
NOTES: Samples 1 and 2 pushed easily into ground					

CONSISTENCY		SAMPLE	NATURAL UNIT WT P.C.F.
MOIST. CONTENT- % DRY WT.			
20	30	40	
			112

PROJECT NO. C108/J170

## TROW SODERMAN AND ASSOCIATES

SITE INVESTIGATIONS AND SOIL MECHANICS CONSULTATION

PROJECT Embankment, C.P.R. Overpass  
 LOCATION Rossport, Ont.  
 HOLE LOCATION See Dwg. 1  
 HOLE ELEVATION AND DATUM El. 630.5

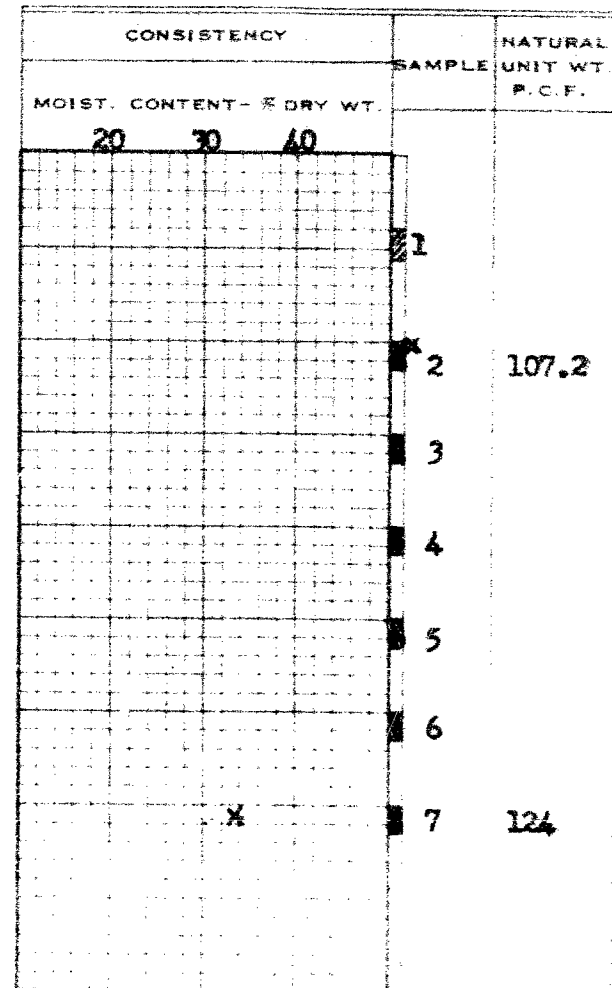
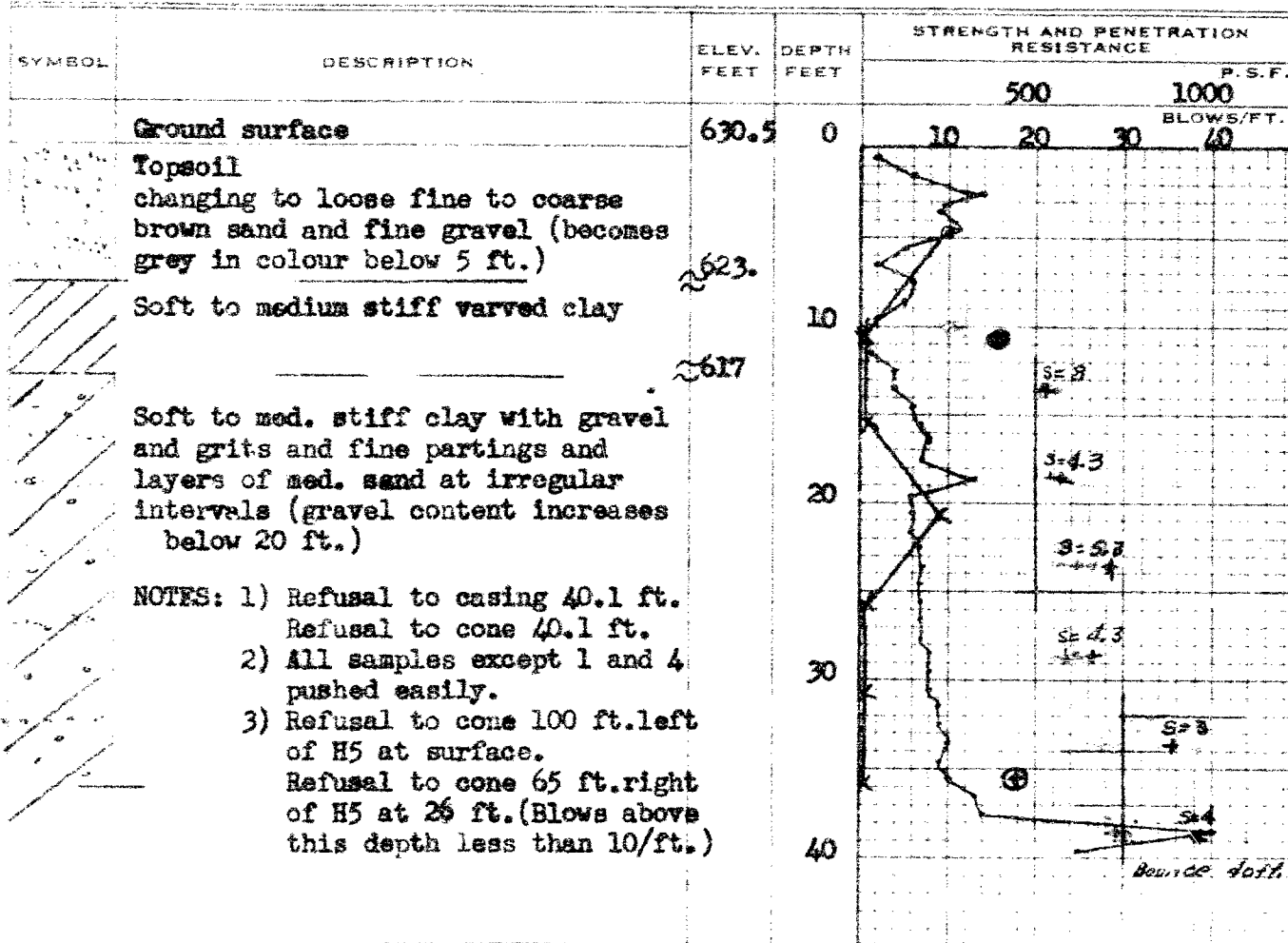
BOREHOLE NO. 5  
 FIELD SUPERVISOR KP  
 DRILLER ML  
 PREP. WT

DRAWING NO. 3

## LEGEND

2" DIA. SPLIT TUBE  
 2" SHELBY TUBE  
 2" SPLIT TUBE  
 2" DIA. CONE  
 CASING  
 2" SHELBY  
 1/2 UNCONFINED COMPRESSION (QU)  
 VANE TEST (C) AND SENSITIVITY (S)  
 NATURAL MOISTURE AND  
 LIQUIDITY INDEX  
 LIQUID LIMIT  
 PLASTIC LIMIT

2" DIA. SPLIT TUBE  
 2" SHELBY TUBE  
 2" SPLIT TUBE  
 2" DIA. CONE  
 CASING  
 2" SHELBY  
 1/2 UNCONFINED COMPRESSION (QU)  
 VANE TEST (C) AND SENSITIVITY (S)  
 NATURAL MOISTURE AND  
 LIQUIDITY INDEX  
 LIQUID LIMIT  
 PLASTIC LIMIT



PROJECT NO. C108/J170

DRAWING NO. 4

# TROW SODERMAN AND ASSOCIATES

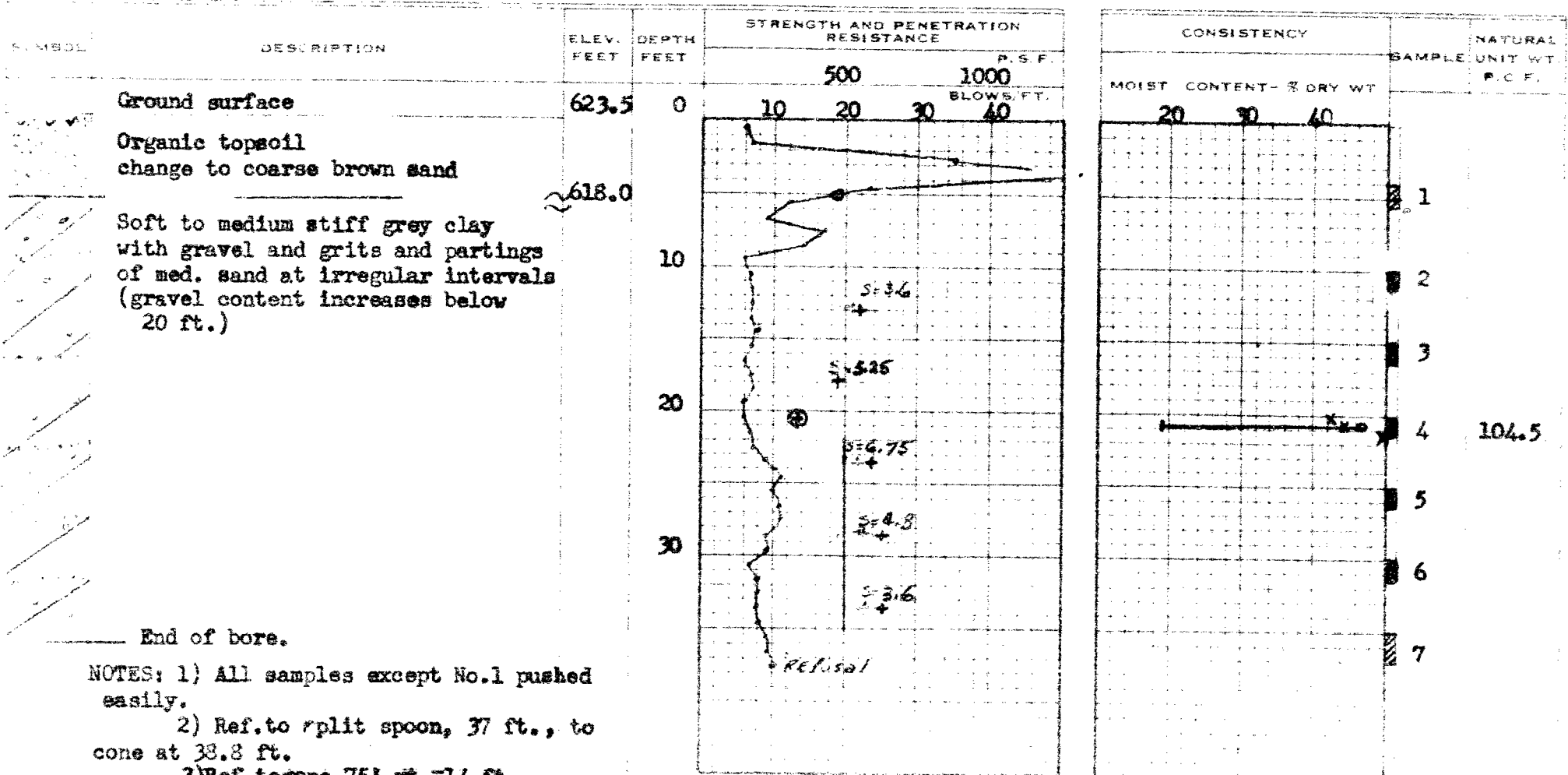
SITE INVESTIGATIONS AND SOIL MECHANICS CONSULTATION

PROJECT **Embankment, C.P.R. Overpass**  
 LOCATION **Rosspport, Ont.**  
 HOLE LOCATION **See Dwg.1**  
 HOLE ELEVATION AND DATUM **El. 623.5**

BOREHOLE NO. **6**  
 FIELD SUPERVISOR **KP**  
 DRILLER **WL**  
 PREP. **WT**

## LEGEND

- 2" DIA. SPLIT TUBE
- 2" SHELBY TUBE
- 2" SPLIT TUBE
- 2" DIA. CONE
- CASING
- 2" SHELBY
- 1/2 UNCONFINED COMPRESSION (QU)
- VANE TEST (C) AND SENSITIVITY (S)
- NATURAL MOISTURE AND LIQUIDITY INDEX
- LIQUID LIMIT
- PLASTIC LIMIT



PROJECT NO. C108/J170

TROW SODERMAN AND ASSOCIATES

SITE INVESTIGATIONS AND SOIL MECHANICS CONSULTATION

DRAWING NO. 5

LEGEND

- 2" DIA. SPLIT TUBE
- 2" SHELBY TUBE
- 2" SPLIT TUBE
- 2" DIA. CONE
- CASING
- 2" SHELBY
- 1/2 UNCONFINED COMPRESSION [Qu]
- VANE TEST [C] AND SENSITIVITY [S]
- NATURAL MOISTURE AND LIQUIDITY INDEX
- LIQUID LIMIT
- PLASTIC LIMIT

PROJECT Embankment, C.P.R. Overpass

LOCATION Rossport, Ont.

SOLE LOCATION See Dwg.1

HOLE ELEVATION AND DATUM El. 622.0

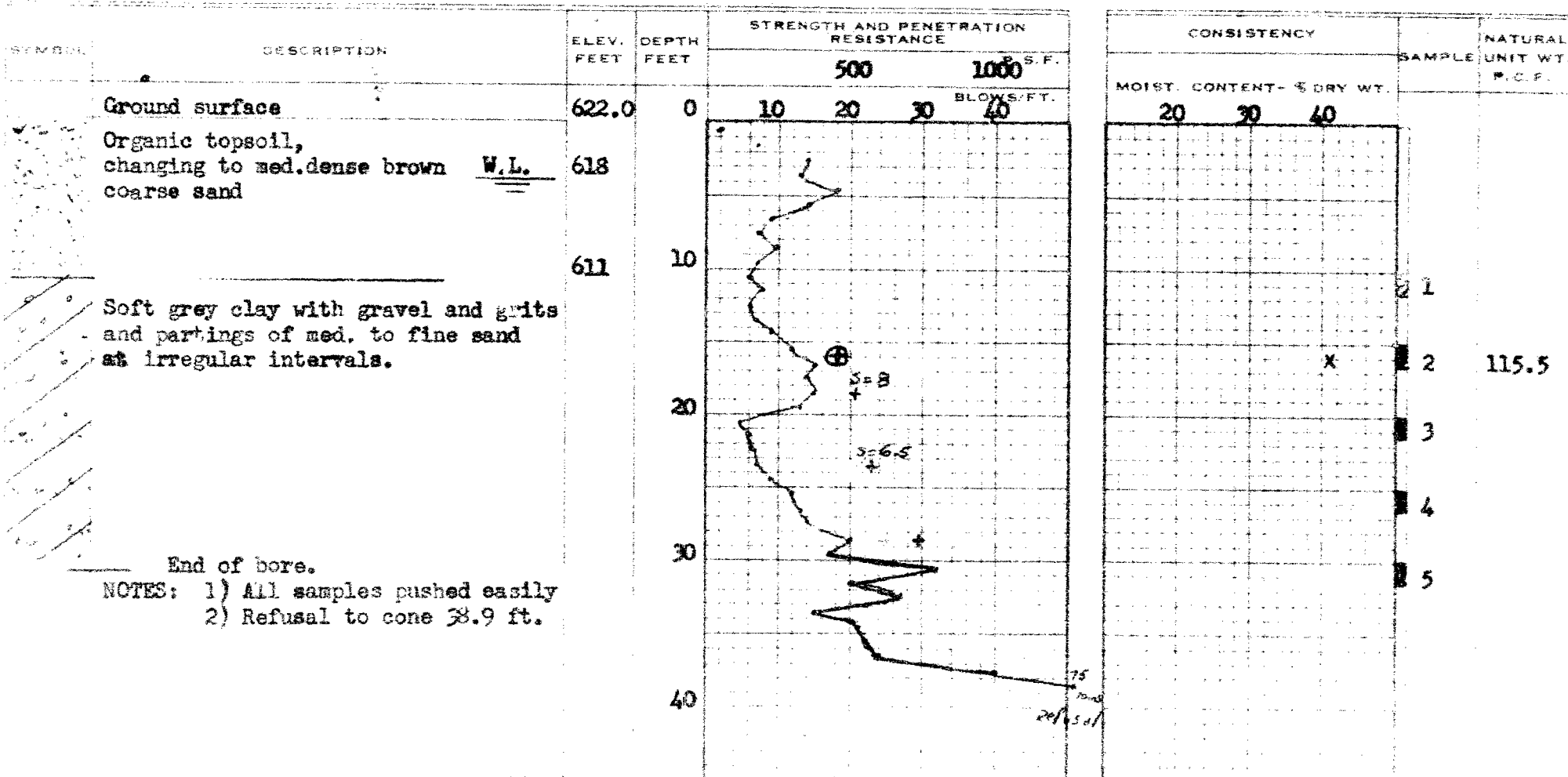
BOREHOLE NO. 7

FIELD SUPERVISOR

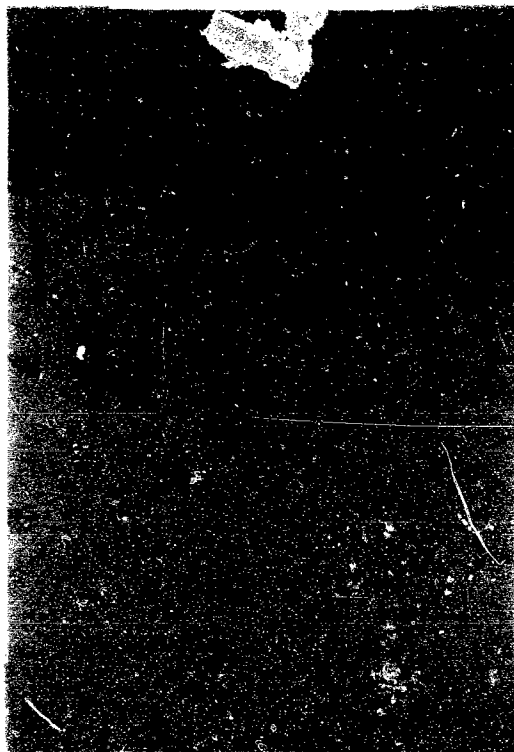
DRILLER WL

PREP. MT

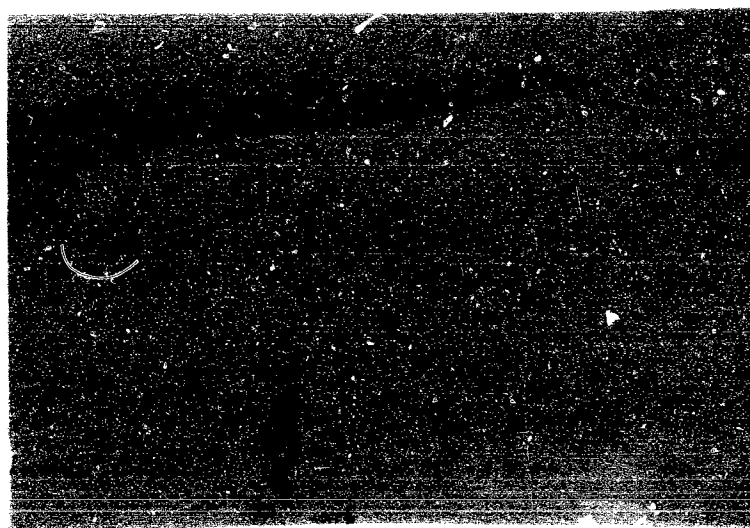
KP





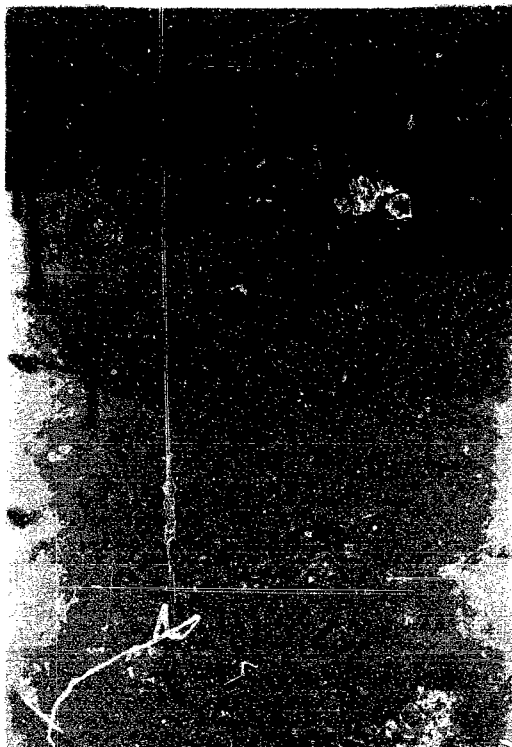


View looking South-East from  
C.P.R. along proposed highway  
centre line toward Lake Superior

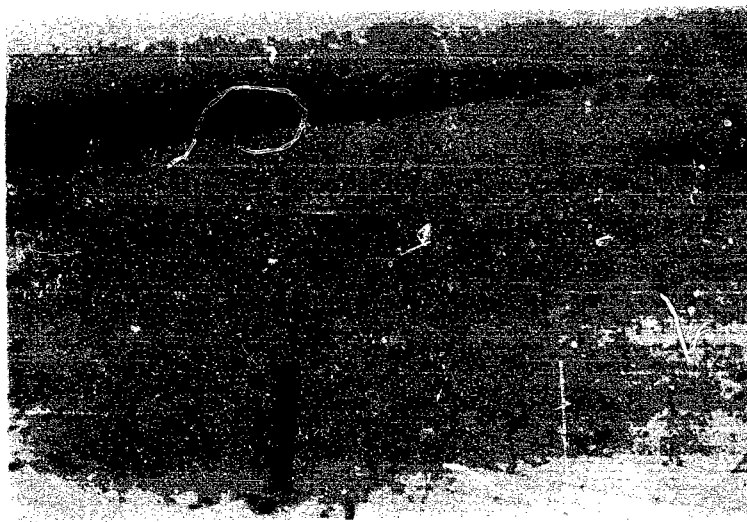


View looking North from C.P.R.  
along proposed highway centre line.

SUPER IMPOSED DOCUMENT MAY  
APPEAR AS MULTI-FEED ON FILM.



View looking South-East from  
C.P.R. along proposed highway  
centre line toward Lake Superior



View looking North from C.P.R.  
along proposed highway centre line.

SUPER IMPOSED DOCUMENT MAY  
APPEAR AS MULTI-FEED ON FILM.

B A 711 C

TROW, SODERMAN AND ASSOCIATES

SITE INVESTIGATIONS  
AND  
SOIL MECHANICS CONSULTATION

W. A. TROW, M.A.S.C., M.E.I.C., P.ENG.  
L. G. SODERMAN, B.S.C., D.I.C., P.ENG.

884 WILSON AVE., DOWNSVIEW  
ST. 8-5921

Project: G139J213

May 26, 1958.

De Leuw Cather & Co. of Canada Ltd.,  
Consulting Engineers,  
52 St. Clair Ave. E.,  
Toronto, Ont.

58-F-277C

Attention: Mr. E. C. Padlock

Foundation Investigation  
C.P.R. Overpass, P.C.H.#17,  
Revised Location, Rosport.

Dear Sirs:

Enclosed herewith is our report of the foundation conditions underlying the revised C.P.R. Overpass at Rosport, Ontario. This report was prepared by Mr. D. Shields, P. Eng., who supervised the field investigation program.

Reference to the enclosed information indicates that sound bedrock lies close to the surface at all locations, except about 100 feet south of the railway. Soft clay to a depth of 20 feet occupies a depression in the bedrock here. This clay must be removed before embankment construction can begin.

We hope that the contents of this report assist you in appraising the conditions at this site. If clarification of any matters is required, please do not hesitate to call.

Yours very truly,

*W. A. Trow*

WAT/lt  
Encl.

William A. Trow (P. Eng.)

DR LEW CATHEN & CO. OF CANADA LTD.,  
CONSULTING ENGINEERS,  
52 ST. CLAIR AVE. E.,  
TORONTO, ONTARIO.

FOUNDATION INVESTIGATION  
C.P.R. OVERPASS, T.C.N.#17,  
RAVISED LOCATION, ROSEPORT.

CL29/J213

Trow Soderman and Associates

May 26, 1958.

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ENCLOSURES

Plan showing hole locations and Rock outcrops	Dwg. 1
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FOUNDATION INVESTIGATION  
C.P.R. OVERPASS, T.O.E. #17,  
PROPOSED LOCATION, ROSSPORT, ONT.

This report contains the results of the field investigation carried out at the above site and includes a discussion on approach embankment stability.

Description of Site

The overpass site considered in this report is situated approximately 1200 feet east of the C.P.R. Station at Rossport and is some 800 feet east of the proposed overpass location investigated in February of this year. At this location, the railroad passes through a rock side-hill section. A vertical 4-foot face of rock is to the north and a 10-foot granular fill has been placed to the south. The top of the embankment is some forty feet wide with the single track near the north edge.

Bedrock outcrops or underlies a few inches of topsoil along the proposed highway location, north of the track. To the south, some rock outcroppings are evident (see Dwg. #1), but the land is generally flat over a 50 foot distance from the toe of the railway embankment. Beyond this point the ground falls into the moderately deep ravine of a creek which runs parallel to the track and approximately 150 feet south of it. The south bank of this ravine, west of the proposed highway, is a rock outcrop. To the east, the ravine is more shallow with gentler slopes and is marshy. Rock outcrops are evident east of the highway near Sta. 357+50.

Field Investigation

Outlining the bedrock outcrops and the areas where rock was only a few inches from the surface formed the first phase of the investigation. Drawing #1 illustrates the exposed areas.

From this, it became evident that bedrock would form the foundation materials for the overpass structure. In order to prove this formation and outline its existence more concisely, four boreholes were put down adjacent to the track. Boreholes 6 and 7 were put down through the railway embankment, while holes 1 and 2 were positioned near the toe of the railroad embankment. Drawing #1 gives the location of these boreholes.

One additional boring and three penetration tests were carried out near the creek where bedrock was not evident. These were necessary in order to evaluate the foundation conditions for the south approach embankment. They are numbered 3, 4 and 5 in drawing #1.

Since rock outcropped or approached within a few inches of the surface elsewhere along the centre line, no additional field work was deemed necessary.

All borings were made with a standard diamond drill. Two and one-half inch diameter casing was driven through overburden while rock drilling

utilized a 1½ inch diamond coring bit. The casing was alternately driven and washed clean to facilitate sampling in the overburden areas. In holes 1, 2, 5 and 7, disturbed spoon samples were taken and the recovered soil identified. Undisturbed 2 inch shelly tube sampling was attempted in hole 3, but only one good sample was obtained because of the soft and gravelly nature of the soil encountered. Drawings 2 - 8 give the logs of the holes and show the soils encountered.

### Discussion of Investigation Results

(a) Overpass structure: Foundations for the overpass structure on the north side of the railway track will rest on the rock exposed by the railway cut or, in the case of the extreme north-east corner, on natural rock at a minimum elevation of 641 feet. Therefore, no problem exists for this portion of the proposed bridge.

To the south of the track, bedrock elevations are somewhat variable, ranging from elevation 640 and 638 in holes 6 and 1, respectively, to an elevation approaching 627, as shown in hole 2. As the foundations for the structure will probably be closer to the railroad track than either of holes 1 or 2, they will be founded on rock at a somewhat higher elevation.

(b) North approach embankment: Outcrops of bedrock or rock within a few inches of the surface will form the foundation material of the north approach embankment.

(c) South approach embankment: In the area between the bedrock outcrops shown in drawing #1 and adjacent to the creek, a bed of soft clay was encountered about 3 feet below ground surface. This clay extends to depths of the order of 20 feet below ground surface, as illustrated by holes 3, 4 and 5. The shear strength of this material, as determined on a sample from hole 3, was of the order of 450 p.s.f. This strength value is similar to the measurements recorded for the site to the west. The clay is much too soft to support the embankment weight required at this crossing and it must either be removed, or a trestle type of approach founded on piles to bedrock must be used.

Removal of the soft clay will probably require the use of dragline equipment. The estimated amount of clay and upper sand excavation will be of the order of 15,000 yards. Side slopes of the excavation will have to be kept to a maximum of 1:1 to ensure stability.

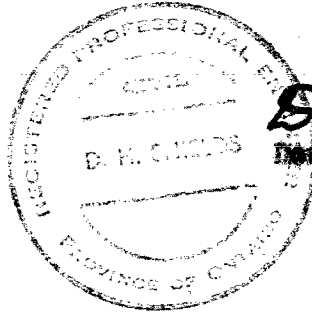
### Conclusions

The conclusions of this investigation can be summarized very briefly.

(1) The bridge abutments will find support on sound bedrock at very shallow depth.

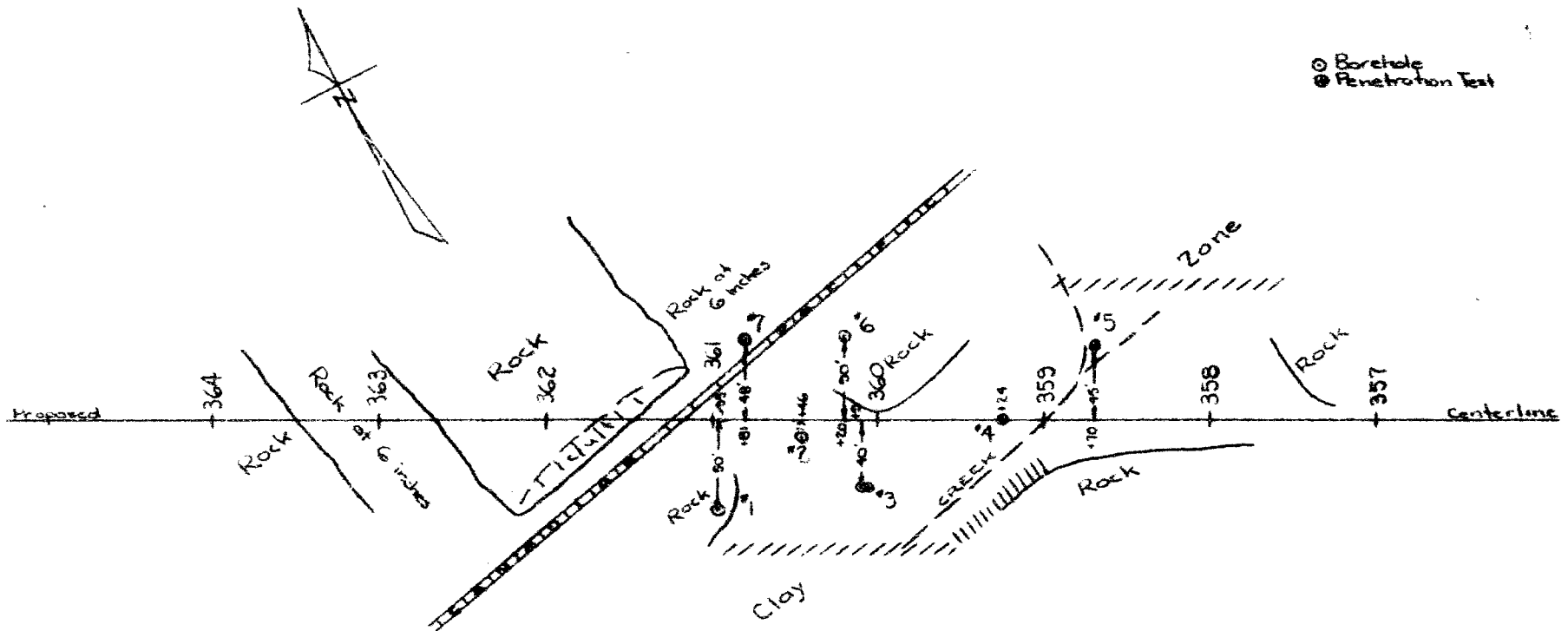
(2) The approach embankments will also rest on rock, except in the vicinity of a creek just south of the railway crossing. Here soft clay extends to a depth of 20 feet. This material is quite incapable of carrying the embankment weights at this location. Therefore this clay must be removed and the area backfilled with granular material, or a trestle type of approach used.

DHS/lt  
May 26, 1958.  
0129/J213



*D H Shields*  
Donald H. Shields (P. Eng.)





Plan Showing Hole Locations & Rock Outcrops

SCALE 1" = 100'

PROJECT NO.

0129 J213

DRAWING NO.

2

## TROW SODERMAN AND ASSOCIATES

SITE INVESTIGATIONS AND SOIL MECHANICS CONSULTATION

PROJECT **Bossport Overpass**

LOCATION **Rossport, Ont.**

See Dwg. #1

HALE ELEVATION AND DATUM. 638.7

$$B/R \text{ C.P.R. @ Sta. } 361+18 = 648.9$$

BOREHOLE NO. 1

FIELD SUPERVISOR **DS**

DRILLER

PREP. DS

LEGEND

- 2" DIA. SPLIT TUBE  
2" SHELBY TUBE  
2" SPLIT TUBE  
2" DIA. CONE  
CASING  
2" SHELBY  
1/2 UNCONFINED COMPRESSION (QU)  
VANE TEST (C) AND SENSITIVITY (S)  
NATURAL MOISTURE AND  
LIQUIDITY INDEX  
LIQUID LIMIT  
PLASTIC LIMIT

SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET	STRENGTH AND PENETRATION RESISTANCE					
				P.S.F.					
				BLOWS/FT.					
✓ ✓ ✓	Topsoil	638.7	0						
	Bedrock - granite	634.2							
	End of hole	634.2	5						
			10						
			15						
			20						

[illegible]

PROJECT NO. 0129/J213

TROW SODERMAN AND ASSOCIATES

SITE INVESTIGATIONS AND SOIL MECHANICS CONSULTATION

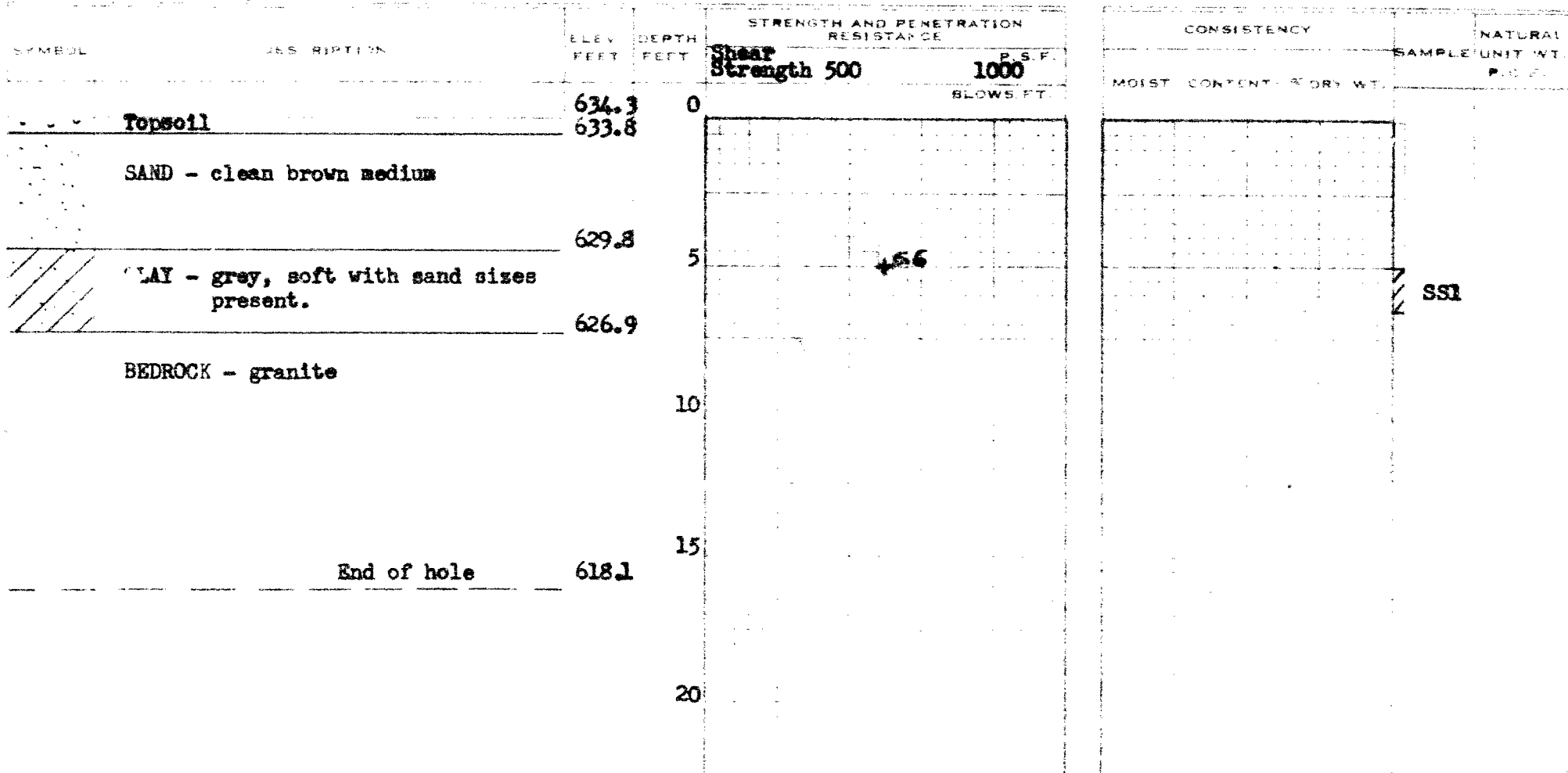
DRAWING NO. 3

LEGEND

- 2" DIA. SPLIT TUBE
- 2" SHELLEY TUBE
- 2" SPLIT TUBE
- 2" DIA. CONE
- CASING
- 2" SHELBY
- 1/2 UNCONFINED COMPRESSION [Qu]
- VANE TEST [C] AND SENSITIVITY [S]
- NATURAL MOISTURE AND
- LIQUIDITY INDEX
- LIQUID LIMIT
- PLASTIC LIMIT

PROJECT **Rossport Overpass,**  
 LOCATION **Rossport, Ont.**  
 HOLE LOCATION **See Dwg. #1**  
 HOLE ELEVATION AND DATUM **634.3**  
**B/R C.P.R. @ Sta. 361 +18 = 648.9**

BOREHOLE NO. **2**  
 FIELD SUPERVISOR **DS**  
 DRILLER **AA**  
 PREP. **DS**



CL29/J213

# TROW SODERMAN AND ASSOCIATES

ENGINEERING AND CONSULTATION

Rossport Overpass

Rossport, Ont.

See Dwg. #1

633.3

B/R CPR @ Sta. 361+18 = 648.9

WELL NO. 3

WELL SUPERVISOR

DRILLER

OPER

DS

AA

DS

STRENGTH AND PENETRATION  
RESISTANCE

Shear  
Str.

500

1000

10

20

Topsoil

SAND - brown, medium

CLAY - grey, stiff at first,

then contains sand sizes

Coarse sand and gravel  
present

End of hole

633.3  
632.3

630.3

614.3

0

5

10

15

20

Refusal

DRAWING NO.

4

TESTED

1. DATA SPLIT TUBE

2. SHELBY TUBE

3. SPLIT TUBE

4. DIAL CONE

5. CASING

6. SHELBY

7. UNCONSOLIDATED COMPRESSION

8. LABORATORY C. AND G. TESTS

9. NATURAL MOISTURE

10. LIQUIDITY INDEX

11. LIQUID LIMIT

12. PLASTIC LIMIT

CONSISTENCY

20 30 40

TW1 No recovery

TW2 "

TW3 "

TW4 "

TW5 "

TW6 Damaged

TW7 No recovery

7. 2. 2. 2. 1413

0129/3213

## TROW SODERMAN AND ASSOCIATES

## SITE INVESTIGATIONS AND SOIL MECHANICS CONSULTATION

PROJECT

### Rosport Overpass

Rosspport, Ont.

102-1123

• • • • •

See Dwg. #1

## RELATION AND CATION

630.0

$$E/R \text{ CPR @ Sta. } 361+18 = 648.9$$

BOREHOLE NO. 4

4

FIELD SUPERVISOR

DS

DRILLER

AA

如欲更詳，

DS

DRAWING NO. 5

LEGEND

- 2" DIA. SPLIT TUBE  
2" SHELBY TUBE  
2" SPLIT TUBE  
2" DIA. CONE  
CASING  
2" SHELBY  
1-2 UNCONFINED COMPRESSION [QU]  
VANE TEST [C] AND SENSITIVITY [S]  
NATURAL MOISTURE AND  
LIQUIDITY INDEX  
LIQUID LIMIT  
PLASTIC LIMIT

### STRENGTH AND PENETRATION RESISTANCE

३. ५. ३

### CONSISTENCY

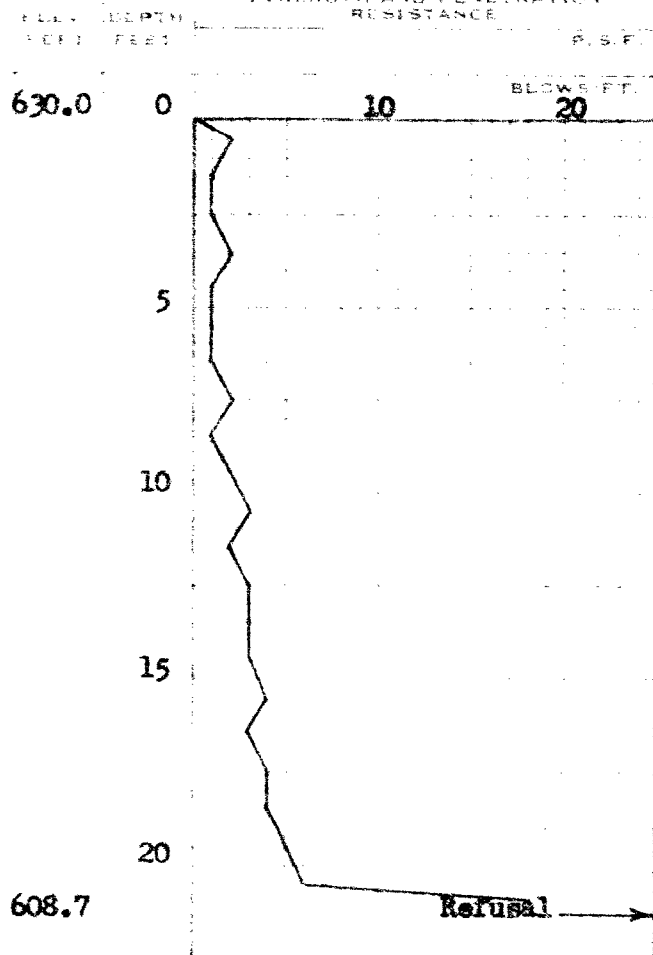
747 (126)

SAMPLE UNIT WT

2. 2. 2.

MOIST CONTENT - 2.18% WT

### Penetration test



## TROW SODERMAN AND ASSOCIATES

SITE INVESTIGATIONS AND SOIL MECHANICS CONSULTATION

PROJECT **Rossport Overpass**  
 LOCATION **Rossport, Ont.**  
 HOLE LOCATION **See Dwg. 1**  
 HOLE ELEVATION AND DATUM **627.6**  
**B/R CPR @ Sta. 361+18 = 648.9**

BOREHOLE NO. **5**  
 FIELD SUPERVISOR **DS**  
 DRILLER **AA**  
 PREP. **DS**

## LEGEND

2" DIA. SPLIT TUBE  
 2" SHELBY TUBE  
 2" SPLIT TUBE  
 2" DIA. CONE  
 CASING  
 1" SHELBY  
 1/2 UNCONFINED COMPRESSION (QU)  
 VANE TEST (C) AND SENSITIVITY (S)  
 NATURAL MOISTURE AND  
 LIQUIDITY INDEX  
 LIQUID LIMIT  
 PLASTIC LIMIT

SYMBOL DESCRIPTION

Penetration test

ELEV. (DEPTH)  
FEET FEETSTRENGTH AND PENETRATION  
RESISTANCE

P.S.F.

BLOWS FT.

627.6 0

10

20

5

10

15

20

605.6

Refusal

CONSISTENCY

NATURAL

SAMPLE UNIT WT

P.S.F.

MOIST. CONTENT - % DRY WT.

C129/J213

## TROW SODERMAN AND ASSOCIATES

## SITE INVESTIGATIONS AND SOIL MECHANICS CONSULTATION

PROJECT **Rossport Overpass**  
LOCATION **Rossport, Ont.**

HOLE LOCATION      See Dwg.1

HOLE ELEVATION AND DATUM 647.8

$$H/R \text{ CPR @ Sta. } 361+18 = 648.9$$

BOREHOLE NO. 6

FIELD SUPERVISOR

DRILLER

**PREP.**

6

DS

A



DRAWING NO.

1

### LEGEND

2" DIA. SPLIT TUBE  
2" SHELBY TUBE  
2" SPLIT TUBE  
2" DIA. CONE  
CASING  
2" SHELBY  
1/2 UNCONFINED COMPRESSION [Qu]  
VANE TEST [C] AND SENSITIVITY [S]  
NATURAL MOISTURE AND  
LIQUIDITY INDEX  
LIQUID LIMIT  
PLASTIC LIMIT

SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET	STRENGTH AND PENETRATION RESISTANCE	
				P. S. F.	
		647.8	0	BLOWS/FT.	
	FILL: sand gravel boulders				
		639.8	5		
	BEDROCK - granite		10		
	End of hole	634.8	15		
			20		

[illegible]

PROJECT NO.

CL29/J213

## TROW SODERMAN AND ASSOCIATES

## SITE INVESTIGATIONS AND SOIL MECHANICS CONSULTATION

PROJECT

## Rossport Overpass

LOCATION

Rosspport, Ont.

HOLE LOCATION

See Dwg. 1

HOLY ELEVATION AND DATUM

647.2

B/R CPH @Sta.  $361+18 = 648.9$

BOREHOLE NO.

2

FIELD SUPERVISOR

DS

DRILLER

**PREP**

**DE**

## DRAWING NO. 2

LEGEND

2<sup>71</sup> DIA. SPLIT TUBE

2" **SHELBY TUBE**

2. SPLIT TUBE

2<sup>nd</sup> DIA. CONE

## CASING

23 SHELBY

1/2 UNCONFINED COMPRESSION  $1Q_u$ 

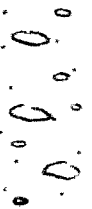
VANE TEST [C] AND SENSITIVITY [S]

NATURAL MOISTURE AND

LIQUIDITY INDEX

LIQUID LIMIT

PLASTIC LIMIT

SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET	STRENGTH AND PENETRATION RESISTANCE		CONSISTENCY	MOIST. CONTENT - % DRY WT.	NATURAL UNIT WT. P.C.F.
				P.S.F. BLOWS/FT.				
	FILL: Boulders, gravel & sand	647.2	0					
	BEDROCK - granite	641.2	5					
	End of hole	637.2	10					
			15					
			20					