

Ken Selby

Materials & Research Division

February 6th, 1963.

C.G. Parker & Parsons,
Brinckerhoff Ltd.,
795 Main Street West,
Hamilton, Ontario.

00-F-88
- 3

For the Attention of: Mr. J.W. Disner

Re: Hwy. 403, W.P. 140-57-1, Aberdeen Interchange,
Proposed Bin Retaining Walls.

In response to your letter of January 2, 1963, the three Bin Type Retaining Walls, as shown on your Drawing No. 17.5-5, were discussed on January 8, 1963. This is to confirm that this Section has no objection to your proposals as far as soils conditions and stability of the structures are concerned.

R. Schonfeld,
For: T.J. Kovich,
Regional Soils Engineer.

RS/bc
c.c.A. Sternac.
T.J.K. (2)
File

RM 110
File
ao, 0

April 6th, 1962.

60-F-88
59-F-128

C.C. Parker & Parsons, Brinckerhoff Ltd.,
Consulting Engineers,
795 Main Street, West,
Hamilton, Ontario.

Attention: Mr. J. Disher.

Dear Sir: Re: Chedoke Expressway,
 W.P. #231-58-3,
 Culvert #9. (Concrete Box 7' x 7').

The proposed culvert crosses under the Main Lanes between Stations 439 and 440. The invert elevation will be 13 to 18 feet below the existing ground. The highway embankment over the culvert will be 8 to 10 feet high.

The extent of differential settlement of the culvert under the embankment was considered. For this purpose, two hand auger holes were placed at stations 439/00, 25' left of centreline W.B.L., O.G. El. 261.20, and 438/25, 75' right of centreline, E.B.L., O.G. El. 266.20. These indicate that the culvert will rest on the grey brown silty clay stratum investigated previously in connection with the adjacent Ramp "H" structure (boreholes #3 and #4). This stratum has a cohesive strength (vane test) of the order of 1.000 p.s.f.

Under these circumstances, the anticipated settlement will be tolerable without pre-loading of the culvert line.

The groundwater table in this area is fluctuating, but may be as high as 2 feet below surface and pumping will be required.

RS/hl
c.c. I.C. Campbell,
 H.S. Bawcutt (Bridge Section)
 A. Stermac,
 T.J. Kovich,
 Files.

For: R. Schonfeld,
 T.J. Kovich,
 Regional Soils Engr.

23-62-10

Materials and Research Section.

July 12, 1961.

C.C. Parker & Parsons, Brinckernhoff, Ltd.,
Consulting Engineers,
795 Main Street West,
Hamilton, Ontario.

Attention: Mr. J. W. Disher

Re: Chedoke Expressway -
between Sta. 453+50 and 472+00
W.J. 60-F-8 & W.J. 60-F-88
W.P. 140-57-1 & W.P. 231-58-3
District #4, Hamilton, Ontario.

Dear Sir:-

This letter accompanies borehole logs, summary of field and laboratory tests and stratigraphic profile between Sta. 453+50 and 472+00.

We draw your attention to the following comments:-

- 1) Between Sta. 453+50 to 455+00, the proposed highway will be in cut and therefore no special treatment is required.
- 2) The proposed expressway between Sta. 455+00 and 461+00 will be partially under cut and fill. In this portion, the subsoil generally consists of soft clay with organic matter and extends to a depth of 4 to 5 ft. This soft upper layer, approximately 4 to 5 ft. deep, should be sub-excavated for the entire width of the fill section.
- 3) The embankment for the main lanes between Sta. 461+00 and Sta. 472+00, will rise 20 ft. above the original ground level. The upper stratum in this part is creek bottom and generally soft. Therefore, it is our recommendation that this soft material should be sub-excavated for the entire width of the embankment. The sub-excavation should be carried out to a depth approximately 4 to 5 ft.

cont'd. /2 ...

Recommendations: (cont'd.) ...

- 4) The sub-excavated material between Sta. 455+00 and Sta. 472+00 (approx.) should not be used for embankment fill, and therefore, must be wasted.

For the purpose of estimating, an average 4 ft. of sub-excavation and backfill may be assumed. The depth of granular base course and the type of fill material should be as per Soils Section recommendations.

We trust that the above information will allow you to complete your design and estimates. If clarification of any of the above information is required, please contact our Office.

L. G. Soderman,
PRINCIPAL FOUNDATION ENGR.
Per:

M. Devata
(M. Devata,
PROJECT FOUNDATION ENGR.)

MD/MSF
Encls.

cc: C.C. Parker (4)
A. M. Toye (2)
H. A. Tregaskes
H. D. McMillan
I. C. Campbell
J. C. Thatcher
T. J. Kovich
J. Roy
J. Crispier
E. K. Saint
P. Norman
Foundations Office
Gen. Files.

APPENDIX I.

SUMMARY OF FIELD & LABORATORY TESTS

JOB 60-F-8
140-57-1
W.P. 231-58-3

HOLE NO.	SAMP NO.	SAMPLE DEPTH (FEET)	MATERIAL DESCRIPTION	PENET'N RESIST. BLOWS/FT.	MOIST. CONT. %	PLASTIC LIMIT %	LIQUID LIMIT %	SHEAR STRENGTH p.s.f.	UNIT WEIGHT p.c.f.	REMARKS
1A	S1	5'-6.5'	Fill material (mixture of cinder, ashes with organic matter)-Loose	4	13.3	-	-	-	-	
	S2	10'-11.5'	Fill material (mixture of cinder, sand and gravel)-Loose	9	-	-	-	-	-	
	S3	15'-16.5'	Fill material (cinders with organic matter and refuse)-Med. dense	12	12.3	-	-	-	-	
	S4	20'-21.5'	Fill material (cinder with organic matter)-Loose	9	-	-	-	-	-	
	S5	25'-26.5'	Organic silt-clay with some gravel	20	14.6	17.3	20.2	-	-	
	T6	30'-31.5'	Silt of low plasticity, v. stiff.	P	24.8	26.1	38.4	2050	124.0	
	VANE	33'		-	-	-	-	960	-	Sens: 3.4
	S7	35'-36.5'	Clay of low plasticity, med. stiff	33	-	15.6	30.5	-	-	
	T8	40'-41.5'	No Recovery of Sample	P	-	-	-	-	-	Lost
	T9	45'-46.5'	" " "	P	-	-	-	-	-	"
	T10	50'-51.5'	" " "	P	-	-	-	-	-	"
	VANE	56.5'		-	-	-	-	1280	-	Sens: 2.3

SUMMARY OF FIELD & LABORATORY TESTS

JOB 60-F-8
140-57-1
W.P. 231-58-3

HOLE NO.	SAMP NO.	SAMPLE DEPTH (FEET)	MATERIAL DESCRIPTION	PENET'N RESIST. BLOWS/FT.	MOIST. CONT. %	PLASTIC LIMIT %	LIQUID LIMIT %	SHEAR STRENGTH p.s.f.	UNIT WEIGHT p.c.f.	REMARKS
1A	VANE	61.5'		-	-	-	-	800	-	Sens: 1.1
	T11	60'-65'	No Recovery of Sample	-	-	-	-	-	-	
	VANE	71'		-	-	-	-	2000	-	Sens: 1.1
	SI2	80'-81.5'	Clay of low plasticity, stiff, grey	24	8.0	12.8	27.7	-	-	
2A	S1	5'-6.5'	Fill material (cinders, ashes with refuse)	5	-	-	-	-	-	
	S2	10'-11.5'	Fill material (cinders, ashes, sand with organic matter)	7	1.4	-	-	-	-	
	S3	15'-16.5'	Fill material (ashes, cinders with slight traces of refuse)	16	-	-	-	-	-	
	S4	20'-21.5'	Fill material (mixture of ashes, cinders, clay & organic matter)	18	-	-	-	-	-	
	S5	25'-26.5'	No Recovery of Sample	19	-	-	-	-	-	
	S6	30'-31.5'	Silty sand with fine gravel - Med. Dense	21	34.4	-	-	-	-	
	S7	35'-36.5'	35-36.0 Silty sand with fine gravel - Dense 36-36.5 Silty clay of low plasticity Hard	40	-	-	-	-	-	
	T8	40'-41.5'	Silty clay of low plasticity, Hard, grey	47	-	16.5	30.3	-	-	Lost

SUMMARY OF FIELD & LABORATORY TESTS

JOB 60-F-8
W.P. 140-57-1
231-58-3

HOLE NO.	SAMP NO.	SAMPLE DEPTH (FEET)	MATERIAL DESCRIPTION	PENET'N RESIST. BLOWS/FT.	MOIST. CONT. %	PLASTIC LIMIT %	LIQUID LIMIT %	SHEAR STRENGTH p.s.f.	UNIT WEIGHT p.c.f.	REMARKS
2A	S8	40'-41.5'	Silty clay of low plasticity, Hard, grey	39	-	16.5	30.3	-	-	
	T9	45'-46.5'	Silty clay of low plasticity, v. stiff, grey	P	19.7	16.2	31.1	2430	132.0	
	T10	50'-51.5'	No Recovery of Sample	P	-	-	-	-	-	Lost
	S10	50'-51.5'	No Recovery of Sample	15	-	-	-	-	-	"
	T11	60'-61.5'	Clay of low plasticity, stiff, grey	P	-	13.6	25.1	-	-	
	S11	60'-61.5'	Grey silty clay of low plasticity m. stiff, grey	7	-	-	-	-	-	
	VANB	66.5'		-	-	-	-	960	-	Sens: 3.0
	T12	70'-71.5'	Grey silty clay of low plasticity m. stiff, grey	P	-	-	-	-	-	Lost
	S12	70'-71.5'	" " " " "	9	-	-	-	-	-	"
	VANB	76.5'		-	-	-	-	1280	-	Sens: 1.1

SUMMARY OF FIELD & LABORATORY TESTS

 JOB 60-F-8
140-57-1
 W.P. 231-58-3

HOLE NO.	SAMP. NO.	SAMPLE DEPTH (FEET)	MATERIAL DESCRIPTION	PENET'N RESIST. BLOWS/FT.	MOIST. CONT. %	PLASTIC LIMIT %	LIQUID LIMIT %	SHEAR STRENGTH p.s.f.	UNIT WEIGHT p.c.f.	REMARKS
3 A	S1	5'-6.5'	Fill material (cinders, ashes with sand)	9	4.6	-	-	-	-	
	S2	10'-11.5'	Fill material (cinders, ashes with sand)	6	-	-	-	-	-	
	S3	15'-16.5'	Fill material (cinders & ashes)	11	-	-	-	-	-	
	S4	20'-21.5'	Fill material (cinders & ashes)	10	-	-	-	-	-	
	S5	30'-31.5'	Silty sand with clay-med. dense	11	21.4	-	-	-	-	
	S6	35'-36.5'	Silty clay with gravel and decomposed wood-v. stiff-grey	21	-	-	-	-	-	
	S7	40'-41.5'	Clay of low plasticity, v. stiff, grey	16	-	16.7	31.0	-	-	

SUMMARY OF FIELD & LABORATORY TESTS

JOB 60-F-8

W.P. 140-57-1
231-36-3

HOLE NO.	SAMP NO.	SAMPLE DEPTH (FEET)	MATERIAL DESCRIPTION	PENET'N RESIST. BLOWS/FT.	MOIST. CONT. %	PLASTIC LIMIT %	LIQUID LIMIT %	SHEAR STRENGTH p.s.f.	UNIT WEIGHT p.c.f.	REMARKS
4	S1	3'-4.5'	Silty sand with fine to coarse gravel med. dense, brown	13	15.1	-	-	-	-	
	S2	6'-7.5'	6-70 Sandy silt with fine gravel, med. dense 7.0-7.5 Clay of low plasticity, stiff, grey	10	-	15.6	23.4	-	-	
	S3	9'-10.5'	Layers of sandy silt and silty clay.	24	-	-	-	-	-	
	S4	12'-13.5'	Silty clay with gravel, low plasticity, hard grey	33	15.4	-	-	-	-	
	S5	15'-16.5'	Clayey silt with fine sand, grey	38	16.7	-	-	-	-	
	S6	20'-21.5'	Silty clay of low plasticity, hard, grey	38	-	14.6	23.2	-	-	
	S7	25'-26.5'	Silty clay of low plasticity, hard, grey	46	18.4	-	-	-	-	
	S8	30'-31.5'	Silty clay of low plasticity, v. stiff, grey	16	20.0	16.5	32.5	-	-	
	T9	31.5'-33'	Silty clay of low plasticity, v. stiff, grey	20	-	16.1	29.1	-	-	

SUMMARY OF FIELD & LABORATORY TESTS

JOB 60-F-8

W.P. 140-57-1
231-58-3

HOLE NO.	SAMP NO.	SAMPLE DEPTH (FEET)	MATERIAL DESCRIPTION	PENET'N RESIST. BLOWS/FT.	MOIST. CONT. %	PLASTIC LIMIT %	LIQUID LIMIT %	SHEAR STRENGTH p.s.f.	UNIT WEIGHT p.c.f.	REMARKS
5 A	S1	3'-4.5'	Oxidized clay of Intermediate plasticity soft-brown	3	29.4	24.8	45.6	-	-	
	S2	6'-7.5'	Silty sand with some fine gravel-Loose brown	5	20.6	-	-	-	-	
	S3	9'-10.5'	Silty fine sand with pockets of clay-loose-brown	5	20.1	-	-	-	-	
	S4	12'-13.5'	Silty fine sand, med. dense, grey	15	10.6	-	-	-	-	
	S5	15'-16.5'	Silty fine sand, med. dense, grey	20	16.6	-	-	-	-	
	S6	20'-21.5'	Layers of fine sand, silt and clay grey	28	16.1	17.6	25.1	-	-	
	S7	25'-26.5'	Clay of low plasticity with fine sand-very stiff, grey	26	17.0	15.5	27.0	-	-	
	T8	30'-31.5'	Clay of low plasticity, very stiff, grey	P	20.0	18.0	35.0	-	-	
			S = split spoon sample T = shelby tube sample A = Auger sample							

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS AND RESEARCH SECTION

231-58-3

W.P. 140-57-1

BORE HOLE NO. 1A

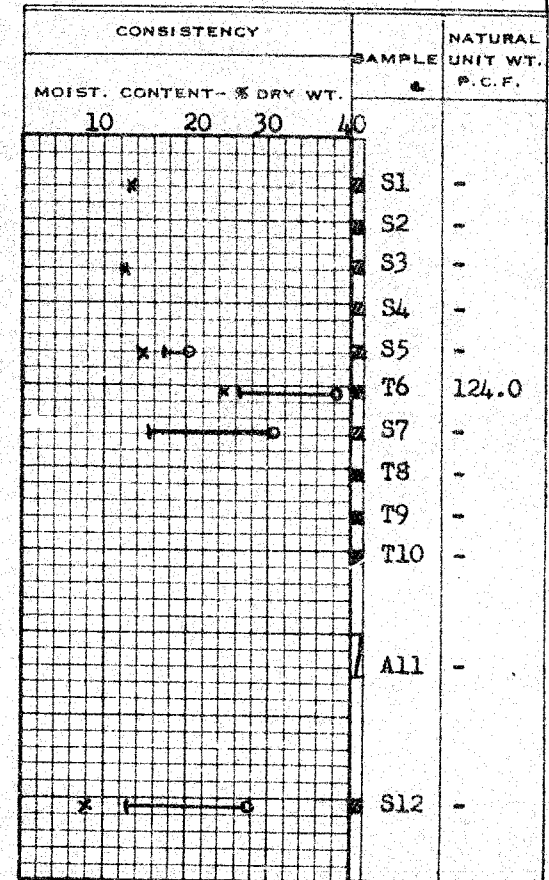
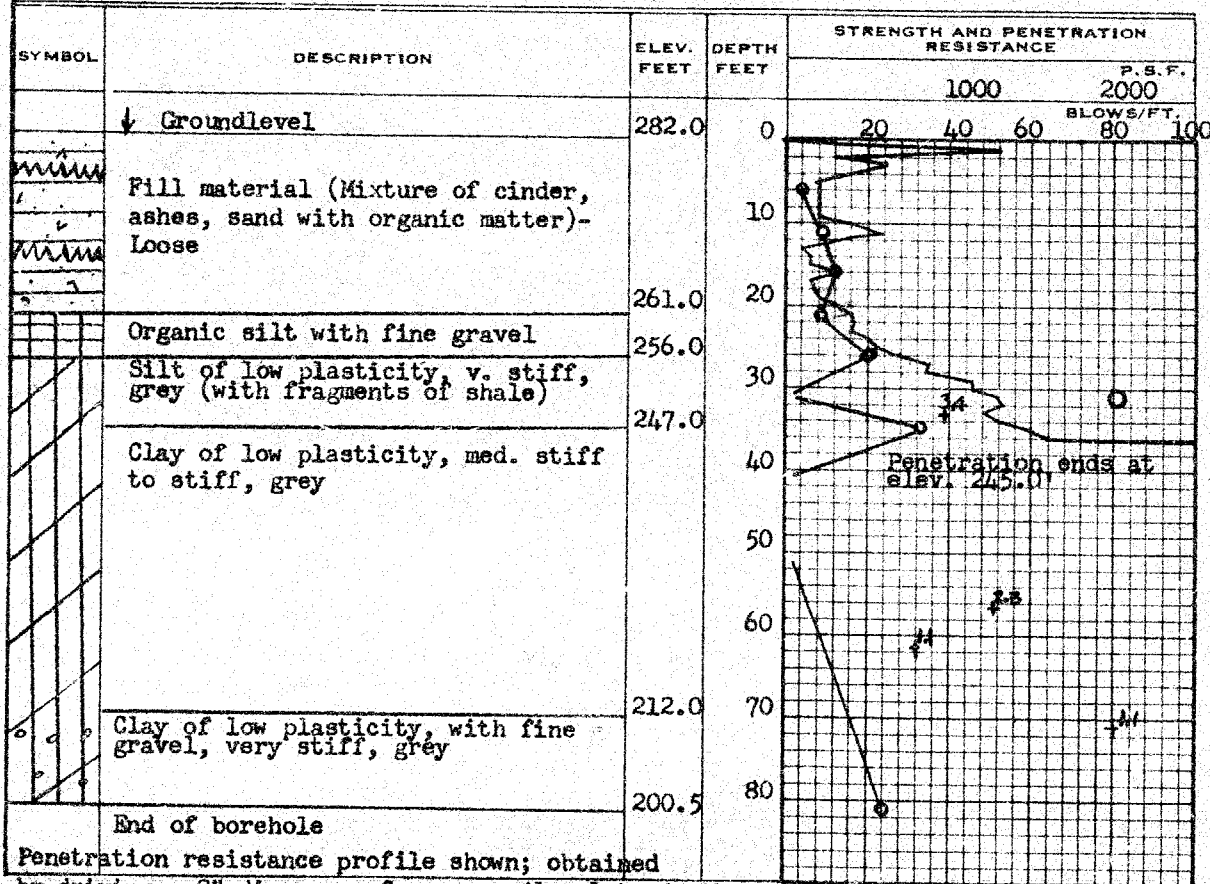
JOB 60-F-8

STATION 456+00 @ E.B.L.DATUM 282.0'COMPILED BY B.K.BORING DATE Jan. 28/60CHECKED BY M.D.

2" DIA. SPLIT TUBE
 2" SHELBY TUBE
 2" SPLIT TUBE
 2" DIA. CONE
 2" SHELBY
 CASING

LEGEND

1/2 UNCONFINED COMPRESSION (Qu) ○
 VANE TEST (C) AND SENSITIVITY (S) +s
 NATURAL MOISTURE AND LIQUIDITY INDEX LI
 LIQUID LIMIT ○
 PLASTIC LIMIT —



DEPARTMENT OF HIGHWAYS - ONTARIO MATERIALS AND RESEARCH SECTION

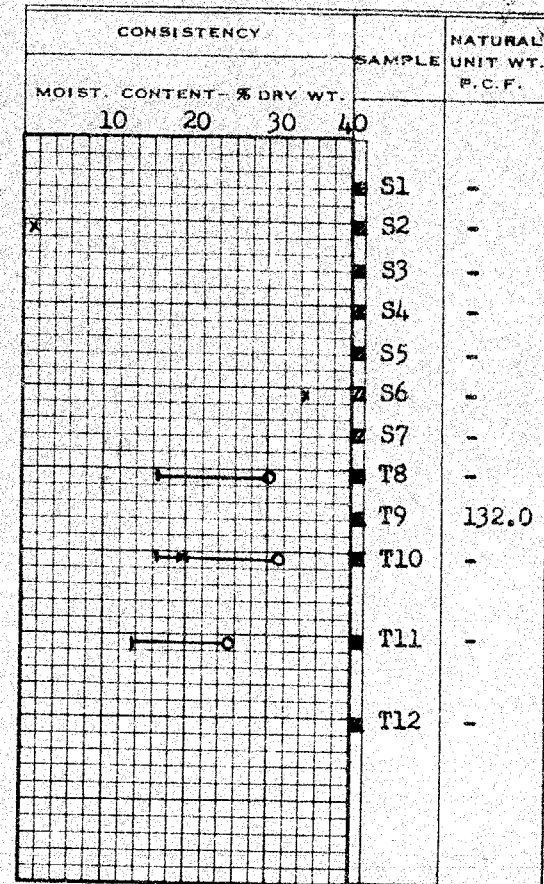
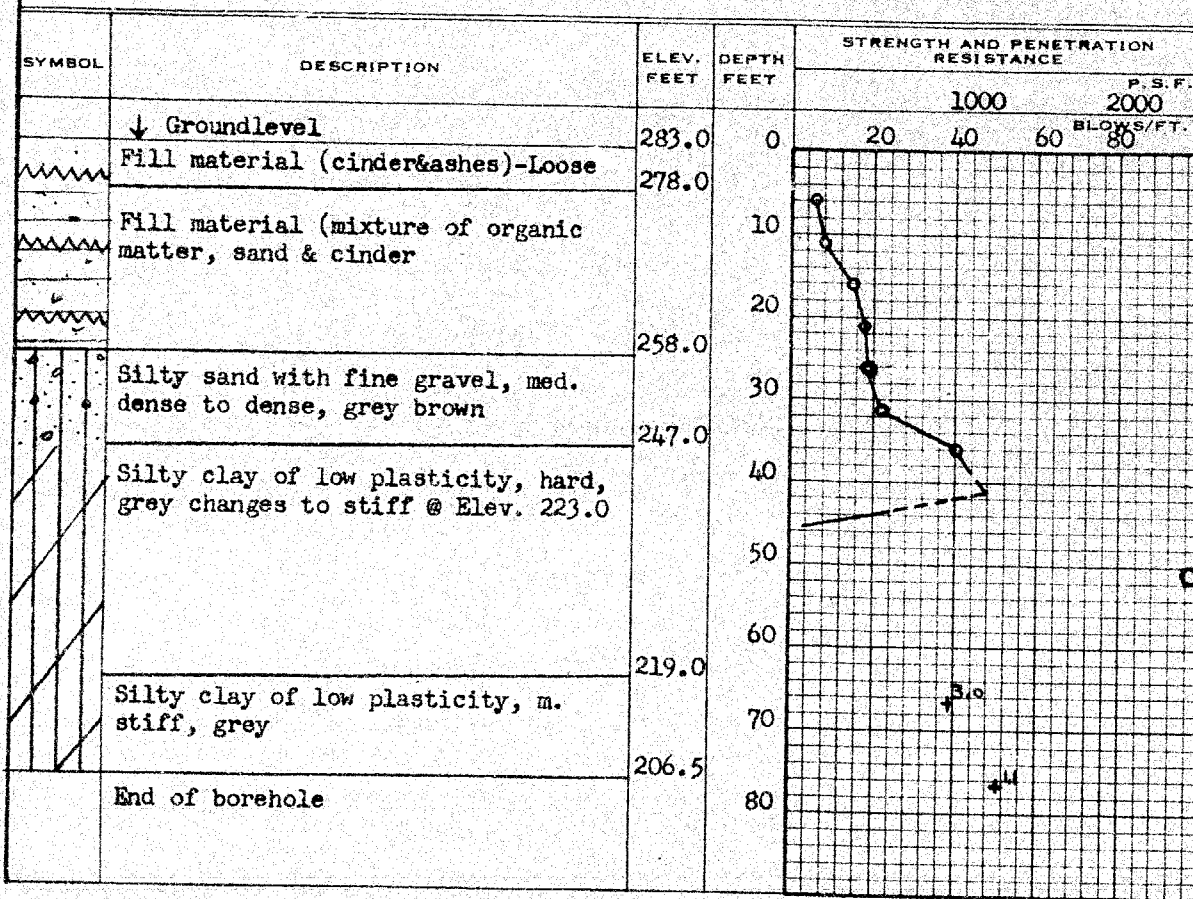
140-57-1
 W.P. 231-58-3
 JOB 60-F-8
 DATUM 283.0'
 BORING DATE Feb. 1/60

BORE HOLE NO. 2 A
 STATION 458+00 E.E.B.L.
 COMPILED BY B.K.
 CHECKED BY M.D.

2" DIA. SPLIT TUBE
 2" SHELBY TUBE
 2" SPLIT TUBE
 2" DIA. CONE
 2" SHELBY
 CASING

LEGEND

1/2 UNCONFINED COMPRESSION (Q_u)
 VANE TEST (C) AND SENSITIVITY (S)
 NATURAL MOISTURE AND LIQUIDITY INDEX
 LIQUID LIMIT
 PLASTIC LIMIT



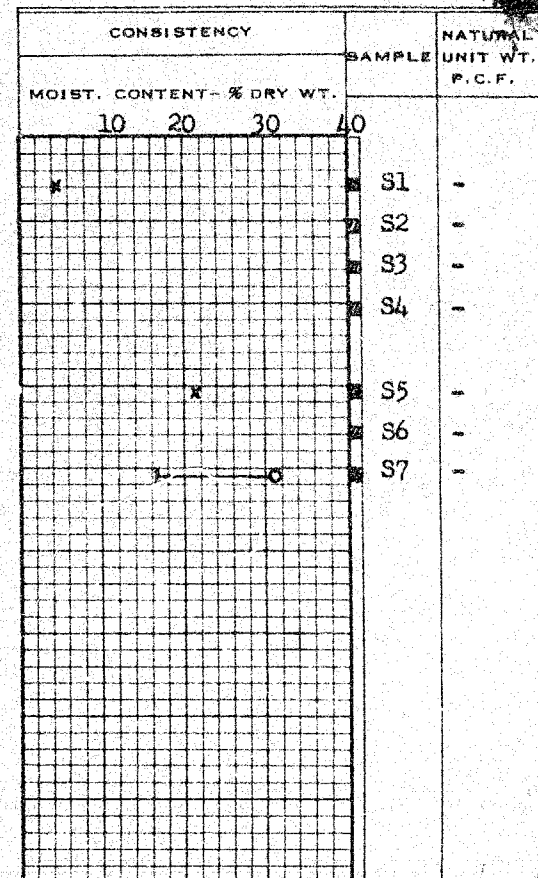
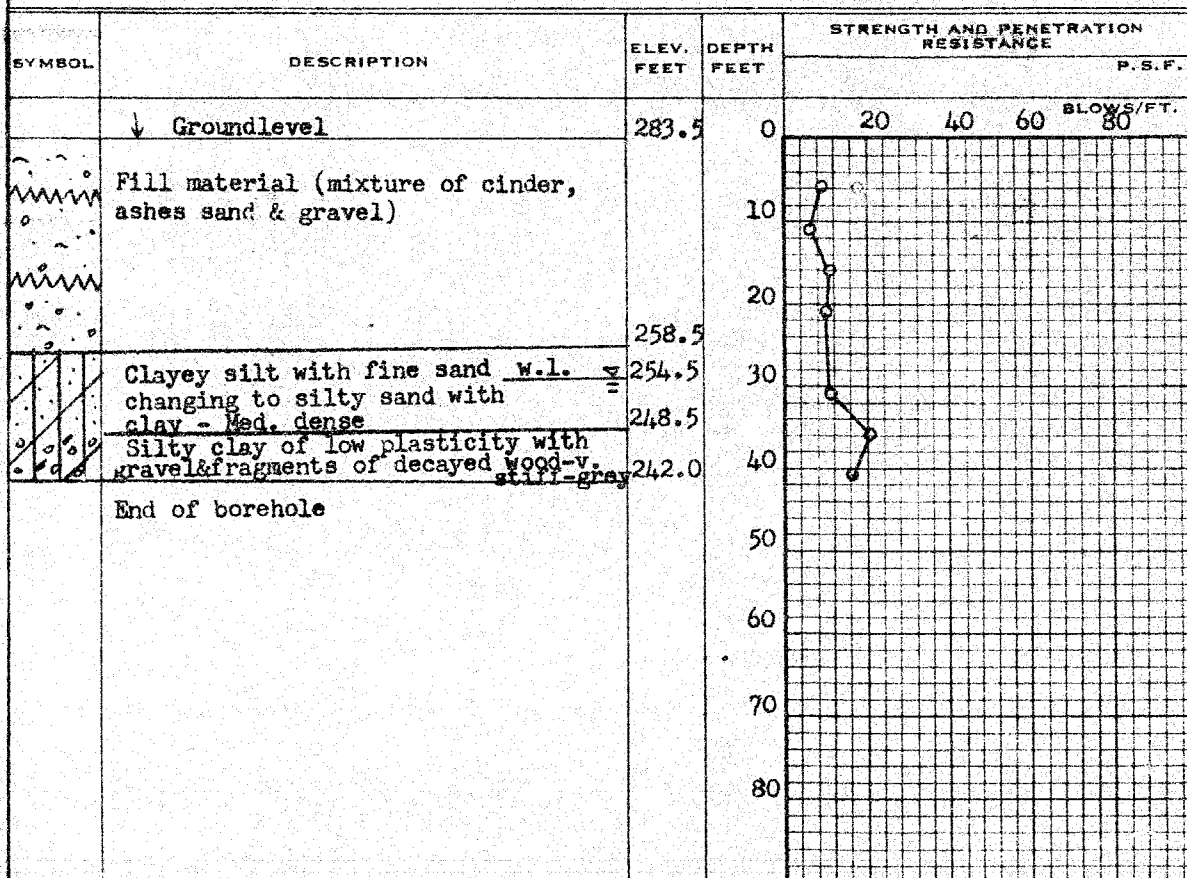
DEPARTMENT OF HIGHWAYS - ONTARIO MATERIALS AND RESEARCH SECTION

140-57-1
W.P. 231-58-3 BORE HOLE NO. 3A
JOB 60-F-8 STATION 454+00 6 E.B.L.
DATUM 283.5' COMPILED BY B.K.
BORING DATE Feb. 3/60 CHECKED BY M.D.

2" DIA. SPLIT TUBE
2" SHELBY TUBE
2" SPLIT TUBE
2" DIA. CONE
2" SHELBY
CASING

LEGEND

1/2 UNCONFINED COMPRESSION (Q_u)
VANE TEST (C) AND SENSITIVITY (S)
NATURAL MOISTURE AND LIQUIDITY INDEX
LIQUID LIMIT
PLASTIC LIMIT



DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS AND RESEARCH SECTION

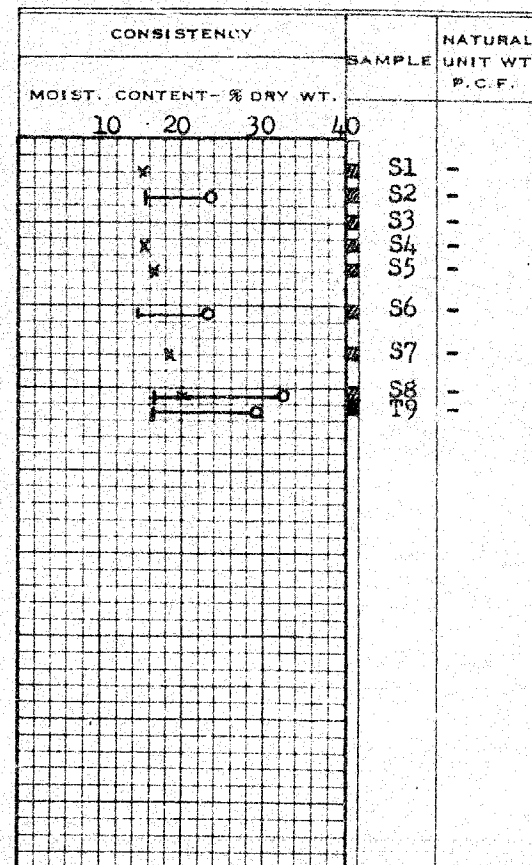
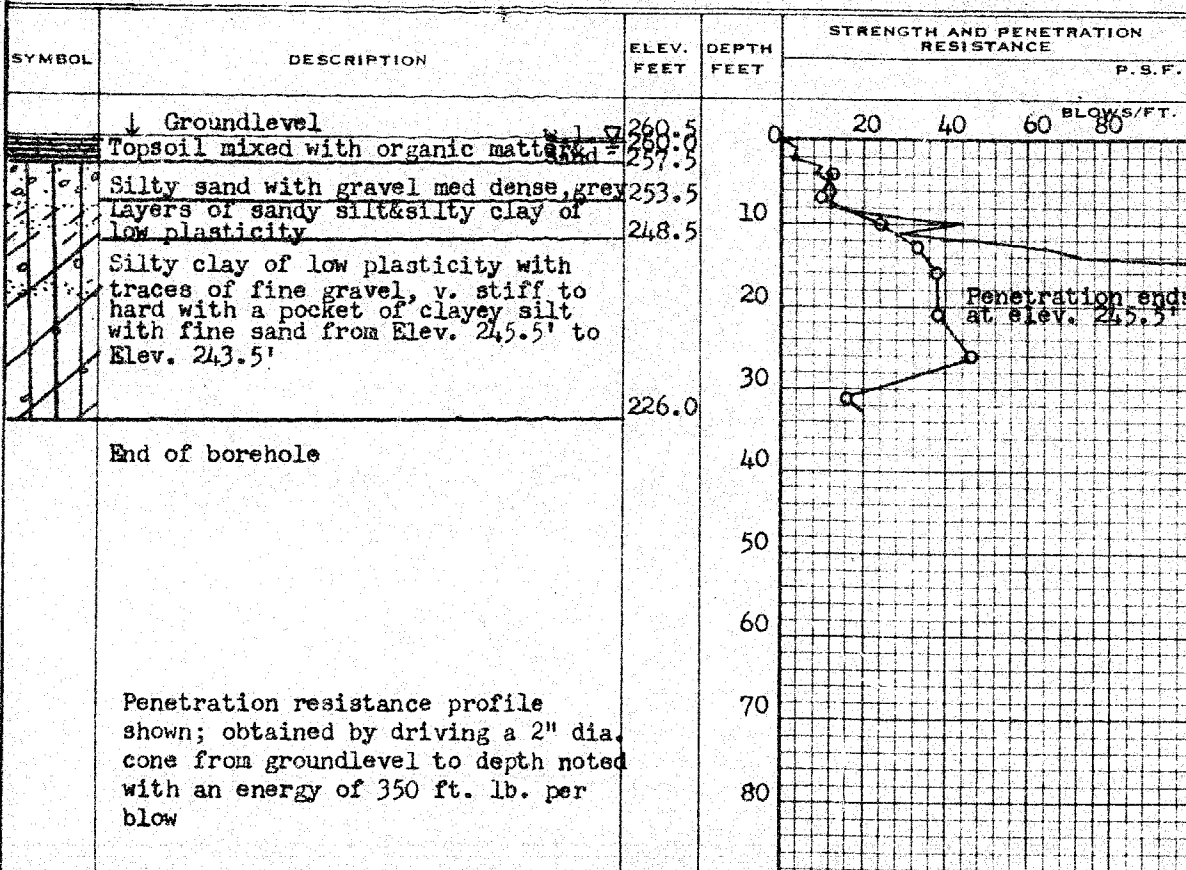
140-57-1
W.P. 231-58-3
JOB 60-F-8
DATUM 260.5'
BORING DATE Mar. 24/60

BORE HOLE NO. 4A
STATION 461+00 E. E.B.L.
COMPILED BY B.K.
CHECKED BY M.D.

2" DIA. SPLIT TUBE
2" SHELBY TUBE
2" SPLIT TUBE
2" DIA. CONE
2" SHELBY
CASING

LEGEND

1/2 UNCONFINED COMPRESSION (Qu) O
VANE TEST (C) AND SENSITIVITY (S) +
NATURAL MOISTURE AND LIQUIDITY INDEX L
LIQUID LIMIT X
PLASTIC LIMIT



DEPARTMENT OF HIGHWAYS - ONTARIO

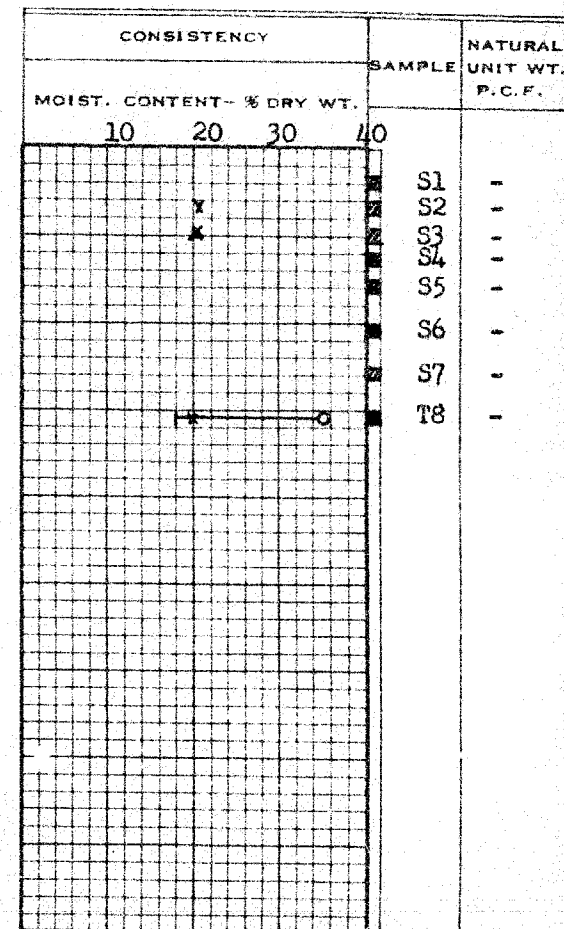
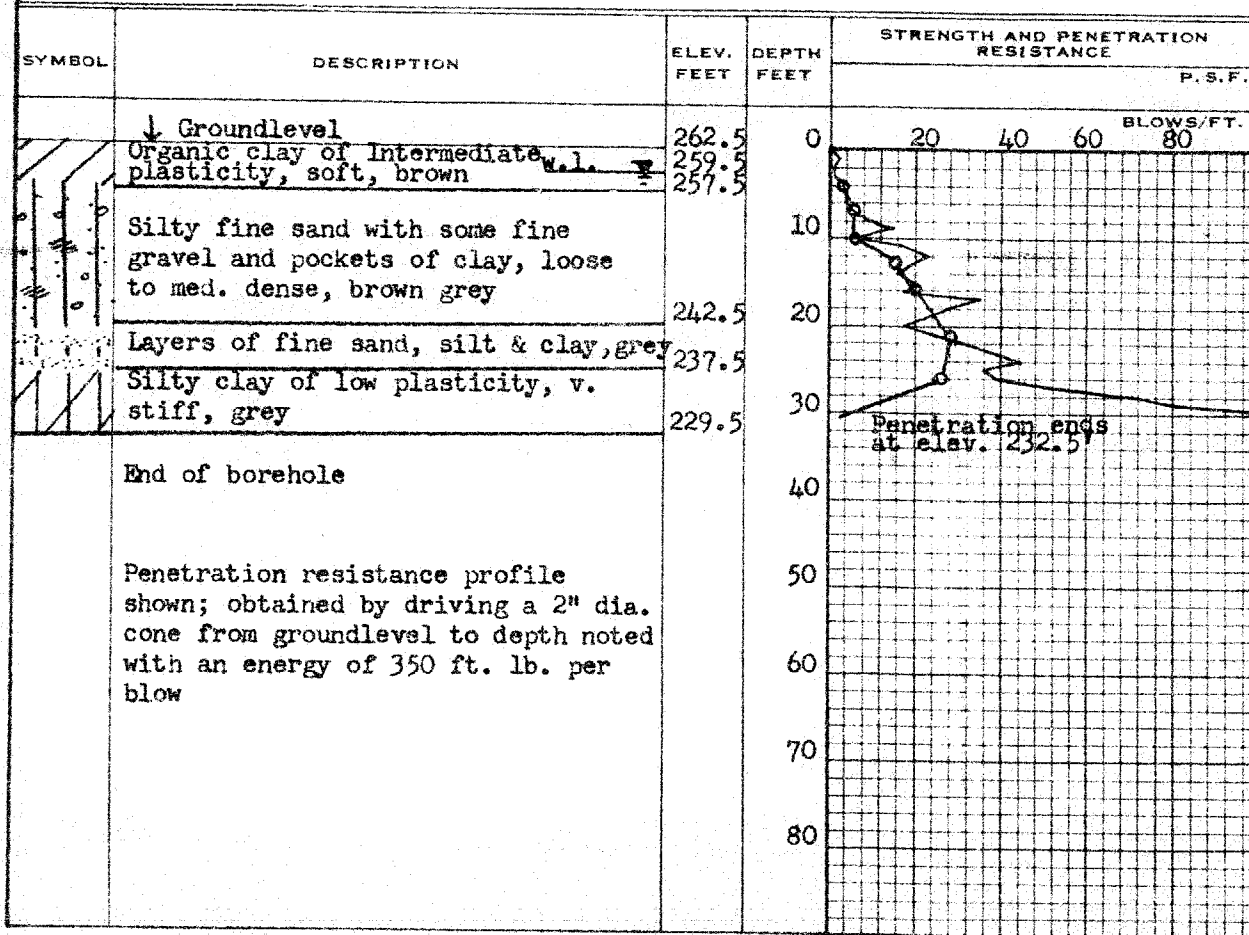
MATERIALS AND RESEARCH SECTION

140-57-1
 W.P. 231-58-3 BORE HOLE NO. 5
 JOB 60-F-8 STATION 463+00 & E.B.L.
 DATUM 262.5' COMPILED BY B.K.
 BORING DATE Mar. 26/60 CHECKED BY M.D.

2" DIA. SPLIT TUBE
 2" SHELBY TUBE
 2" SPLIT TUBE
 2" DIA. CONE
 2" SHELBY
 CASING

LEGEND

1/2 UNCONFINED COMPRESSION (Q_u) — O
 VANE TEST (C) AND SENSITIVITY (S) — +
 NATURAL MOISTURE AND LIQUIDITY INDEX — X
 LIQUID LIMIT —
 PLASTIC LIMIT —



SUMMARY OF FIELD & LABORATORY TESTS

JOB 60-F-88
140-57-1
W.P. 231-58-3

HOLE NO.	SAMP NO.	SAMPLE DEPTH (FEET)	MATERIAL DESCRIPTION	PENET'N RESIST. BLOWS/FT.	MOIST. CONT. %	PLASTIC LIMIT %	LIQUID LIMIT %	SHEAR STRENGTH p.s.f.	UNIT WEIGHT p.c.f.	REMARKS
1	S1	3'-4.5'	Silty clay of Intermediate plasticity with traces of organic matter and with fragments of shale-reddish brown-stiff	14	25.4	19.6	40.3	-	115	
	T2	6'-7.5'	Silty clay of low plasticity, med. stiff grey brown	P	27.4	16.7	32.7	595	129	
	VANE	9'		-	-	-	-	1120	-	Sens: 3.3
	T3	10'-11.5'	Silty clay of low plasticity, med. stiff grey	P	23.1	15.7	26.0	910	128	
	G3B	11.5'-13'	" " "	-	26.3	17.2	28.2	-	-	
	VANE	13'		-	-	-	-	1040	-	Sens: 2.6
	T4	15'-16.5'	Silty clay of low plasticity, med. stiff grey	P	30.5	17.7	31.1	920	126	
	G4B	16.5'-18'	" " "	-	28.9	18.2	33.4	-	-	
	VANE	18'		-	-	-	-	960	-	Sens: 2.8
	T5	20'-21.5'	Clay of low plasticity, med. stiff grey	P	26.0	18.9	35.1	1000	123.5	
	G5B	21.5'-23'	" " " "	-	31.0	17.7	34.7	-	-	
	VANE	23'		-	-	-	-	1040	-	Sens: 2.6
	T6	25'-26.5'	Clay of Intermediate plasticity stiff, grey	P	30.6	17.6	38.3	1070	122	
	G6B	26.5'-28'	" " " "	-	23.3	18.6	34.3	-	-	
	VANE	28'		-	-	-	-	1040	-	Sens: 2.6

SUMMARY OF FIELD & LABORATORY TESTS

JOB 60-F-88
140-57-1
W.P. 231-58-3

HOLE NO.	SAMP NO.	SAMPLE DEPTH (FEET)	MATERIAL DESCRIPTION	PENET'N RESIST. BLOWS/FT.	MOIST. CONT. %	PLASTIC LIMIT %	LIQUID LIMIT %	SHEAR STRENGTH p.s.f.	UNIT WEIGHT p.c.f.	REMARKS
1	T7	30'-31'	Clay of low plasticity with traces of fine gravel-stiff, grey	P	18.9	17.4	29.5	1710	133	
	S8	33'-34.5'	Clay of low plasticity with gravel-v. stiff	25	16.6	14.0	28.1	-	121	

SUMMARY OF FIELD & LABORATORY TESTS

JOB 60-F-88

140-57-1

W.P. 231-58-3

HOLE NO.	SAMP NO.	SAMPLE DEPTH (FEET)	MATERIAL DESCRIPTION	PENET'N RESIST. BLOWS FT.	MOIST. CONT. %	PLASTIC LIMIT %	LIQUID LIMIT %	SHEAR STRENGTH p.s.f.	UNIT WEIGHT p.c.f.	REMARKS
2	T1	1'-2.5'	Clay of Intermediate plasticity with fine to med. gravel and with some organic matter-soft, brown	P	31.8	21.6	35.3	400	118	
	G1B	3'-4.5'	" " " "	-	34.9	20.6	40.9	-	-	
	VANE	4.5'		-	-	-	-	920	-	Sens: 2.9
	T2	6'-7.5'	Clay of low plasticity with fine gravel and fragments of shale-med. stiff, reddish brown.	P	20.6 35.7	17.4	25.3	-	-	
	VANE	9'		-	-	-	-	900	-	Sens: 2.8
	G2B	7.5'-9'	Clay of low plasticity with fine gravel and fragments of shale-med. stiff, reddish brown.	-	27.1	16.0	26.8	-	-	
	T3	10'-11.5'	Clay of low plasticity, med. stiff, grey	P	25.8	17.0	35.0	655	115	
	VANE	13'		-	-	-	-	880	-	Sens: 2.2
	S3B	11.5'-13'	" " " "	P	29.9	18.1	33.8	-	-	
	T4	15'-16.5'	Clay of low plasticity, med. stiff, grey	P	26.7	16.7	34.1	-	-	
	VANE	18'		-	-	-	-	1040	-	Sens: 2.2
	G4B	16.5'-18.0'	" " " "	-	27.8	17.1	32.0	-	-	
	T5	20'-21.5'	Silty clay of Intermediate plasticity Med. stiff, grey	P	30.5	19.5	41.1	640	118	
	VANE	23'		-	-	-	-	1760	-	Sens: 3.7

SUMMARY OF FIELD & LABORATORY TESTS

JOB 60-F-88

140-57-1

W.P. 231-58-3

HOLE NO.	SAMP NO.	SAMPLE DEPTH (FEET)	MATERIAL DESCRIPTION	PENET'N RESIST. BLOWS/FT.	MOIST. CONT. %	PLASTIC LIMIT %	LIQUID LIMIT %	SHEAR STRENGTH p.s.f.	UNIT WEIGHT p.c.f.	REMARKS
2	G5B	21.5'-23'	Silty clay of Intermediate plasticity Med. stiff, grey	-	30.8	16.5	32.5	-	-	
	T6	25'-26.5'	Clay of low plasticity, Med. stiff, grey	P	25.2	18.5	35.0	665	135	
	VANE	28'		-	-	-	-	1440	-	Sens: 4.5
	G6B	26.5'-28'	" " " " "	-	29.2	17.3	31.4	-	-	
	T7	30'-31.5'	Clay of low plasticity, stiff, grey	P	25.0	15.2	27.8	490	132	
	VANE	33'		-	-	-	-	1440	-	Sens: 4.0
	G7B	31.5'-33'	" " " " "	-	31.6	17.6	29.6	-	-	
	T8	35'-36.5'	Clay of low plasticity, stiff, grey	P	25.3	15.5	24.9	865	126	
	VANE	38'		-	-	-	-	1520	-	Sens: 3.8
	G8B	36.5'-38'	" " " " "	-	31.2	15.6	27.1	-	-	
	T9	40'-41.5'	Clay of Intermediate plasticity stiff, grey	P	28.8	19.0	37.0	-	117	
	G9B	41.5'-42'	Clay of low plasticity, stiff, grey	-	26.3	16.2	33.1	-	-	
	S10	45'-46.5'	Clay of low plasticity, v. stiff, grey	25	19.0	10.5	30.0	-	132	

SUMMARY OF FIELD & LABORATORY TESTS

JOB 60-F-88

140-57-1

W.P. 231-58-3

HOLE NO.	SAMP NO.	SAMPLE DEPTH (FEET)	MATERIAL DESCRIPTION	PENET'N RESIST. BLOWS/FT.	MOIST. CONT. %	PLASTIC LIMIT %	LIQUID LIMIT %	SHEAR STRENGTH p.s.f.	UNIT WEIGHT p.c.f.	REMARKS
3	T1	2'-3.5'	Clay of Intermediate plasticity with traces of organic matter-Med. stiff, red	P	30.0	24.3	40.5	580	124	Sens: 9.2
	VANE	5'		-	-	-	-	640	-	
	G1B	3.5'-5'	" " " " "	-	26.4	17.0	36.1	-	-	
	T2	5'-6.5'	Clay of low plasticity with some fine gravel and traces of organic matter-soft-brown	P	29.0	17.5	30.1	325	130	Sens: 10.7
	VANE	8'		-	-	-	-	640	-	
	G2B	6.5'-8'	" " " "	-	32.5	17.7	27.7	-	-	
	T3	8'-9.5'	Sandy silt with some fine gravel, slightly cohesive-Loose-Brown	P	25.8	15.6	23.9	-	131	
	S4	10'-11.5'	Sand poorly graded with traces of fine gravel, Loose, Brown	7	19.8	-	-	-	-	
	S5	15'-16.5'	Layers of sand, gravel and silt Med. dense, grey	12	15.5	-	-	-	-	
	S6	18'-19.5'	Layers of sand and gravel with occasional seams of silt	13	18.9	-	-	-	-	
	S7	21'-22.5'	Clay of Intermediate plasticity Hard, grey	35	20.4	18.5	36.5	-	123	

SUMMARY OF FIELD & LABORATORY TESTS

JOB 60-F-88
140-57-1
W.P. 231-58-3

HOLE NO.	SAMP NO.	SAMPLE DEPTH (FEET)	MATERIAL DESCRIPTION	PENET'N RESIST. BLOWS/FT.	MOIST. CONT. %	PLASTIC LIMIT %	LIQUID LIMIT %	SHEAR STRENGTH p.s.f.	UNIT WEIGHT p.c.f.	REMARKS
3	S8	25'-26.5'	Clay of low plasticity with some fine gravel (clay till) - V. stiff, grey	19	16.8	14.4	21.9	-	128	
	S9	30'-31.5'	Clay of low plasticity, stiff, grey	10	22.0	14.8	27.9	-	129	
	S10	35'-36.5'	Clay of low plasticity with thin seams of sand-stiff, grey	8	22.6	15.7	27.9	-	122	
	T11	40'-41.5'	Clay of low plasticity, Med. stiff, grey	P	26.3	17.6	34.5	860	118	
	VANE	43'		-	-	-	-	1360	-	Sens: 2.1
	G11B	41.5'-43'	Clay of Intermediate plasticity, stiff, grey	-	28.8	16.9	35.5	-	-	
	T12	45'-46.5'	Clay of Intermediate plasticity, stiff, grey	P	29.1	19.4	36.0	1760	116	
	VANE	48'		-	-	-	-	1920	-	Sens: 4.4
	G12B	46.5'-48'	Clay of low plasticity, stiff, grey	-	29.2	17.6	32.6	-	-	
	T13	50'-51.5'	Clay of low plasticity, stiff, grey	P	20.2	17.7	33.0	1730	134	
	VANE	53'		-	-	-	-	>2000	-	Sens: >2.5
	G13B	51.5'-53'	Clay of low plasticity, v. stiff, grey	-	26.4	16.0	31.0	-	-	

SUMMARY OF FIELD & LABORATORY TESTS

JOB 60-F-88
140-57-1
W.P. 231-58-3

HOLE NO.	SAMP NO.	SAMPLE DEPTH (FEET)	MATERIAL DESCRIPTION	PENET'N RESIST. BLOWS FT	MOIST. CONT. %	PLASTIC LIMIT %	LIQUID LIMIT %	SHEAR STRENGTH p.s.f.	UNIT WEIGHT p.c.f.	REMARKS
4	T1	3'-4.5'	Sandy clay of low plasticity with traces of organic matter, med. stiff brown	P	26.6	20.6	34.8	650	137	Sens: 5.7
	VANE	6'		-	-	-	-	800	-	
	G1B	4.5'-6'	Clay of low plasticity, med. stiff, brown	-	25.4	16.8	29.3	-	-	
	S2	7'-8.5'	Sand, well graded with decayed matter, V. loose brown	P	28.3	-	-	-	-	
	S3	8.5'-10'	Sand well graded with decayed matter and pockets of silt, V. loose, brown	P	31.0	-	-	-	-	
	S4	10'-11.5'	10-11.0 Sand poorly graded with traces of fine gravel-Loose-brown 11-11.5 Silt with fine sand-Loose-brown	2	23.4	-	-	-	-	
	S5	13.0'-14.5'	Sandy silt, Med. dense, grey brown	13	21.8	-	-	-	-	
	S6	16'-17.5'	Sand uniformly graded, Med. dense reddish brown	14	16.1	-	-	-	-	
	S7	20'-21.5'	Sandy silt, med. dense, grey brown	21	17.9	-	-	-	-	
	S8	25'-26.5'	25-26.0 Sandy silt, med. dense 26-26.5 Clay of low plasticity with sand	18	21.6	15.5	24.3	-	-	
	S9	30'-31.5'	Sandy clay of low plasticity, Hard, grey	25	21.5	13.5	23.6	-	-	
	S10	35'-36.5'	Silty clay of low plasticity with some fine gravel (clay till)-Hard-	31	17.2	15.9	28.5	-	133	

SUMMARY OF FIELD & LABORATORY TESTS

JOB 60-F-88

140-57-1

W.P. 231-58-3

HOLE NO.	SAMP NO.	SAMPLE DEPTH (FEET)	MATERIAL DESCRIPTION	PENET N RESIST. BLOWS/FT.	MOIST. CONT. %	PLASTIC LIMIT %	LIQUID LIMIT %	SHEAR STRENGTH p.s.f.	UNIT WEIGHT p.c.f.	REMARKS
5	T1	3'-4.5'	Clay of Intermediate plasticity with traces of organic matter-soft-reddish brown	P	33.0	22.8	36.6	310	102	
	VANE	6'		-	-	-	-	480	-	Sens: 6.0
	G1B	4.5'-6'	Clay of low plasticity with traces of organic matter-soft-reddish brown	-	40.0	22.0	41.2	-	-	
	S2	6'-7.5'	" " " "	P	31.5	20.0	33.6	-	-	
	VANE	9'		-	-	-	-	1120	-	Sens: 1.4
	G2B	7.5'-9'	Clay of low plasticity, med. stiff, brown	-	31.8	17.8	23.9	-	-	
	S3	10'-11.5'	Interbedded sand, gravel & silt Loose, grey brown	6	18.3	-	-	-	-	
	S4	15'-16.5'	15-16.0 Silt, grey (non-cohesive)-Dense 16-16.5 Sandy silt, grey, dense.	30	17.7	-	-	-	-	
	S5	20'-21.5'	Sandy silt changing to silty sand Med. dense, grey	20	18.8	-	-	-	-	
	S6	25'-26.5'	Silty sand becoming sandy silt Dense, grey	38	20.5	-	-	-	-	
	S7	30'-31.5'	Clay of low plasticity (clay till). Hard, grey	41	17.2	15.4	24.7	-	135	
			S denotes split spoon sample T " shalby tube G " grab sample							

OFFICE REPORT ON SOIL EXPLORATION

DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS AND RESEARCH SECTION

140-57-1

W.P. 231-58-3

JOB 60-F-88

DATUM 265.0'

BORING DATE Oct. 24/60

BORE HOLE NO. 1

STATION 471+00 @ EBL

COMPILED BY B.K.

CHECKED BY M.D.

2" DIA. SPLIT TUBE

2" SHELBY TUBE

2" SPLIT TUBE

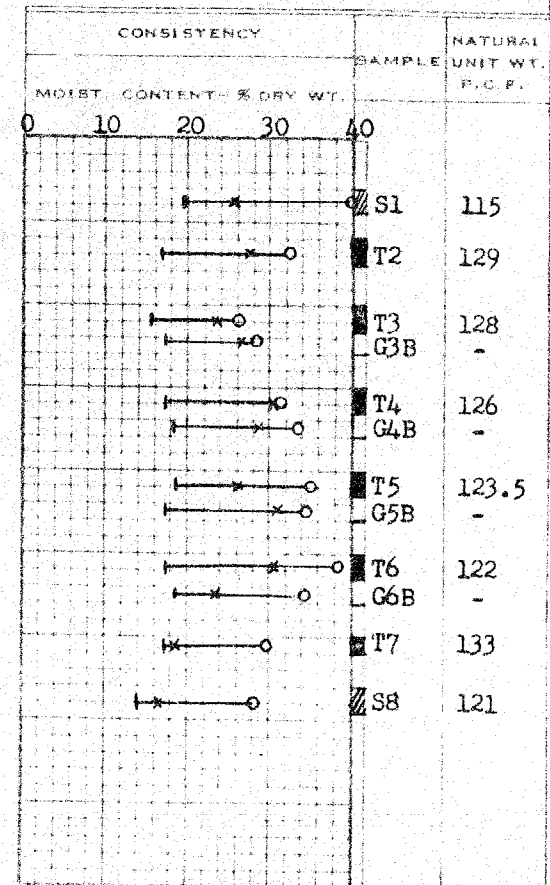
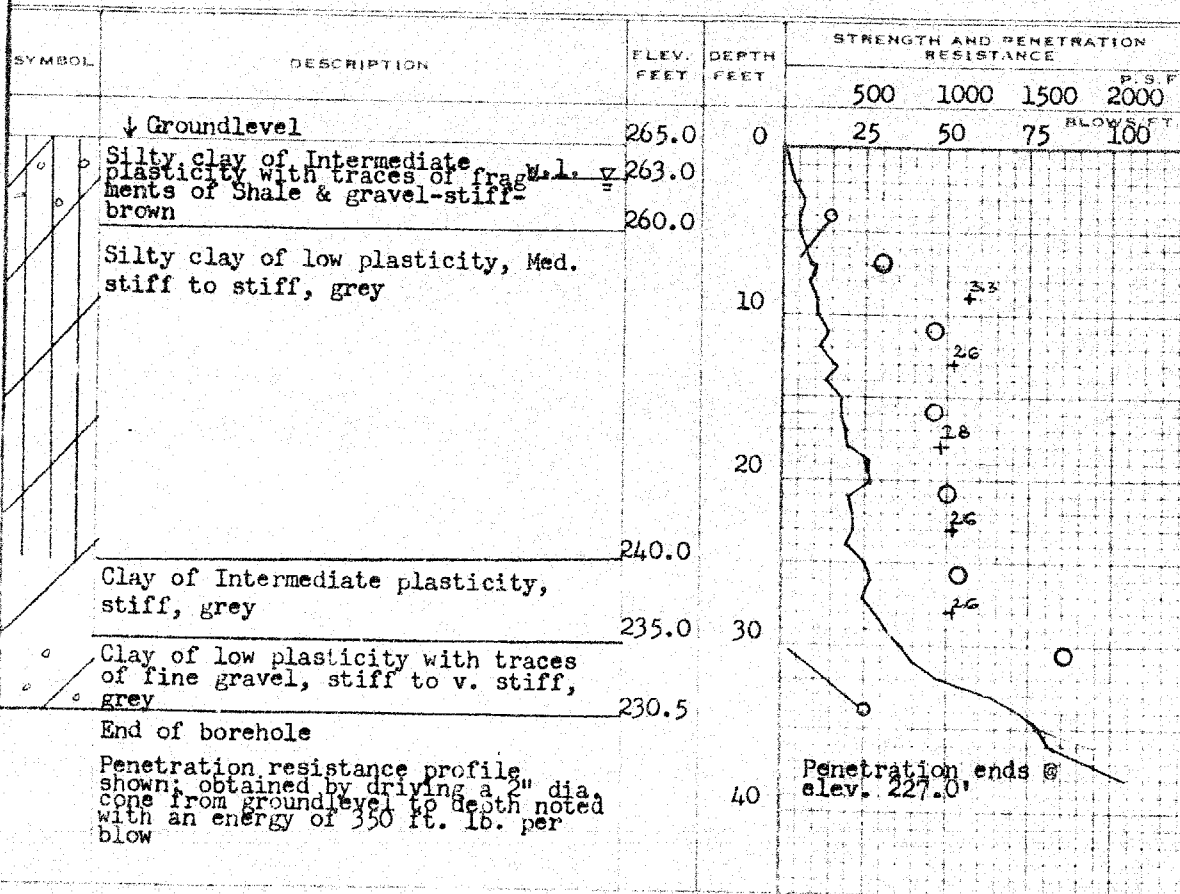
2" DIA. CONE

2" SHELBY

CASING

LEGEND

1/2 UNCONFINED COMPRESSION (QU) — ○
 VANE TEST (G) AND SENSITIVITY (S) — +
 NATURAL MOISTURE AND LIQUIDITY INDEX — LI
 LIQUID LIMIT — X
 PLASTIC LIMIT — —



DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS AND RESEARCH SECTION.

WP 140-57-1
231-58-3

BORE HOLE NO. 2

JOB 60-F-88

STATION 468700 E EBL

DATUM 263.0'

COMPILED BY B.K.

BORING DATE Oct. 27/60

CHECKED BY M.D.

2" DIA SPLIT TUBE
2" SHELBY TUBE
2" SPLIT TUBE
2" DIA CONE
2" SHELBY
CASING

LEGEND

1/2 UNCONFINED COMPRESSION (QU)	0
VANE TEST (C) AND SENSITIVITY (S)	+S
NATURAL MOISTURE AND	LI
LIQUIDITY INDEX	X
LIQUID LIMIT	—
PLASTIC LIMIT	—

[illegible]

DEPARTMENT OF HIGHWAYS - ONTARIO MATERIALS AND RESEARCH SECTION

 140-57-1
 W.P. 231-58-3

BORE HOLE NO. 3

JOB 60-F-88

STATION 466+60 (50' Rt) EBL

DATUM 263.0'

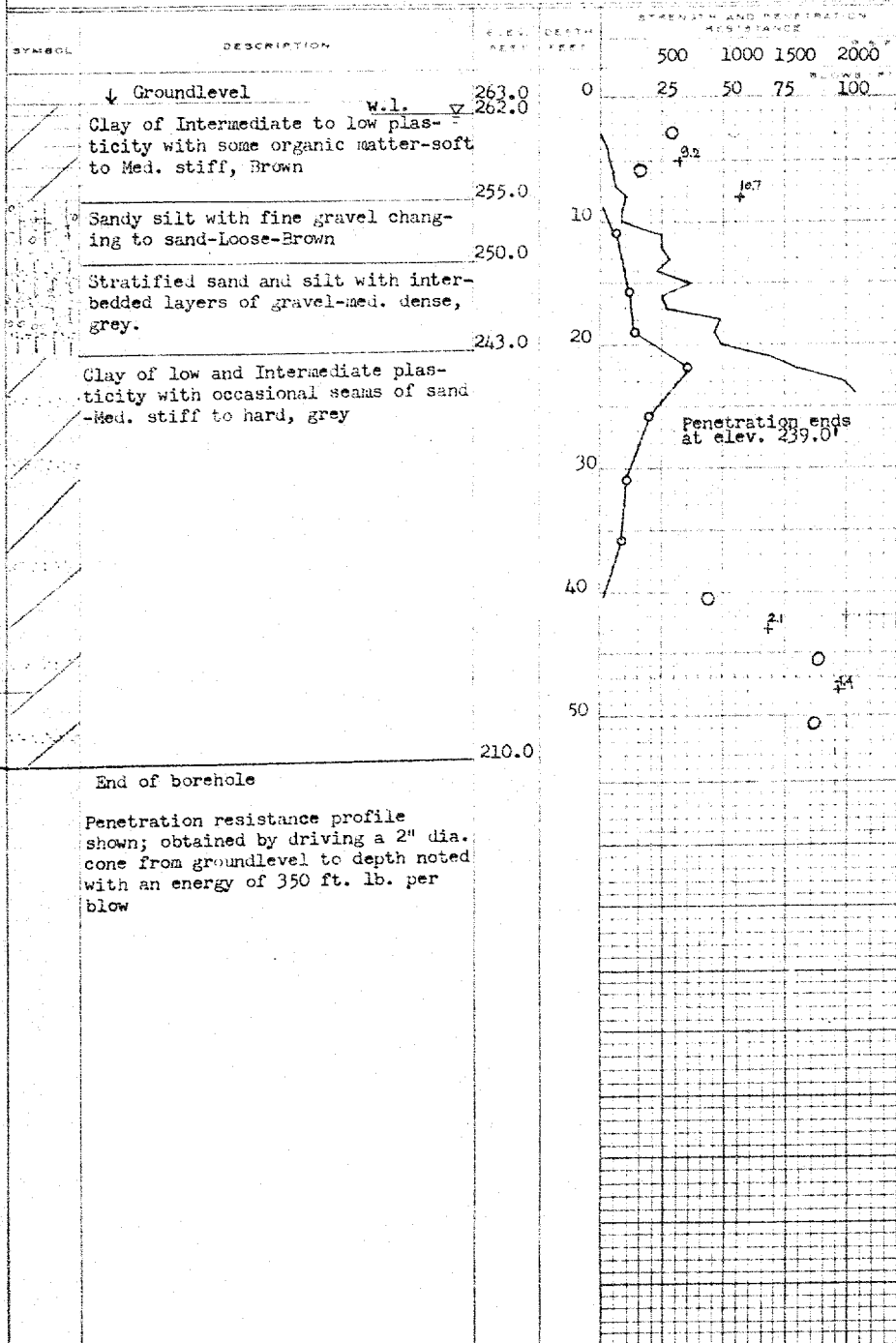
COMPILED BY B.K.

BORING DATE Oct. 28/60

CHECKED BY M.D.

LEGEND

UNCONFINE COMPRESSION (Q_u) — 0
 VANE TEST (C_v) AND SENSITIVITY (S_v) — 4.5
 NATURAL MOISTURE AND LIQUIDITY INDEX — 11
 LIQUID LIMIT — 10
 PLASTIC LIMIT — 10



CONSISTENCY			SAMPLE	NATURAL UNIT WT. P.C.F.
MOIST. CONTENT	% DRY WT.			
10	20	30		
			T1	124
			G1B	-
			T2	130
			G2B	-
			T3	131
			S4	-
			S5	-
			S6	-
			S7	123
			S8	128
			S9	129
			S10	122
			T11	118
			G11B	-
			T12	116
			G12B	-
			T13	134
			G13B	-

OFFICE REPORT ON SOIL EXPLORATION

DEPARTMENT OF HIGHWAYS - ONTARIO

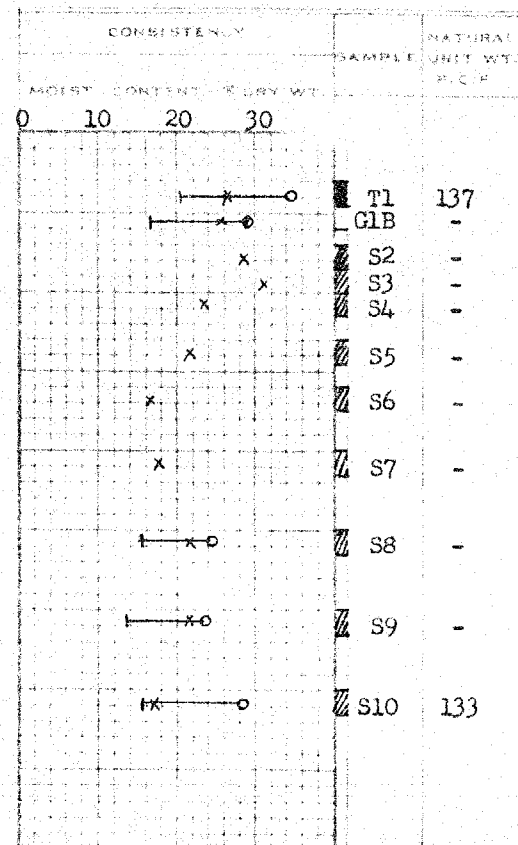
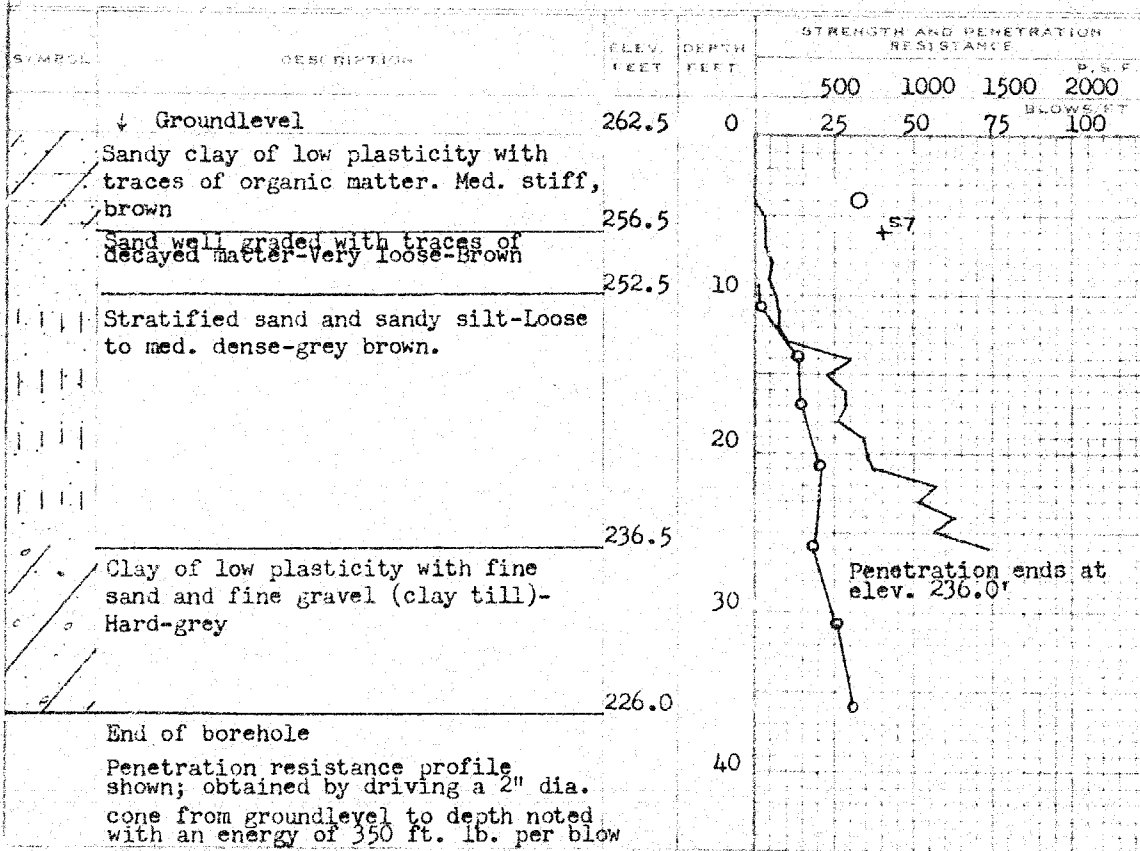
MATERIALS AND RESEARCH SECTION

140-57-1
 W.P. 231-58-3 BORE HOLE NO. 4
 JOB 60-F-88 STATN 464+50 E WBL
 DATUM 262.5' COMPILED BY B.K.
 BORING DATE Nov. 1/60 CHECKED BY M.D.

2" DIA. SPLIT TUBE
 2" SHELBY TUBE
 2" SPLIT TUBE
 2" DIA. CONE
 2" SHELBY
 CASING

LEGEND

1/2 UNCONFINED COMPRESSION (QU) O
 VANE TEST (C) AND SENSITIVITY (S) +
 NATURAL MOISTURE AND LIQUIDITY INDEX LI
 LIQUID LIMIT L
 PLASTIC LIMIT P



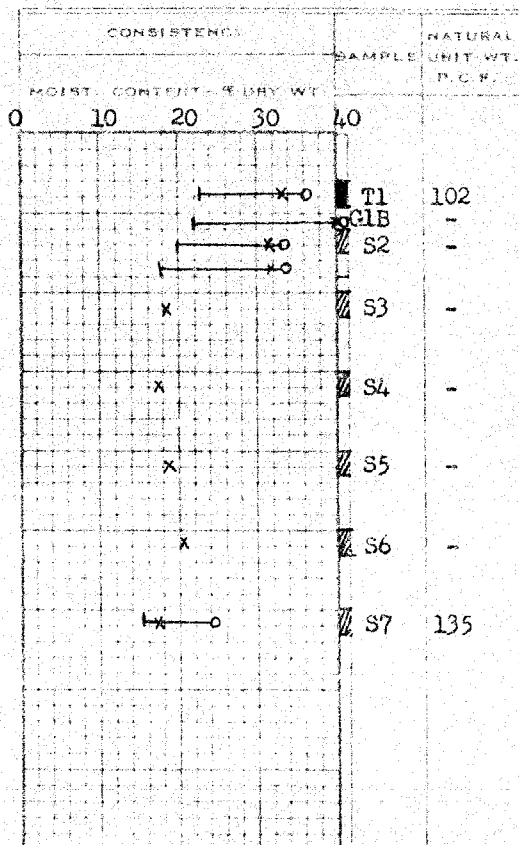
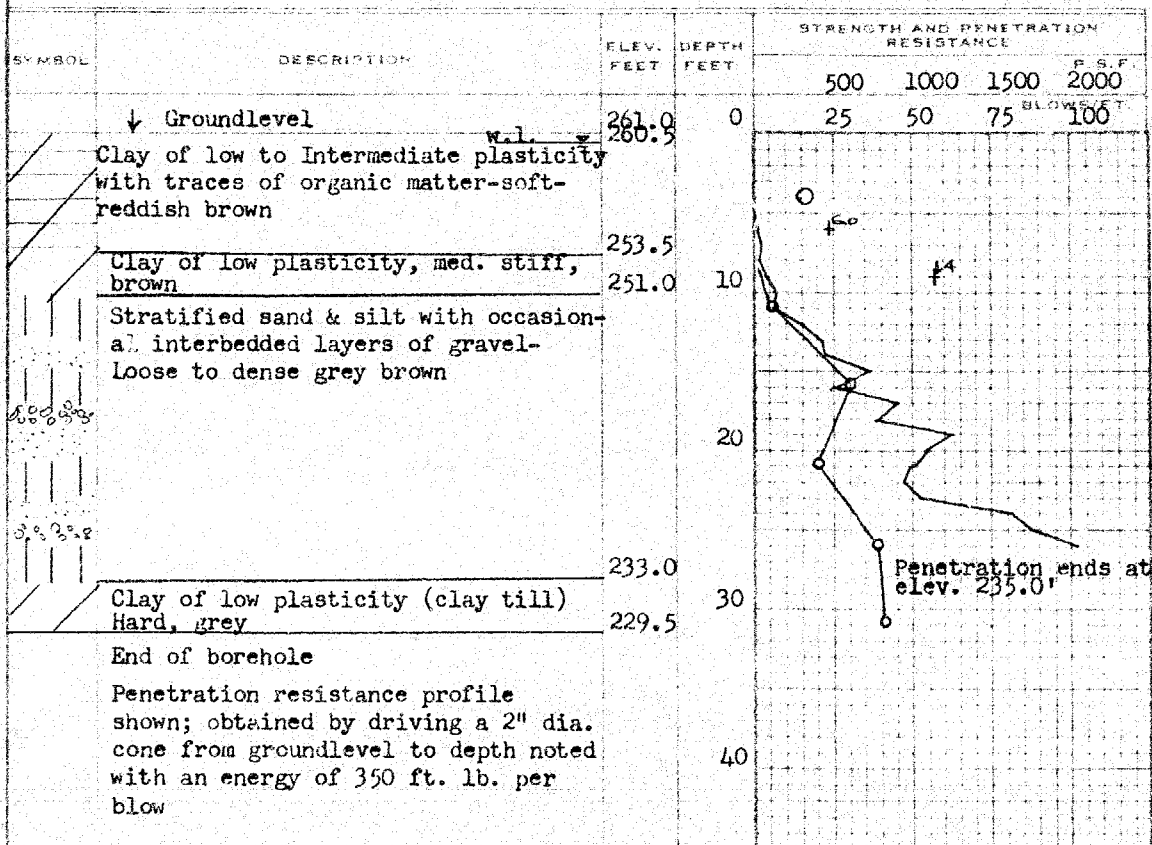
DEPARTMENT OF HIGHWAYS - ONTARIO MATERIALS AND RESEARCH SECTION

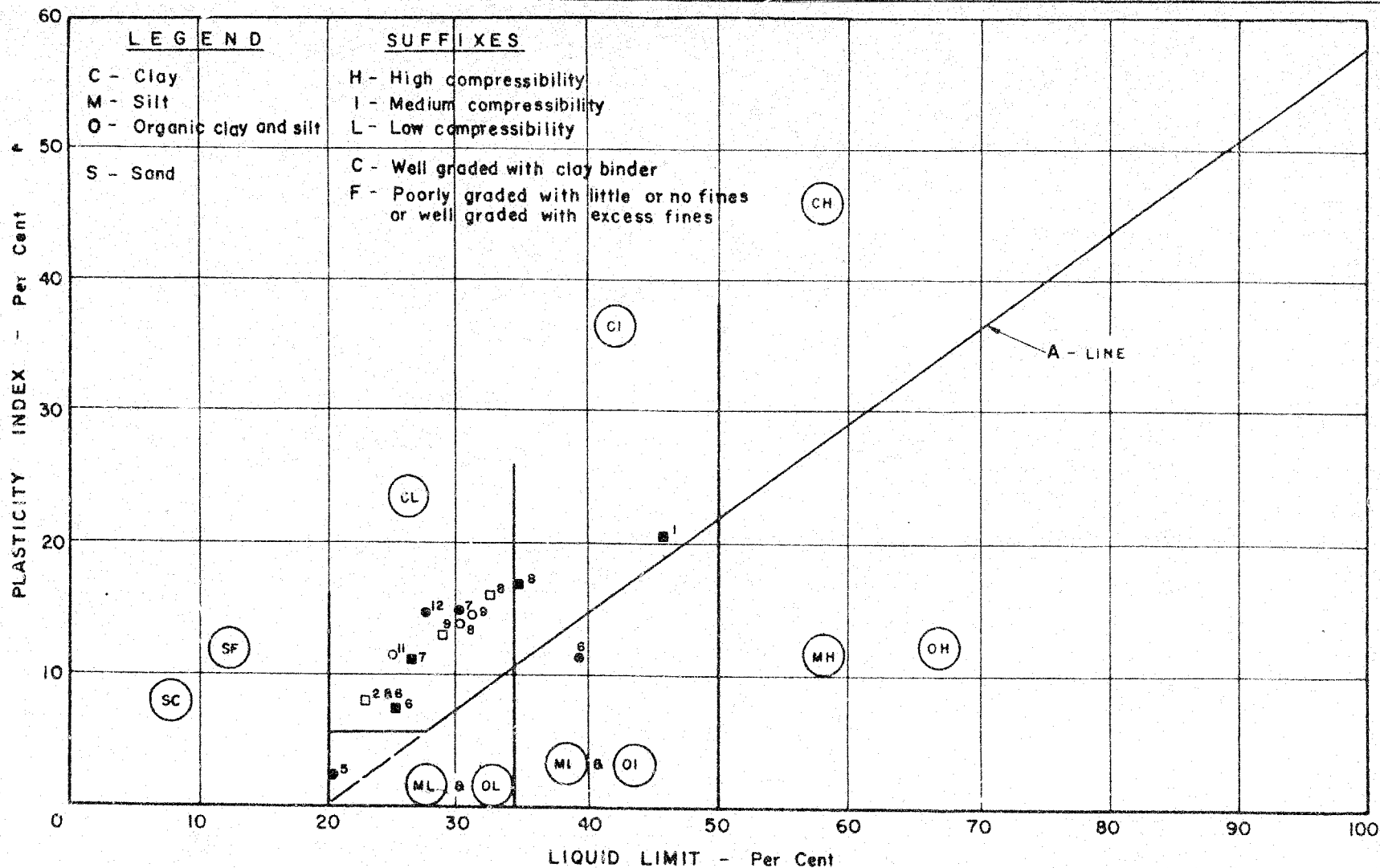
140-57-1
 W.P. 231-58-3 BORE HOLE NO. 5
 JOB 60-F-88 STATION 462+50 E. WBL
 DATUM 261.0' COMPILED BY B.K.
 BORING DAT. Nov. 3/60 CHECKED BY M.D.

2" DIA. SPLIT TUBE
 2" SHELBY TUBE
 2" SPLIT TUBE
 2" DIA. CONE
 2" SHELBY
 CASING

LEGEND

1/2 UNCONFINED COMPRESSION (Q_u)
 VANE TEST (C) AND SENSITIVITY (S)
 NATURAL MOISTURE AND LIQUIDITY INDEX
 LIQUID LIMIT
 PLASTIC LIMIT





NOTES B.H. No. 1 - ●
 B.H. No. 2 - ○
 B.H. No. 4 - □
 B.H. No. 5 - ■

DEPARTMENT OF HIGHWAYS - ONTARIO
 MATERIALS & RESEARCH SECTION
 PLASTICITY CHART

Job No. 60-F-8 & 88 W.P. No. 140-57-1
 231-58-3
 Location CHEDOKE EXPRESSWAY

