

DOCUMENT MICROFILMING IDENTIFICATION

GEOCRES No. 30M5-131

DIST. 4 REGION

W.P. No. 83-74-05

CONT. No. 86-74

W. O. No.

STR. SITE No.

HWY. No. Q.E.W

LOCATION Q.E.W. Widening N.B.L

No of PAGES -

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OVERSIZE DRAWINGS TO BE INCLUDED WITH THIS REPORT.

REMARKS:

RAMP: HIGHWAY 20 TO BURLINGTON STREET20+300 23.0 m Lt. ㄠ

0	-	30 mm	dk.br.si.cl.tps.
30	-	230	cr.gr.
230	-	1.8 m	br.si.cl. (MP) moist
1.8	-	6.0	gry.si.cl. (MP)(moist to 4.0 m) (4.0 - 6.0 m wet)

20+275 22.0 m Lt. ㄠ

0	-	300 mm	dk.br.si.cl.tps.
300	-	400	br.si.cl. (MP) moist
400	-	600	br.si.gr. (seepage 400 - 600 mm)
600	-	2.5 m	br.si.cl. (MP) moist
2.5	-	2.8	dk.gry.grav. si.sa. (seepage 2.5 - 2.8 m)
2.8	-	4.2	gry.si.cl. (MP) moist
4.2	-	5.7	dk.br.org.cl. woody (soft 5.0 m+)
5.7	-	5.8	gry.si.cl. MP

Depth Vane Remould
 5.8 - 6.1 m 65 = 1755 PSF 35 = 945 PSF
 Unable to push vane further.

20+250 22.0 m Lt. ㄠ

0	-	2.5 m	dk.br.si.cl.tps. and rubble mix (seepage 1.7 - 3.0 m)(wet 1.7 - 3.0 m)
2.5	-	3.0	boulders wet (water filled hole to 1.5 m)
3.0	-	4.5	gry.si.cl. (MP) moist firm
4.5	-	5.7	br.cl.si. moist
5.7	-	6.0	gry.si.cl. (MP) moist firm

20+225 22.0 m Lt. ㄠ

0	-	200 mm	dk.br.si.cl.tps.
200	-	500	br.si.cl. (MP)
500	-	3.0 m	dk.br.si.cl. tps. and garbage mix, wet
3.0	-	3.5	br.si.cl. (MP) moist (water ent. 4.5 m)
3.5	-	4.5	gry.si.cl. (MP) moist
4.5	-	6.0	dk.br.org. cl.si. wet

19+780 25.0m Lt. ₪

0	-	140mm	dk.br.si.sa.tps.
140	-	600	br.si.cl.(MP) moist
600	-	1.2m	br.sa.si. wet 84-WB-13
1.2	-	4.5	br.si.cl.(MP) moist
4.5	-	5.5	gry.si.cl.(MP) moist

19+795 25.0m Lt. ₪

0	-	150mm	dk.br.cl.sa.tps.
150	-	700	br.si.cl. (MP) moist
700	-	5.2m	dk.br.cl.sa. and tps. mix wet and soft
5.2	-	6.0	gry.si.cl. (MP) moist

19+810 25.0m Lt. ₪

0	-	7.4m	dk.br.cl.sa. and tps. mix soft and wet
7.4	-	7.7	gry.si.cl.(MP) moist firm

19+830 22.0m Lt. ₪

0	-	200mm	water
200	-	6.1m	dk.br.org.si. soft and wet
6.1	-	6.5	br.si.cl.(MP) moist

19+850 22.0m Lt. ₪

0	-	300mm	water
300	-	4.6m	dk.br.org.si. wet soft
4.6	-	5.0	br.si.cl.(MP) moist firm

19+925 22.0m Lt. ₪

0	-	300mm	water
300	-	4.8m	dk.br.org.si. wet soft
4.8	-	5.0	br.si.cl.(MP) moist firm

20+000 22.0m Lt. ₪

0	-	450mm	water
450	-	5.7m	dk.br.org.si. wet soft
5.7	-	6.0	gry.br.si.cl. MP moist firm

19+705 31.0 m Lt. ₪

0	-	280 mm	ice
280	-	450	water
450	-	1.2 m	br.org. si.
1.2	-	1.5	br.si.cl. firm

19+665 33.0 m Lt. ₪

0	-	900 mm	cr.gr. dirty
900	-	1.3 m	br.si.sa.

19+605 55.0 m Lt. ₪

0	-	60 mm	dk.br.si.cl.tps.
60	-	700	br.si.cl. and tps. mix
700	-	1.4 m	br.si.cl. MP

20+000 25.0 m Lt. ₪

0	-	300 mm	ice
300	-	1.3 m	water
1.3	-	1.8	blk.org.si. soft
1.8	-	4.4	br.org.cl.si. soft
4.4	-	4.7	br.si.cl. firm

19+925 25.0 m Lt. ₪

0	-	300 mm	ice
300	-	1.4 m	water
1.4	-	2.0	blk.org.si. soft
2.0	-	5.6	br.org.cl.si. soft
5.6	-	5.8	br.si.cl. firm

19+850 25.0 m Lt. ₪

0	-	300 mm	ice
300	-	1.4 m	water
1.4	-	1.8	blk.org.si. soft
1.8	-	4.6	br.org.cl.si. soft
4.6	-	4.7	br.si.cl. firm

20+000 35.0 m Lt. ¢

0	-	1.4 m	ice and water
1.4	-	4.4	br.org.si. soft
4.4	-	4.6	br.si.cl. firm

19+850 35.0 m Lt. ¢

0	-	1.4 m	ice and water
1.4	-	4.3	br.org.si. soft
4.3	-	4.6	br.si.cl. firm

19+925 35.0 m Lt. ¢

0	-	1.4 m	ice and water
1.4	-	4.7	br.org.si. soft
4.7	-	4.9	br.si.cl. firm

19+925 Vain Test Remould

0	-	1.4 m =	ice and water	
		2.0 m =	351 lbs.sq.ft.	108 lbs.sq.ft.
		2.6 m =	540 lbs.sq.ft.	189 lbs.sq.ft.
		3.2 m =	567 lbs.sq.ft.	189 lbs.sq.ft.
		3.8 m =	594 lbs.sq.ft.	216 lbs.sq.ft.
		4.4 m =	810 lbs.sq.ft.	270 lbs.sq.ft.
		4.7 m =	999 lbs.sq.ft.	351 lbs.sq.ft.

16+937 25.0 m Rt. ¢

0	-	170 mm	asph.
170	-	280	cr.gr.
280	-	1.4 m	cr.stone and si.sa.

17+020 30.0 m Rt. ¢

0	-	160 mm	asph.
160	-	280	cr.gr.
280	-	1.1 m	cr.stn. and si.sa.
1.1	-	1.9	dk.br.si.cl.tps.
1.9	+		NFP cr.rock

<u>20+050</u>		<u>23.0m Lt. ₪</u>	
0	-	300mm	water
300	-	5.9m	dk.br.org.si.
5.9	-	6.2	br.si.cl.(MP) moist firm

<u>20+080</u>		<u>25.0m Lt. ₪</u>	
0	-	100mm	dk.br.si.cl.tps.
100	-	600	br.si.cl.(MP) moist
600	-		NFP rubble

<u>20+110</u>		<u>25.0m Lt. ₪</u>	
0	-	800mm	br.si.cl. MP
800	-	2.5m	blk.si.cl.tps; rubble mix wet
2.5	-	6.0	br.org.si. soft water ent.@ 2.5m

<u>20+140</u>		<u>18.0m Lt. ₪</u>	
0	-	650mm	cr.gr.
650	-	1.4m	br.si.cl. MP

<u>20+140</u>		<u>25.0m Lt. ₪</u>	
0	-	1.0m	br.si.cl. MP
1.0	-	1.5	dk.br.si.cl.tps.
1.5	-	3.0	blk.si.cl.tps.; rubble mix water ent. @2.5m
3.0	-	6.0	br.org.si. soft

<u>20+170</u>		<u>25.0m Lt. ₪</u>	
0	-	800mm	br.si.cl. MP
800	-	1.5m	dk.br.si.cl.tps.
1.5	-	3.8	gry.si.cl. and rubble mix water ent. @ 1.5m
3.8	-	6.0	br.org.si. soft

<u>20+170</u>		<u>18.0m Lt. ₪</u>	
0	-	650mm	cr.gr.
650	-	2.5m	br.si.cl. (MP)
2.5	-	6.0	gry.si.cl.(MP) moist (soft 5.0-6.0m)

20+210 19.0m Lt. ๕

0	-	100mm	asph.
100	-	640	cr.gr.
640	-	760	dk.br.si.cl.tps.
760	-	1.5m	br.si.cl.MP

20+210 25.0m Lt. ๕

0	-	800mm	br.si.cl. MP
800	-	3.2m	blk.si.cl.tps. and rubble mix inner tubes etc. wet, water ent. @ 2.8m
3.2	-	3.8	gry.si.cl. MP
3.8	-	6.0	br.org.si. soft

20+235 27.0m Lt. ๕

0	-	800mm	br.si.cl. (MP)
800	-	4.0m	dk.br.si.cl.tps. (3.0-4.0m wet and soft)
4.0	-	4.5	br.si.cl. (MP) moist
4.5	-	6.0	br.org.si.wet, soft

20+240 20.0m Lt. ๕

0	-	100mm	asph.
100	-	460	cr.gr.
460	-	700	br.si.gr.
700	-	1.3m	dk.br.si.cl.tps.
1.3	-	1.5	br.si.cl. MP

20+270 20.5m Lt. ๕

0	-	100mm	asph.
100	-	850	cr.gr. (seepage 650-850mm)
850	-	1.3m	dk.br.si.cl.tps.
1.3	-	3.0	br.si.cl. MP moist
3.0	-	5.0	gry.si.cl.(MP) moist
5.0	-	6.0	dk.br.org.si.

20+225 4.5 m Lt. ㄩ

Depth	Vane	Remould
6.1 m	60 = 1620 PSF	25 = 675 PSF

20+200 20.0 m Lt. ㄩ

0	-	100 mm	dk.br.si.cl.tps. (water filled to 1.0 m)
100	-	300	cr.gr.
300	-	900	br.si.cl. moist-wet
900	-	1.8 m	dk.br.si.cl.tps.
1.8	-	3.0	br.si.cl. and stn. mix and bricks, wet (seepage).
3.0	-	4.5	br.si.cl. (MP) moist firm
4.5	-	6.0	br.org.cl.si.f. soft woody

Unable to push vane through stone layer @ 3.0 m.

20+175 19.0 m Lt. ㄩ

0	-	700 mm	dk.br.si.cl. and tps. mix
700	-	3.0 m	br.bldy.si.cl. and brick mix, woody, wet
3.0	-	4.0	br.si.cl. (MP) moist (hole water filled to 1.0 m)
4.0	-	5.9	br.org.cl.si.f. soft

Depth	Vane	Remould
6.0 m	65 = 1755 PSF	30 = 810 PSF

20+150 19.0 m Lt. ㄩ

0	-	100 mm	dk.br.si.cl.tps.
100	-	400	br.si.cl. (MP)
400	-	2.0 m	blk.si.cl.tps.
2.0	-	3.0	br.si.cl. (MP) moist (bricks 2.5 - 3.0 m)
3.0	-	6.0	br.org.cl.si. (84-WB-25)

Depth	Vane	Remould
6.6 m	62 = 1674 PSF	26 = 702 PSF

Unable to push vane further.



RECORD OF BOREHOLE No 3

METRIC

W.P. 83-74-05

LOCATION STA: 20+080; 0/s 28m LT

ORIGINATED BY RT

DIST 4 HWY Q.E.W.

BOREHOLE TYPE CONT. FLIGHT AUGER (H.S.)

COMPILED BY PP

DATUM GEOMETIC

DATE 85 04 22

CHECKED BY

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	'N' VALUES			20 40 60 80 100	20 40 60 80 100					
FEET		METRES						○ UNCONFINED + FIELD VANE	● QUICK TRIAXIAL x LAB VANE					
76.2	GROUND LEVEL													
0.0	ORGANIC MATERIAL		1	SS	4									
5			2	SS	51									
10			3	SS	5									
15	SOFT TO STIFF		4	SS	4									
20			5	TW	PH									
25			6	SS	2									
30			7	SS	2									
67.4	SILTY CLAY		8	TW	PH									
8.8	TRACE OF SAND													
35	SOFT TO FIRM SHALE		9	SS	4									
65.1	FRAGMENTARY													
11.1	END OF BOREHOLE													
40														
45														
50														
55														
60														
65														
67														
69														
71														
73														
75														



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RECORD OF BOREHOLE No 4

METRIC

W P 83-74-05 LOCATION STA: 20+115; 9/s 28m LT ORIGINATED BY RT
DIST 4 HWY Q.E.W. BOREHOLE TYPE CONT. FLIGHT AUGER (H.S.) COMPILED BY PP
DATUM GEODETIC DATE 85 04 19 CHECKED BY _____

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 SHEAR STRENGTH (KPa) ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL x LAB VANE 20 40 60 80 100	PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	'N' VALUES								
76.3	GROUND LEVEL												
0.0	ORGANIC MATERIAL		1	SS	5		75						
			2	SS	13								
			3	SS	11								
	SOFT		4	SS	2		73	+2					
	TO		5	TW	PH								
	STIFF		6	SS	2		71	+2					
			7	SS	2		69	+3					
68.1			8	SS	PH		67	+3					
8.2	SILTY CLAY POCKETS OF ORGANIC MAT'L TRACE OF SAND		9	SS	5		65						
65.8	SOFT TO FIRM		10	SS	52								
65.2	WEATHERED SHALE												
11.1	END OF BOREHOLE												

RECORD OF BOREHOLE No 5

METRIC

WP 83-74-05

LOCATION STA: 20+150 : 28m LT.

ORIGINATED BY RT

DIST 4 HWY Q.E.W.

BOREHOLE TYPE CONT. FLIGHT AUGER (H.S.)

COMPILED BY PP

DATUM Geodetic

DATE 85 04 18

CHECKED BY

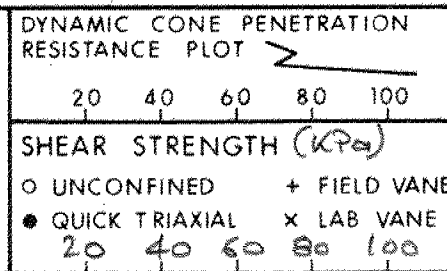
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RECORD OF BOREHOLE No 6

METRIC

W P 83-74-05 LOCATION STA: 20+175; 0/s 28m LT ORIGINATED BY RT
DIST 4 HWY Q.E.W. BOREHOLE TYPE CONT. FLIGHT AUGER (H.S.) COMPILED BY PP
DATUM GEOIDETIC DATE 85 04 18 CHECKED BY _____

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT 	PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%)	
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	'N' VALUES									20 40 60 80 100
76.6	GROUND LEVEL													
0.0	MIXTURE OF SAND GRAVEL & ORGANICS V. DENSE FILL MATERIAL		1	SS	56									
75.1			2	SS	11									
1.5			3	SS	9									
	ORGANIC MATERIAL		4	SS	6									
			5	SS	3									
	FIRM TO STIFF		6	TW	PH									
			7	SS	3									
67.9			8	SS	3									
8.7	SILTY CLAY TRACES OF SAND AND GRAVEL FIRM TO V. STIFF		9	SS	4									
65.2														
11.4	END OF BOREHOLE													

RECORD OF BOREHOLE No 7

METRIC

W P 83-74-05 LOCATION STA: 20+200; 9/8 28m LT ORIGINATED BY RT
DIST 4 HWY Q.E.W. BOREHOLE TYPE CONT. FLIGHT AUGER (H.S.) COMPILED BY PP
DATUM GEODETIC DATE 85 04 17 CHECKED BY _____

[illegible]

RECORD OF BOREHOLE No 8

METRIC

W P 83-74-05 LOCATION STA: 20+225; 26.5m LT ORIGINATED BY DT

DIST 4 HWY O.E.W. BOREHOLE TYPE CONT. FLIGHT AUGER (H.S.) COMPILED BY PP

DATUM GEODETIC DATE 85 04 16 CHECKED BY _____

[illegible]

RECORD OF BOREHOLE No 9

METRIC

W P 83-74-05 LOCATION STA: 20+240; 0/s 28m LT ORIGINATED BY RT
DIST 4 HWY Q.E.W. BOREHOLE TYPE CONT. FLIGHT AUGER (H.S.) COMPILED BY PP
DATUM GEODETIC DATE 85 04 16 CHECKED BY _____

[illegible]



RECORD OF BOREHOLE No 10

METRIC

W P 83-74-05 LOCATION STA: 20+261; 9/S 28m LT ORIGINATED BY RT
DIST 4 HWY Q.E.W. BOREHOLE TYPE CONT. FLIGHT AUGER (H.S.) COMPILED BY PP
DATUM GEODETIC DATE 85 04 15 AND 16 CHECKED BY _____

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	'N' VALUES			20 40 60 80 100	20 40 60 80 100					
77.7	GROUND LEVEL													
0.0	MIXTURE OF SAND GRAVEL & ORGANICS		1	SS	17									
76.3	FILL MATERIAL		2	SS	2									
1.4	ORGANIC MATERIAL		3	SS	2									
	ODD. SILTY CLAY LAYERS		4	SS	7									
	SOFT TO STIFF		5	TW	PH								16.4	
			6	TW	PH								14.3	
			7	SS	4									
69.8	WEATHERED SHALE		8	SS	100/13cm									
69.2	END OF BOREHOLE													
8.5														



RECORD OF BOREHOLE No 11

METRIC

W P 83-74-05 LOCATION STA: 20+280; 9/6 28m LT ORIGINATED BY RT
DIST 4 HWY Q.E.W BOREHOLE TYPE CONT' FLIGHT AUGER (H.S.) COMPILED BY PP
DATUM GEODETIC DATE 85 04 15 CHECKED BY _____

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 SHEAR STRENGTH (kPa) ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL x LAB VANE 20 40 60 80 100	PLASTIC LIMIT Wp	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	'N' VALUES								
77.9	GROUNDLEVEL												
0.0	MIXTURE OF SAND GRAVEL & ORGANICS												
76.5	FILL MATERIAL		1	SS	11		77						
1.4	ORGANIC MATERIAL		2	SS	8								
			3	SS	2		75						
	SOFT TO STIFF		4	SS	3								
73.2			5	SS	7		73						
4.7	SILTY CLAY SOME SAND		6	TW	PH								
	TRADES OF GRAVEL AND ORGANICS		7	SS	18		71						
	FIRM TO V. STIFF		8	SS	21								
69.5			9	SS	30		69						
8.4	WEATHERED SHALE												
68.8													
9.1	END OF BOREHOLE (REFUSAL)												



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RECORD OF BOREHOLE No 100

METRIC

W P 83-74-05

LOCATION STA: 20+100; 0/S 25m LT

ORIGINATED BY GDS

DIST 4 HWY QEW

BOREHOLE TYPE CONT. FLIGHT AUGER (H.S.)

COMPILED BY GDS

DATUM GEOAZETIC

DATE 85-06-19

CHECKED BY

SOIL PROFILE

SAMPLES

GROUND WATER CONDITIONS

ELEVATION SCALE

DYNAMIC CONE PENETRATION RESISTANCE PLOT

20 40 60 80 100

SHEAR STRENGTH kPa

○ UNCONFINED + FIELD VANE
● QUICK TRIAXIAL x LAB VANE

20 40 60 80 100

PLASTIC
LIMIT

NATURAL
MOISTURE
CONTENT

LIQUID
LIMIT

W_p

W

W_L

WATER CONTENT (%)

UNIT
WEIGHT
γ

REMARKS
&
GRAIN SIZE
DISTRIBUTION
(%)

GR SA SI CL

ELEV
DEPTH

DESCRIPTION

STRAT PLOT

NUMBER

TYPE

'N' VALUES

GROUND WATER
CONDITIONS

ELEVATION SCALE

DYNAMIC CONE PENETRATION
RESISTANCE PLOT

20 40 60 80 100

SHEAR STRENGTH kPa

○ UNCONFINED + FIELD VANE
● QUICK TRIAXIAL x LAB VANE

20 40 60 80 100

PLASTIC
LIMIT

NATURAL
MOISTURE
CONTENT

LIQUID
LIMIT

W_p

W

W_L

WATER CONTENT (%)

UNIT
WEIGHT
γ

REMARKS
&
GRAIN SIZE
DISTRIBUTION
(%)

GR SA SI CL

76.1
0.0

GROUND LEVEL

1 METRES

1 SS 24

2 SS 2

3 SS 3

4 TW PH

5 SS 5

6 SS 5

7 SS 6

8 SS 20

9 SS 80

10 RC 40%

11 RC 90%

12 RC 90%

13 RC 90%

14 RC 90%

15 RC 90%

16 RC 90%

17 RC 90%

18 RC 90%

19 RC 90%

GROUND WATER
CONDITIONS

75

73

71

69

67

65

63

61

59

DYNAMIC CONE PENETRATION
RESISTANCE PLOT

20 40 60 80 100

SHEAR STRENGTH kPa

○ UNCONFINED + FIELD VANE
● QUICK TRIAXIAL x LAB VANE

20 40 60 80 100

PLASTIC
LIMIT

NATURAL
MOISTURE
CONTENT

LIQUID
LIMIT

W_p

W

W_L

WATER CONTENT (%)

UNIT
WEIGHT
γ

REMARKS
&
GRAIN SIZE
DISTRIBUTION
(%)

GR SA SI CL

68.1
7.9

SILTY CLAY
OCC. SAND
LAYERS AND
SHALE FRAGMENTS
FIRM

10

7 SS 6

8 SS 20

9 SS 80

10 RC 40%

11 RC 90%

12 RC 90%

13 RC 90%

14 RC 90%

15 RC 90%

16 RC 90%

17 RC 90%

18 RC 90%

19 RC 90%

GROUND WATER
CONDITIONS

63

61

59

DYNAMIC CONE PENETRATION
RESISTANCE PLOT

20 40 60 80 100

SHEAR STRENGTH kPa

○ UNCONFINED + FIELD VANE
● QUICK TRIAXIAL x LAB VANE

20 40 60 80 100

PLASTIC
LIMIT

NATURAL
MOISTURE
CONTENT

LIQUID
LIMIT

W_p

W

W_L

WATER CONTENT (%)

UNIT
WEIGHT
γ

REMARKS
&
GRAIN SIZE
DISTRIBUTION
(%)

GR SA SI CL

63.8
12.3

WEATHERED
SHALE
SOUND
BEDROCK

15

10 RC 40%

11 RC 90%

12 RC 90%

13 RC 90%

14 RC 90%

15 RC 90%

16 RC 90%

17 RC 90%

18 RC 90%

19 RC 90%

GROUND WATER
CONDITIONS

63

61

59

DYNAMIC CONE PENETRATION
RESISTANCE PLOT

20 40 60 80 100

SHEAR STRENGTH kPa

○ UNCONFINED + FIELD VANE
● QUICK TRIAXIAL x LAB VANE

20 40 60 80 100

PLASTIC
LIMIT

NATURAL
MOISTURE
CONTENT

LIQUID
LIMIT

W_p

W

W_L

WATER CONTENT (%)

UNIT
WEIGHT
γ

REMARKS
&
GRAIN SIZE
DISTRIBUTION
(%)

GR SA SI CL

60.5
15.6

END OF BOREHOLE

15

12 RC 90%

13 RC 90%

14 RC 90%

15 RC 90%

16 RC 90%

17 RC 90%

18 RC 90%

19 RC 90%

GROUND WATER
CONDITIONS

63

61

59

DYNAMIC CONE PENETRATION
RESISTANCE PLOT

20 40 60 80 100

SHEAR STRENGTH kPa

○ UNCONFINED + FIELD VANE
● QUICK TRIAXIAL x LAB VANE

20 40 60 80 100

PLASTIC
LIMIT

NATURAL
MOISTURE
CONTENT

LIQUID
LIMIT

W_p

W

W_L

WATER CONTENT (%)

UNIT
WEIGHT
γ

REMARKS
&
GRAIN SIZE
DISTRIBUTION
(%)

GR SA SI CL

OFFICE REPORT ON SOIL EXPLORATION



RECORD OF BOREHOLE No 200

METRIC

W P 83-74-05 LOCATION STA: 20+130; 0/S 15.5m LT ORIGINATED BY GDS
DIST 4 HWY QEW BOREHOLE TYPE CONT. FLIGHT AUGER (H.S.) COMPILED BY GDS
DATUM Geodetic DATE 85-06-20 CHECKED BY _____

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	'N' VALUES			20	40					
77.7	PAVEMENT LEVEL													
0.0	ASPHALT (8cm)													
	SAND & GRAVEL													
	LOOSE													
75.0	FILL MATERIAL													
2.7	SILTY CLAY													
	TRACE OF SAND													
	FIRM													
72.8	FILL MATERIAL													
4.9	ORGANIC													
	MATERIAL													
	SOFT													
	TO													
	FIRM													
66.7	SILTY CLAY													
11.0	AND SHALE													
	FRAGMENTS													
65.05	SOFT													
12.65	END OF BOREHOLE													
	REFUSAL													

* Ground water



METRIC

ORIGINATED BY G.D.S

COMPILED BY GDS

CHECKED BY _____

[illegible]

OFFICE REPORT ON SOIL EXPLORATION



Ministry of
Transportation and
Communications
Ontario

RECORD OF BOREHOLE No 400

METRIC

W P 83-74-05 LOCATION STA: 20+150; 9/5 25m LT ORIGINATED BY GDS
DIST 4 HWY D.E.W BOREHOLE TYPE CONT. FLIGHT AUGER (H.S.) COMPILED BY GDS
DATUM Geodetic DATE 85-06-20 CHECKED BY _____

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	'N' VALUES			20 40 60 80 100									
								SHEAR STRENGTH									
								○ UNCONFINED + FIELD VANE									
								● QUICK TRIAXIAL x LAB VANE									
								20 40 60 80 100									
75.8	GROUND LEVEL																
0.0																	
	MIXTURE OF																
	ORGANIC MATERIAL																
	AND INDUSTRIAL																
	WASTE																
73.4	FILL MATERIAL																
2.4																	
	ORGANIC																
	MATERIAL																
	SOFT																
	TO																
	FIRM																
67.7																	
8.1	END OF BOREHOLE																



Ministry of
Transportation and
Communications


224-7405

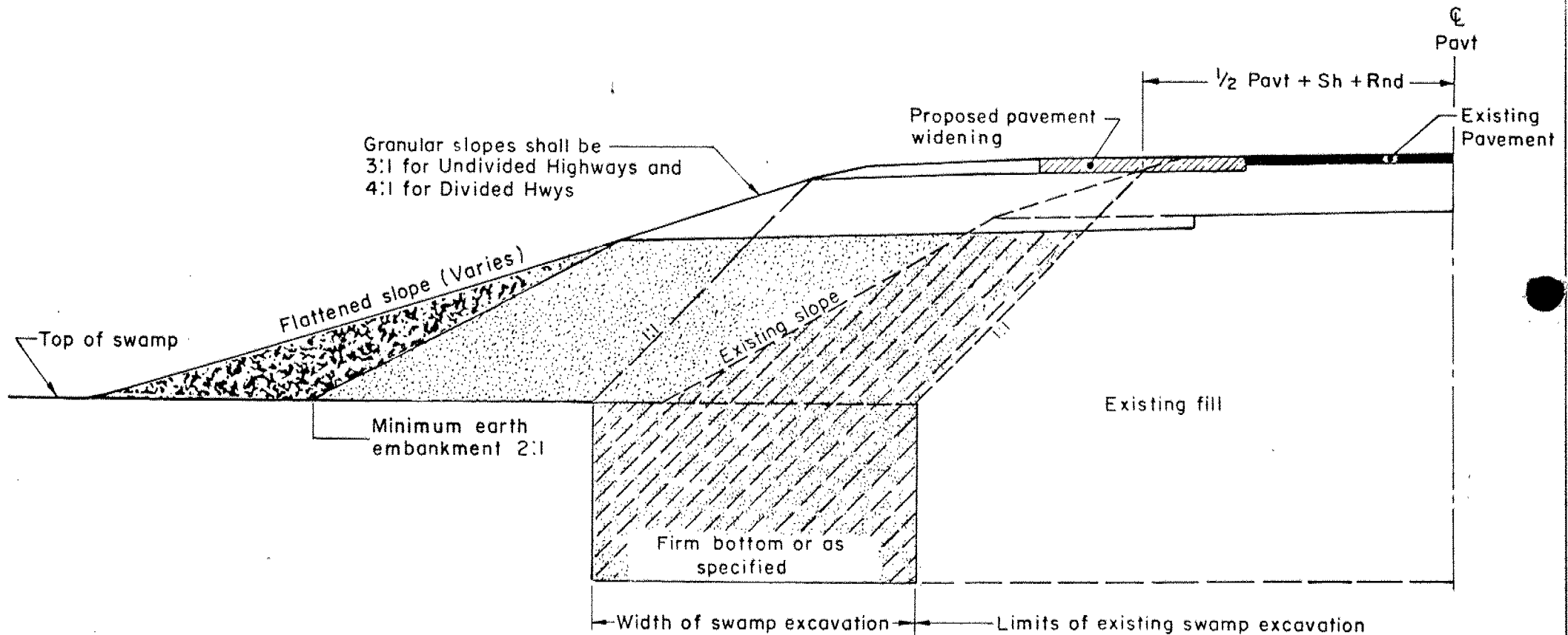
224-7407

RECORD OF BOREHOLE No 500




METRIC

W P 83-74-05 LOCATION STA: 200+00; 9/5 18m LT ORIGINATED BY GDS
DIST 4 HWY QEW BOREHOLE TYPE CONT. FLIGHT AUGER (H.S.) COMPILED BY GDS
DATUM Geodetic DATE 85 06 21 CHECKED BY _____

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT 	PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL	
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	'N' VALUES									
77.2	PAVEMENT LEVEL						77							
0.0	ASPHALT (18cm)													
	SAND & GRAVEL													
	LOOSE													
74.2	FILL MATERIAL		1A	SS	6		75							
3.0	SILTY CLAY													
	TRACE OF SAND		1	SS	5									
72.9	FIRM FILL MATERIAL						73							
4.3	ORGANIC MATERIAL		2	SS	5									
			3	SS	4		71							
	SOFT TO STIFF													
			4	SS	6									
			5	SS	11		69							
							67							
66.2			6	SS	19									
11.0	SILTY CLAY													
	SAND & GRAVEL													
	SHALE FRAGMENTS		7	SS	50(6)		65							
12.8	END OF BOREHOLE (REFUSAL)						63							



LEGEND:

-  Approved embankment materials
-  Excavated swamp material
-  Area to be excavated & backfilled

NOTES:

- A This Standard to be used only where depth of swamp is 4.0 m or less and height of fill is 2.0 m or less.
- B All dimensions are in millimetres or metres unless otherwise specified.

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS - ONTARIO No DD-408

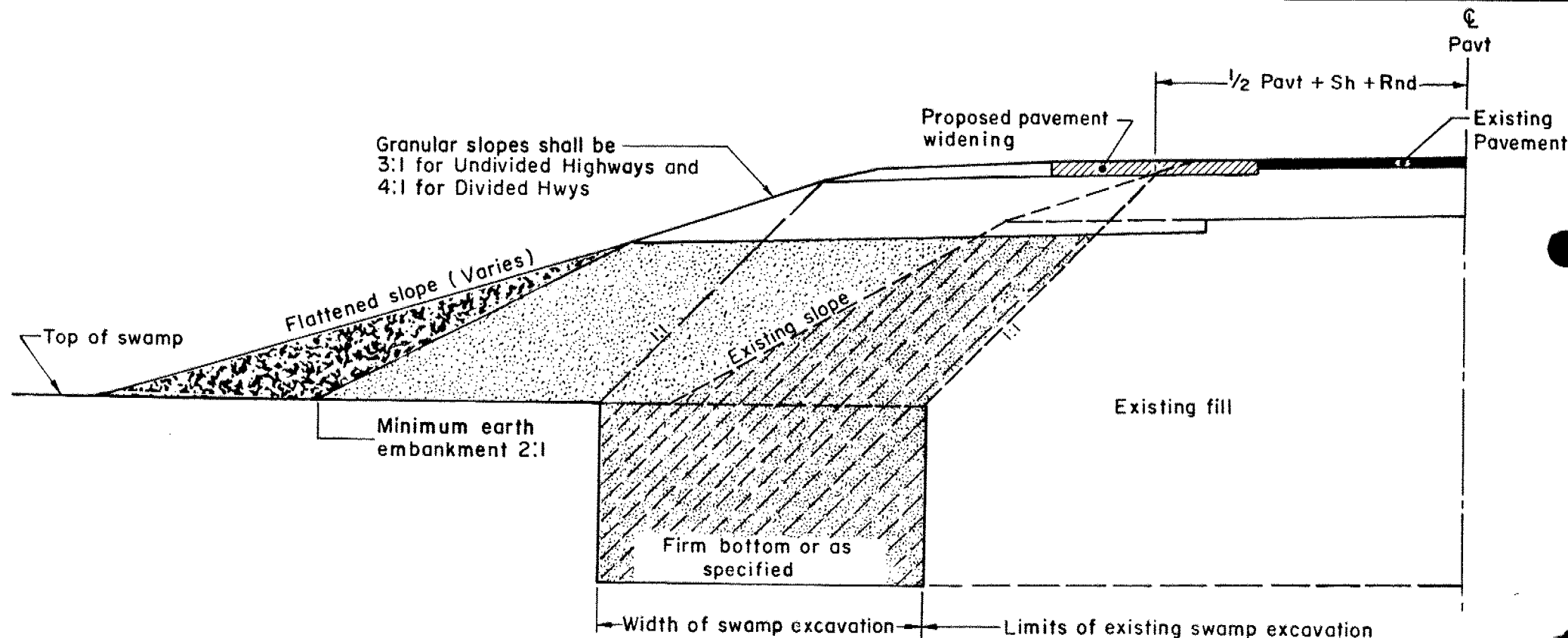
SWAMP TREATMENT FOR WIDENING, RE-ALIGNMENT AND WIDENING FOR PASSING LANE

Date	1981 11 04	Rev	
------	------------	-----	--

William L. Lee
Manager Highway Standards Office

No DD-408

Date Nov 4/81 Rev



Granular slopes shall be 3:1 for Undivided Highways and 4:1 for Divided Hwys

Flattened slope (Varies)

Top of swamp

Minimum earth embankment 2:1

Existing slope

Existing fill

Firm bottom or as specified

Width of swamp excavation

Limits of existing swamp excavation

NOTE:

A This Standard to be used only where depth of swamp is 13' or less and height of fill is 6.5' or less.

LEGEND:



Approved embankment materials



Excavated swamp materials



Area to be excavated & backfilled

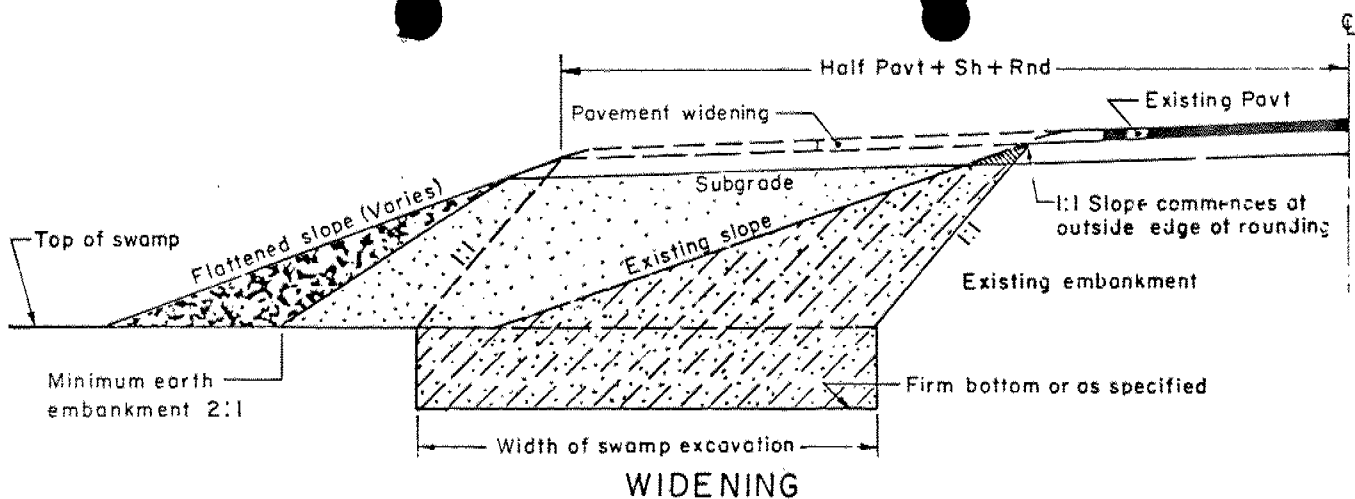
MINISTRY OF TRANSPORTATION
AND COMMUNICATIONS - ONTARIO

SWAMP TREATMENT FOR WIDENING, RE-ALIGNMENT AND WIDENING FOR PASSING LANE

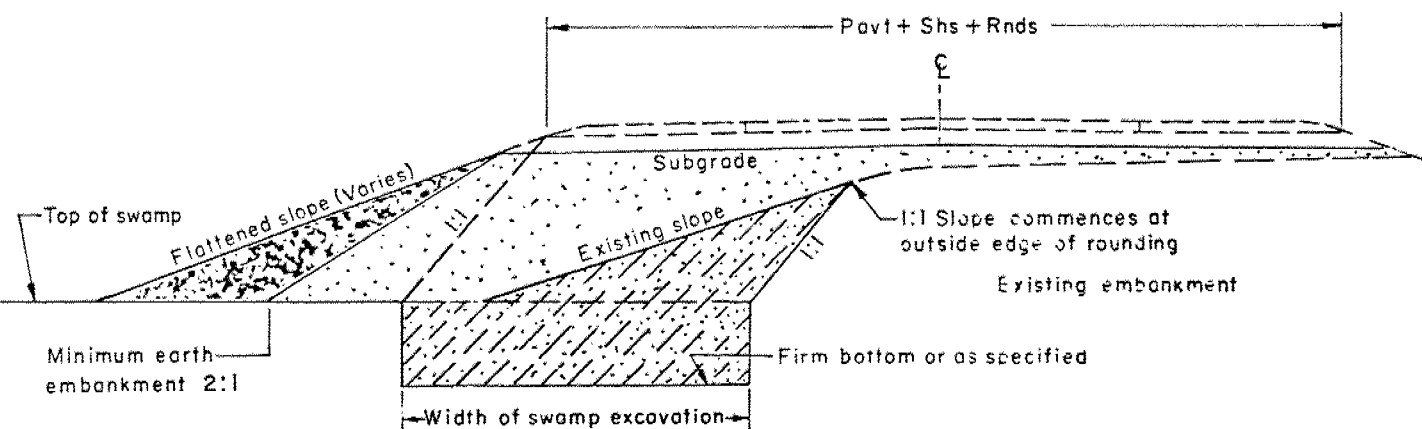
Drawn by S.S.
Traced by S.S.
Checked by E.G.
Passed by B.A.V.

APPROVED

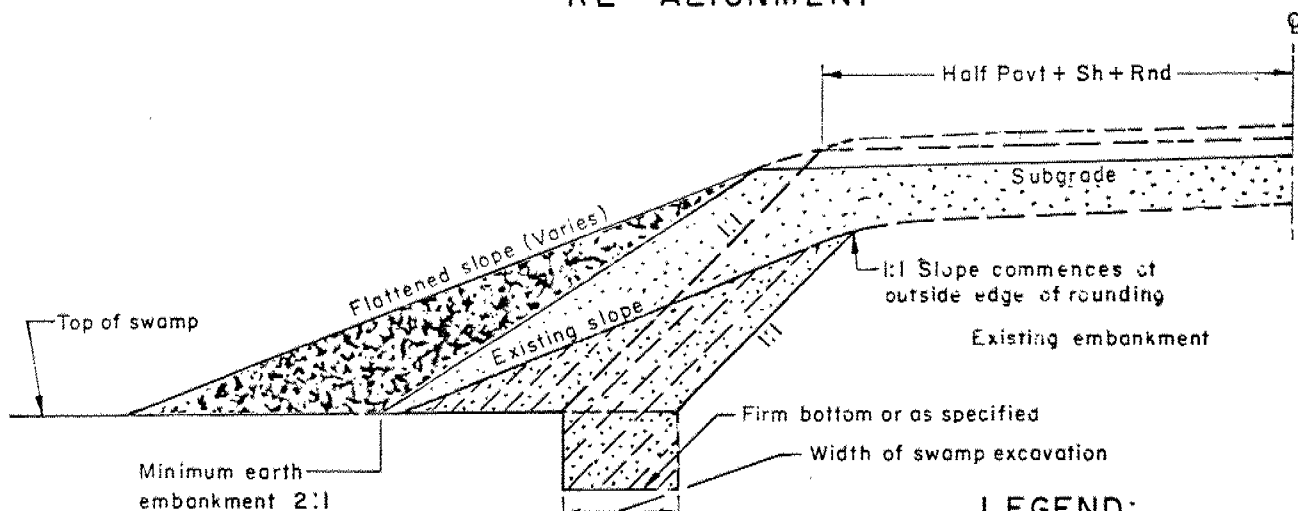
[Signature]
Manager Highway Standards Office



WIDENING



RE-ALIGNMENT



PROFILE GRADE CHANGE

NOTES:

- This Standard to be used only where depth of swamp is 4.0 m or less and height of fill is 2.0 m or less.
- All dimensions are in millimetres or metres unless otherwise specified

LEGEND:

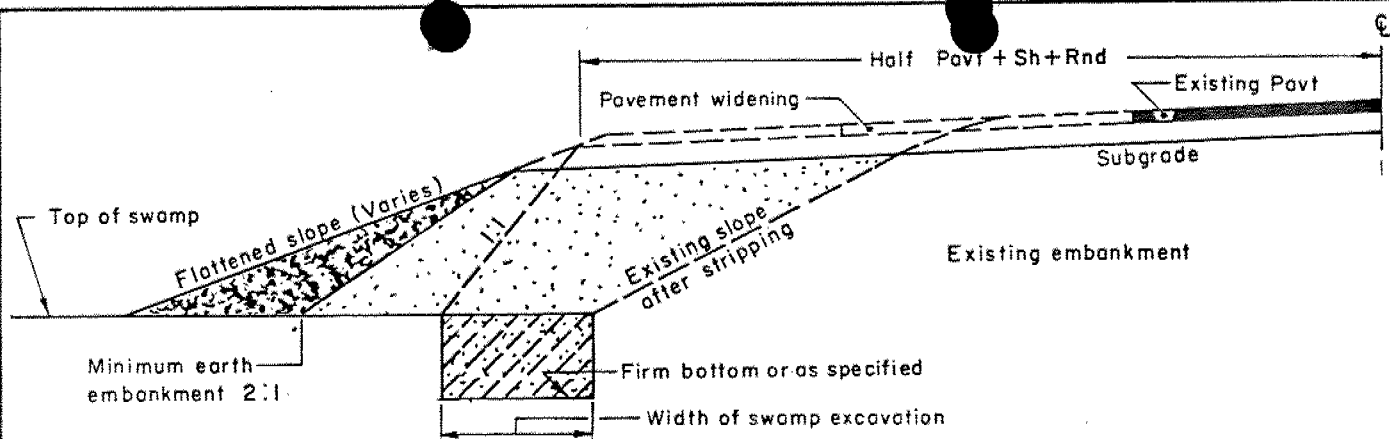
- Approved embankment materials
- Excavated swamp material
- Area to be excavated & backfilled
- Area to be excavated

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS - ONTARIO No DD - 408-A

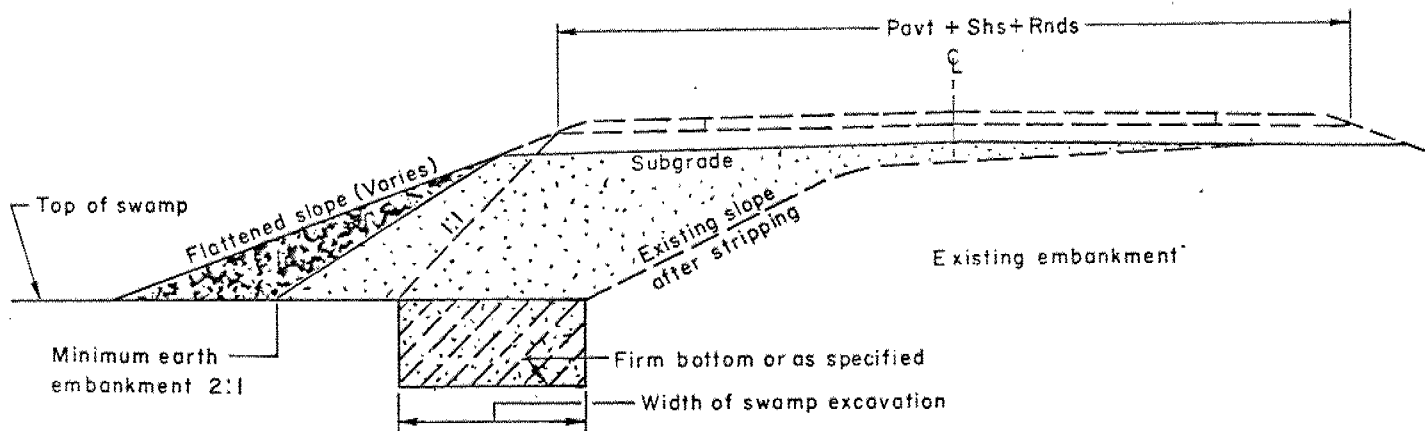
**RECONSTRUCTION
SWAMP TREATMENT
EXCAVATION - 1:1 SLOPES**

Date 1983 04 01 Rev

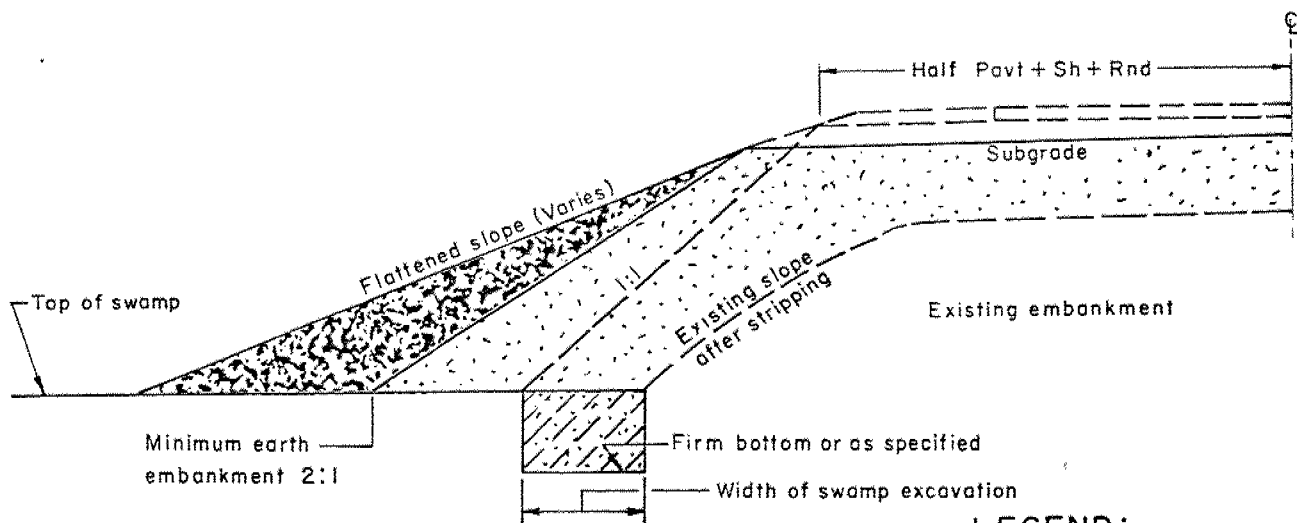
P. Lee
Manager Highway Design Office



WIDENING



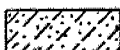


RE-ALIGNMENT



PROFILE GRADE CHANGE

LEGEND:

-  Approved embankment materials
-  Excavated swamp material
-  Area to be excavated & backfilled

NOTES:

- A This Standard to be used only where depth of swamp is 4.0 m or less and height of fill is 2.0 m or less.
- B Topsoil shall be stripped from existing slopes.
- C All dimensions are in millimetres unless otherwise specified.

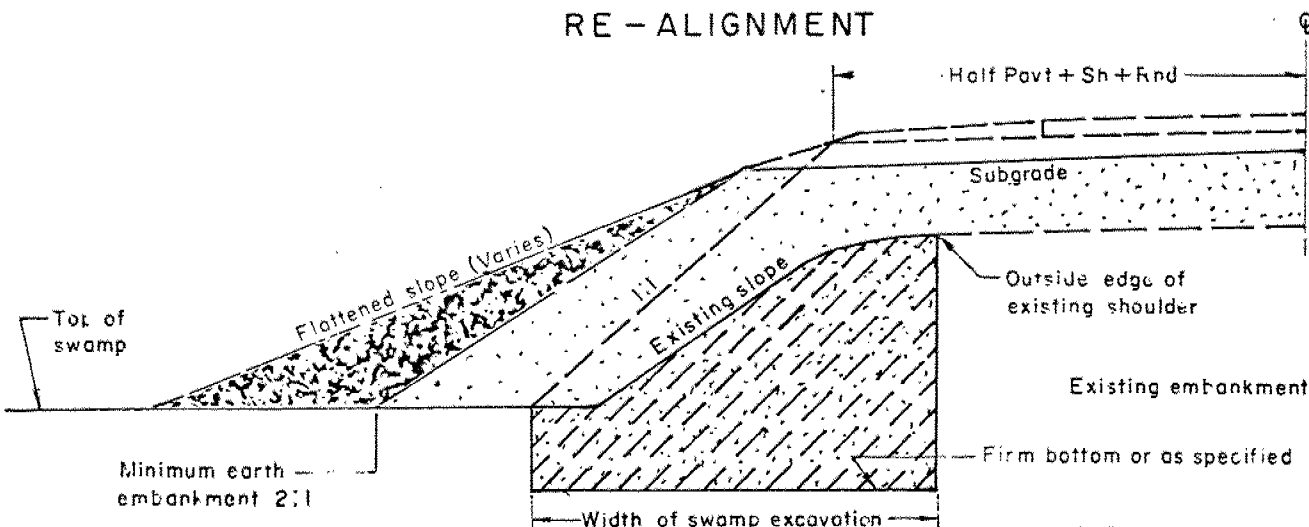
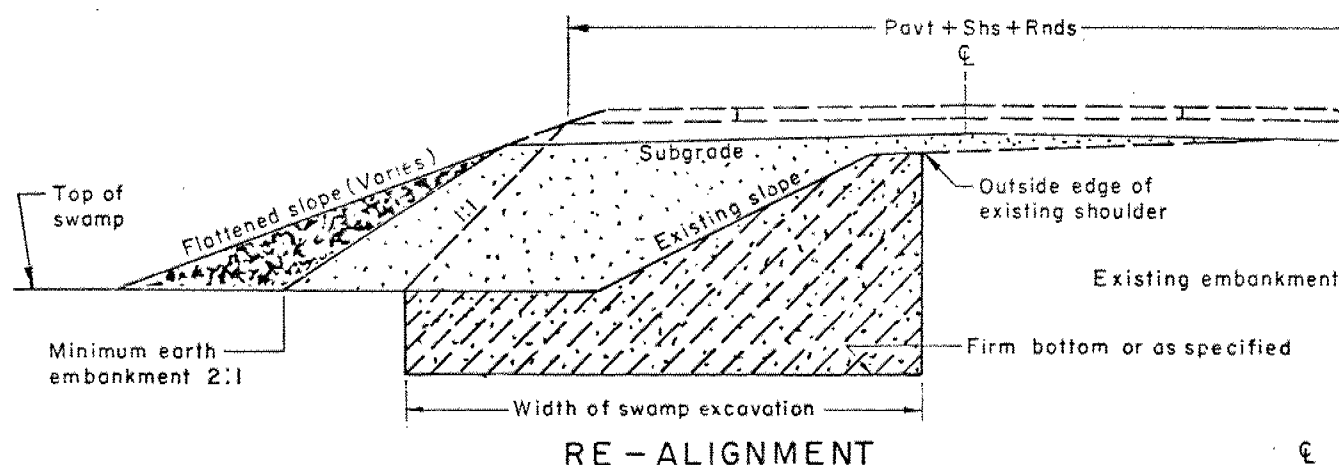
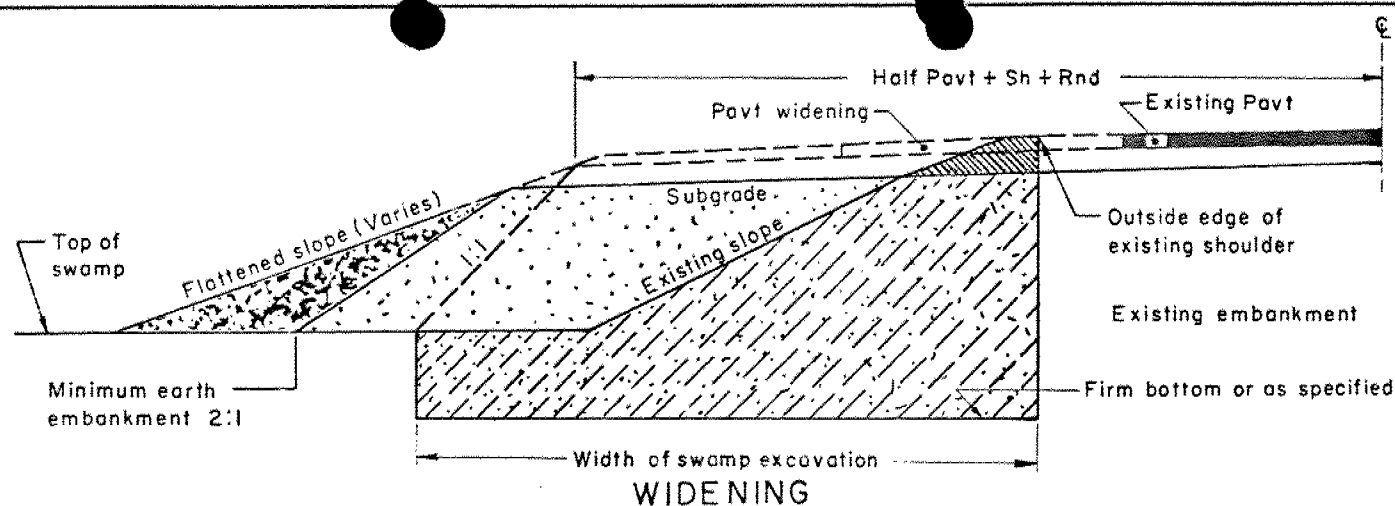
MINISTRY OF TRANSPORTATION AND COMMUNICATIONS - ONTARIO

No DD-408-B

RECONSTRUCTION SWAMP TREATMENT EXISTING SLOPES MAINTAINED

Date 1983 04 01 Rev

Phu Pim
Manager Highway Design Office


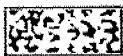




NOTES:

- A This Standard to be used only where depth of swamp is 4.0 m or less and height of fill is 2.0 m or less.
- B All dimensions are in millimetres or metres unless otherwise specified.

PROFILE GRADE CHANGE

LEGEND:

-  Approved embankment materials
-  Excavated swamp material
-  Area to be excavated & backfilled
-  Area to be excavated

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS - ONTARIO No DD - 408 - C

RECONSTRUCTION SWAMP TREATMENT EXCAVATION - VERTICAL FACE

Date 1983 04 01 Rev

John D. Brown
Manager Highway Design Office

SEND
TO

P. PAYER

FOUNDATION DESIGN

ENG. MATERIALS OFFICE

DEPT.

DATE

FROM

HARRY STURM

CENTRAL REGION GEOTECHNICAL

MAY 16/86

SUBJECT

WP 83-74-05

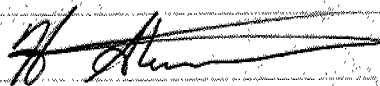
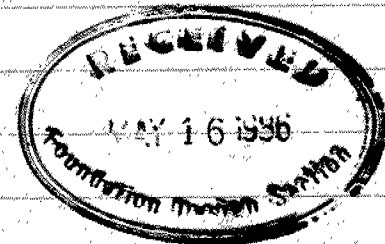
QEW WIDENING SOUTH OF BURLINGTON
SKYWAY

In your memorandum dated 85-07-08 subexcavation between stations 20+000 and 20+300 was recommended for the above described project. Backfill was required to be a non-cohesive material with consideration of light weight material.

The use of light weight material was investigated, however, due to availability problems a select subgrade material must be used. We trust this will be acceptable. If there are

REPLY

any problems objections to this please contact me at 224-7407.

REPLY FROM

REPLY DATE

memorandum



To: G.C.E. Burkhardt
Head
Structural Section
Central Region
5000 Yonge St,

Date: 1985 08 14

Attn: M.D. Bendayan

From: Foundation Design Section
Room 315, Central Building
Downsview

Re: Sign Footing W.P. 83-74-05
Q.E.W. Widening, District #4
Burlington

Further to our memo of 85 07 05 we, have reviewed our recommendations for the right footing for the overhead sign at Sta. 20 + 100 on the above mentioned project. In view of the fact that approximately four metres of soft soil will be excavated and replaced with non-cohesive fill we are now of the opinion that a piled foundation will not be required. Standard type footings for overhead signs should be adequate in this case.

A handwritten signature in cursive script, appearing to read "K.G. Selby".

K.G. Selby, P. Eng.
Chief Foundations Engineer
(West)

KGS/pet

memorandum

KEITH HETCHLER
(811) 634-8606



To: R.D. Gunter
Head, Geotechnical Section
Central Region
5000 Yonge Street.

Date: 1985 07 08

Attn: P.G. Verok

From: Foundation Design Section
Room 315, Central Building
Downsview

Re: Q.E.W. Widening - N.B.L.
STA: 20 + 000 to STA: 20 + 300
W.P. 83-74-05
District #4 (Burlington)

A field investigation was carried out at the above mentioned location.

The borings revealed the presence of up-to 12 m thick, soft organic deposit and/or industrial waste (garbage) material.

In view of the encountered subsurface conditions our recommendations are as follows:

- 1) Excavate organic material and or garbage as per MTC Standard DD-408-C (Dated: 83 04 01) down to EL. 72.
- 2) the subexcavation should be carried out in 'STRIPS' not wider than 5 m, and backfilled before the commencement of the next section (STRIP).
- 3) The backfill should consist of non-cohesive material. Consideration should be given to light weight backfill material (slag). This aspect however should be cleared with the Environment Office.
- 4) In order to reduce post-construction settlement of the widened portion of the roadway, 'Rolling' surcharge not higher than 2 m high (over profile grade) should be placed for a length of about 30 m. The surcharge can be removed and placed over the adjacent completed section.

These recommendations in part were communicated to you by telephone on 85 07 02.

A handwritten signature in dark ink, appearing to read "P. Payer".

P. Payer
Foundations Engineer

PP/pet

memorandum



To: G.C.E. Burkhardt
Head, Structural Section
Central Region
5000 Yonge Street

Date: 1985 07 05

From: Foundation Design Section
Room 313, Central Building
Downsview

ATT: M.D. Bendayan

RE: Sign Footing
W.P. 83-74-05
Q.E.W. Widening
District #4, Burlington

This is to confirm our verbal recommendation of 85 06 24 concerning the right footing support of the proposed overhead sign in the vicinity of Sta: 20 + 100.

The field investigation revealed the presence of a 11 m thick, soft organic deposit at the proposed footing location.

In view of the encountered subsurface conditions it is recommended that the footing be supported on end-bearing steel 'H' piles driven to bedrock, using a safe design load of 1150 kN (HP 310 x 110) or 830 kN (HP 310 x 79) per pile. The pile tips should be reinforced with pile driving shoes. It is assumed that the piles will meet practical refusal at El. 63 \pm .

A handwritten signature in dark ink, appearing to read "P. Payer".

P. Payer
Foundations Engineer

PP/pet

19+705 31.0 m Lt. Φ

0	-	280 mm	ice
280	-	450	water
450	-	1.2 m	br.org. si.
1.2	-	1.5	br.si.cl. firm

19+665 33.0 m Lt. Φ

0	-	900 mm	cr.gr. dirty
900	-	1.3 m	br.si.sa.

19+605 55.0 m Lt. Φ

0	-	60 mm	dk.br.si.cl.tps.
60	-	700	br.si.cl. and tps. mix
700	-	1.4 m	br.si.cl. MP

20+000 25.0 m Lt. Φ

0	-	300 mm	ice
300	-	1.3 m	water
1.3	-	1.8	blk.org.si. soft
1.8	-	4.4	br.org.cl.si. soft
4.4	-	4.7	br.si.cl. firm

19+925 25.0 m Lt. Φ

0	-	300 mm	ice
300	-	1.4 m	water
1.4	-	2.0	blk.org.si. soft
2.0	-	5.6	br.org.cl.si. soft
5.6	-	5.8	br.si.cl. firm

19+850 25.0 m Lt. Φ

0	-	300 mm	ice
300	-	1.4 m	water
1.4	-	1.8	blk.org.si. soft
1.8	-	4.6	br.org.cl.si. soft
4.6	-	4.7	br.si.cl. firm

19+280	14.6 m Lt. Φ		
0	200 mm	asph.	-
200	550	cr.gr.	-
550	1.0 m	br.si.sa.	-
19+110	15.0 m Lt. Φ		
0	150 mm	dk.br.si.cl.tps.	-
150	1.2 m	br.si.cl. MP	-

20+000 35.0 m Lt. ϕ

0	-	1.4 m	ice and water
1.4	-	4.4	br.org.si. soft
4.4	-	4.6	br.si.cl. firm

19+850 35.0 m Lt. ϕ

0	-	1.4 m	ice and water
1.4	-	4.3	br.org.si. soft
4.3	-	4.6	br.si.cl. firm

19+925 35.0 m Lt. ϕ

0	-	1.4 m	ice and water
1.4	-	4.7	br.org.si. soft
4.7	-	4.9	br.si.cl. firm

19+925 Vain Test Remould

0	-	1.4 m =	ice and water	
		2.0 m =	351 lbs.sq.ft.	108 lbs.sq.ft.
		2.6 m =	540 lbs.sq.ft.	189 lbs.sq.ft.
		3.2 m =	567 lbs.sq.ft.	189 lbs.sq.ft.
		3.8 m =	594 lbs.sq.ft.	216 lbs.sq.ft.
		4.4 m =	810 lbs.sq.ft.	270 lbs.sq.ft.
		4.7 m =	999 lbs.sq.ft.	351 lbs.sq.ft.

16+937 25.0 m Rt. ϕ

0	-	170 mm	asph.
170	-	280	cr.gr.
280	-	1.4 m	cr.stone and si.sa.

17+020 30.0 m Rt. ϕ

0	-	160 mm	asph.
160	-	280	cr.gr.
280	-	1.1 m	cr.stn. and si.sa.
1.1	-	1.9	dk.br.si.cl.tps.
1.9	+		NFP cr.rock

0	-	300 mm	cr.gr.
300	-	3.0 m	sa.SP wet 2.0 m +
3.0	-	3.5	br.org.si. wet
3.5	-	4.2	gr.GP wet

17+570 18.0 m Lt. ϕ

0	-	150 mm	dk.br.si.sa.tps.
150	-	1.3 m	br.si.sa.
1.3	-	1.5	dk.br.org. and sa. mix
1.5	-	2.4	sa.SP
2.4	-	3.0	grav.GP

17+570 25.0 m Lt. ϕ

0	-	1.9 m	gr.GP
1.9	-	2.4	br.stny.si.sa. wet
2.4	-	3.2	dk.br.org. and si.sa. mix wet
3.2	-	3.6	gry.sa. wet

17+760 15.0 m Lt. ϕ

0	-	200 mm	dk.br.si.sa.tps.
200	-	1.2 m	br.stny.si.sa. wet 800 mm +
1.2	-	1.4	dk.br.org. wet
1.4	-	1.8	gry.sa.SP wet

17+760 21.0 m Lt. ϕ

0	-	150 mm	asph.
150	-	500	cr.gr.
500	-	1.3 m	cr.stn. and si.sa.

16+943 30.0 m Lt. ϕ

0	-	180 mm	asph.
180	-	350	cr.gr.
350	-	1.0 m	gr.GP
1.0	-	1.5	cr.stn. and si.sa.

17+030 28.0 m Lt. ϕ

-20-a ③

17+530 20.0m Rt. ㇿ

0	-	200mm	cr.gr.
200	-	2.7m	br.gr.(GP)(wet 1.6m+)
2.7	-	3.1	dk.br.org.
3.1	-	3.5	gry.sa.(SP) wet

17+550 20.0m Rt. ㇿ

0	-	150mm	cr.gr.
150	-	2.5m	br.gr.(GP)(wet 1.7m+)
2.5	-	2.7	dk.br.org.
2.7	-	3.5	gry.sa.(SP) wet
3.5	-		NFP bld.

18+040 20.0m Lt. ㇿ

0	-	300mm	dk.br.si.sa.tps.
300	-	2.0m	br.sa.(SP) wet (stny. to 600mm)
2.0	-		NFP hole caving in

18+080 20.0m Lt. ㇿ

0	-	200mm	dk.br.si.sa.tps.
200	-	1.5m	br.sa.(SP)(stny. to 800mm wet)
1.5	-		NFP hole caving in

19+570 75.0m Lt. ㇿ

0	-	70mm	br.si.gr.
70	-	200	dk.br.si.sa.tps.
200	-	500	br.si.cl.MP
500	-	900	br.si.sa. moist
900	-	1.6m	br.si.cl. (MP) moist

19+750 25.0m Lt. ㇿ

0	-	380mm	dk.br.si.sa.tps.
380	-	600	br.si.sa. moist
600	-	1.5m	br.si.cl.(MP) moist
1.5	-	2.8	br.sa.si. moist 84-WB-11
2.8	-	3.5	gry.si.cl. (MP) moist - wet
3.5	-	3.9	gry.sa.si. moist
3.9	-	6.0	gry.si.cl.(MP) moist - wet 84-WB-12

taken 4.5-5.0m

19+780	25.0m Lt. ㇿ	0	140mm	dk.br.si.sa.tps.
		-	600	br.si.cl.(MP) moist
		-	1.2m	br.sa.si. wet 84-WB-13
		-	4.5	br.si.cl.(MP) moist
		-	5.5	gry.si.cl.(MP) moist
19+795	25.0m Lt. ㇿ	0	150mm	dk.br.cl.sa.tps.
		-	700	br.si.cl. (MP) moist
		-	5.2m	dk.br.cl.sa. and tps. mix wet and soft
		-	6.0	gry.si.cl. (MP) moist
19+810	25.0m Lt. ㇿ	0	7.4m	dk.br.cl.sa. and tps. mix soft and wet
		-	7.7	gry.si.cl.(MP) moist firm
19+830	22.0m Lt. ㇿ	0	200mm	water
		-	6.1m	dk.br.org.si. soft and wet
		-	6.5	br.si.cl.(MP) moist
19+850	22.0m Lt. ㇿ	0	300mm	water
		-	4.6m	dk.br.org.si. wet soft
		-	5.0	br.si.cl.(MP) moist firm
19+925	22.0m Lt. ㇿ	0	300mm	water
		-	4.8m	dk.br.org.si. wet soft
		-	5.0	br.si.cl.(MP) moist firm
20+000	22.0m Lt. ㇿ	0	450mm	water
		-	5.7m	dk.br.org.si. wet soft
		-	6.0	gry.br.si.cl. MP moist firm

20+050 23.0m Lt. ₪

0	-	300mm	water
300	-	5.9m	dk.br.org.si.
5.9	-	6.2	br.si.cl.(MP) moist firm

20+080 25.0m Lt. ₪

0	-	100mm	dk.br.si.cl.tps.
100	-	600	br.si.cl.(MP) moist
600	-		NFP rubble

20+110 25.0m Lt. ₪

0	-	800mm	br.si.cl. MP
800	-	2.5m	blk.si.cl.tps; rubble mix wet
2.5	-	6.0	br.org.si. soft water ent. @ 2.5m

20+140 18.0m Lt. ₪

0	-	650mm	cr.gr.
650	-	1.4m	br.si.cl. MP

20+140 25.0m Lt. ₪

0	-	1.0m	br.si.cl. MP
1.0	-	1.5	dk.br.si.cl.tps.
1.5	-	3.0	blk.si.cl.tps.; rubble mix water ent. @ 2.5m
0.0	-	6.0	br.org.si. soft

20+170 25.0m Lt. ₪

0	-	800mm	br.si.cl. MP
800	-	1.5m	dk.br.si.cl.tps.
1.5	-	3.8	gry.si.cl. and rubble mix water ent. @ 1.5m
3.8	-	6.0	br.org.si. soft

20+170 18.0m Lt. ₪

0	-	650mm	cr.gr.
650	-	2.5m	br.si.cl. (MP)
2.5	-	6.0	gry.si.cl.(MP) moist (soft 5.0-6.0m)

0	-	100mm	asph.
100	-	850	cr.gr. (seepage 650-850mm)
850	-	1.3m	dk.br.si.cl.tps.
1.3	-	3.0	br.si.cl. MP moist
3.0	-	5.0	gry.si.cl.(MP) moist
5.0	-	6.0	dk.br.org.si.

20+270 20.5m Lt. ₪

0	-	100mm	asph.
100	-	460	cr.gr.
460	-	700	br.si.gr.
700	-	1.3m	dk.br.si.cl.tps.
1.3	-	1.5	br.si.cl. MP

20+240 20.0m Lt. ₪

0	-	800mm	br.si.cl. (MP)
800	-	4.0m	dk.br.si.cl.tps. (3.0-4.0m wet and soft)
4.0	-	4.5	br.si.cl. (MP) moist
4.5	-	6.0	br.org.si. wet, soft

20+235 27.0m Lt. ₪

0	-	800mm	br.si.cl. MP
800	-	3.2m	blk.si.cl.tps. and rubble mix inner tubes etc. wet, water ent. @ 2.8m
3.2	-	3.8	gry.si.cl. MP
3.8	-	6.0	br.org.si. soft

20+210 25.0m Lt. ₪

0	-	100mm	asph.
100	-	640	cr.gr.
640	-	760	dk.br.si.cl.tps.
760	-	1.5m	br.si.cl. MP

20+210 19.0m Lt. ₪

20+300 23.0 m Lt. Φ

0	-	30 mm	dk.br.si.cl.tps.
30	-	230	cr.gr.
230	-	1.8 m	br.si.cl. (MP) moist
1.8	-	6.0	gry.si.cl. (MP) (moist to 4.0 m)
			(4.0 - 6.0 m wet)

20+275 22.0 m Lt. Φ

0	-	300 mm	dk.br.si.cl.tps.
300	-	400	br.si.cl. (MP) moist
400	-	600	br.si.gr. (seepage 400 - 600 mm)
600	-	2.5 m	br.si.cl. (MP) moist
2.5	-	2.8	dk.gry.grav. si.sa. (seepage 2.5 - 2.8 m)
2.8	-	4.2	gry.si.cl. (MP) moist
4.2	-	5.7	dk.br.org.cl. woody (soft 5.0 m+)
5.7	-	5.8	gry.si.cl. MP

Depth 5.8 - 6.1 m Vane 65 = 1755 PSF 35 = 945 PSF
Unable to push vane further.

20+250 22.0 m Lt. Φ

0	-	2.5 m	dk.br.si.cl.tps. and rubble mix
			(seepage 1.7 - 3.0 m) (wet 1.7 - 3.0 m)
2.5	-	3.0	boulders wet (water filled hole to 1.5 m)
3.0	-	4.5	gry.si.cl. (MP) moist firm
4.5	-	5.7	br.cl.si. moist
5.7	-	6.0	gry.si.cl. (MP) moist firm

20+225 22.0 m Lt. Φ

0	-	200 mm	dk.br.si.cl.tps.
200	-	500	br.si.cl. (MP)
500	-	3.0 m	dk.br.si.cl. tps. and garbage mix, wet
3.0	-	3.5	br.si.cl. (MP) moist (water ent. 4.5 m)
3.5	-	4.5	gry.si.cl. (MP) moist
4.5	-	6.0	dk.br.org. cl. si. wet

32-5

16+200 20.0 m Lt. Φ

0	-	100 mm	dk.br.si.sa.tps.
100	-	2.0 m	br.stny.si.sa.
2.0	-	2.5	blk.org., wet
2.5	-	3.5	gry.sa. (SP) wet

16+150 22.0 m Lt. Φ

0	-	100 mm	dk.br.si.sa.tps.
100	-	1.8 m	br.si.sa.
1.8	-	2.2	blk.org.
2.2	-	2.5	gry.sa. (SP) wet

16+100 22.0 m Lt. Φ

0	-	100 mm	dk.br.si.sa.tps.
100	-	2.0 m	br.si.sa.stny.
2.0	-	3.0	gry.sa. (SP) wet

16+050 23.0 m Lt. Φ

0	-	100 mm	dk.br.si.sa.tps.
100	-	1.2 m	br.si.sa.
1.2	-	2.5	gry.sa. (SP) wet

16+000 23.0 m Lt. Φ

	-	150 mm	dk.br.si.sa.tps.
150	-	800	br.si.sa. (stny. and brick mix)
800	-	1.1 m	dk.br.org.tps.
1.1	-	1.7	gry.sa. (SP) wet

15+950 20.0 m Lt. Φ

0	-	100 mm	dk.br.si.sa.tps.
100	-	1.7 m	br.si.sa.
1.7	-	2.2	br.sa. (SP) wet

20+225 4.5 m Lt. ㄥ

Depth	Vane	Remould
6.1 m	60 = 1620 PSF	25 = 675 PSF

20+200 20.0 m Lt. ㄥ

0	-	100 mm	dk.br.si.cl.tps. (water filled to 1.0 m)
100	-	300	cr.gr.
300	-	900	br.si.cl. moist-wet
900	-	1.8 m	dk.br.si.cl.tps.
1.8	-	3.0	br.si.cl. and stn. mix and bricks, wet (seepage).
3.0	-	4.5	br.si.cl. (MP) moist firm
4.5	-	6.0	br.org.cl.si.f. soft woody

Unable to push vane through stone layer @ 3.0 m.

20+175 19.0 m Lt. ㄥ

0	-	700 mm	dk.br.si.cl. and tps. mix.
700	-	3.0 m	br.bldy.si.cl. and brick mix, woody, wet
3.0	-	4.0	br.si.cl. (MP) moist (hole water filled to 1.0 m)
4.0	-	5.9	br.org.cl.si.f. soft

Depth	Vane	Remould
6.0 m	65 = 1755 PSF	30 = 810 PSF

20+150 19.0 m Lt. ㄥ

0	-	100 mm	dk.br.si.cl.tps.
100	-	400	br.si.cl. (MP)
400	-	2.0 m	blk.si.cl.tps.
2.0	-	3.0	br.si.cl. (MP) moist (bricks 2.5 - 3.0 m)
3.0	-	6.0	br.org.cl.si. (84-WB-25)

Depth	Vane	Remould
6.6 m	62 = 1674 PSF	26 = 702 PSF

Unable to push vane further.