

62-F-52



ONTARIO
DEPARTMENT OF HIGHWAYS

Murphy
Feb. 6. 1962

See me about this, please
Ally

Memo to Mr. A. Sternac, Date February 1st, 1962.
Foundations Engineer. Subject Embankment failure, Hwy. #58,
From P.F. Weber. Sta. 85 1/2 to 87 1/2, Contract 60-188,
Welland to Port Colborne.

Attention: Mr. M. Devata.

As discussed with you previously, the District has requested that the Soils Section investigate a failure which has occurred on this recently completed contract.

The section in question is located in a muskeg area (1 1/2 miles north of Port Colborne) and it appears that the additional padding of the old road under this contract has caused a movement in a portion of the fill with the result that a large longitudinal crack in the east lane has appeared in the pavement. Since this road was originally constructed by the County in about 1955, no detailed information is available as to whether the muck here was removed or partially displaced by placing rock from the adjacent rock cut.

As you already have the profile for this job, an investigation can be carried out when you have a core drill in this area.

PTW/hl
c.c. T.J. Kovich,
Files.

P.F. Weber,
Sr. Project Soils Supervisor.

23-60-188-1
COPY

For the information of:

Mr. A. Rutka.

Toronto Regional Road Design Office,
DOWNSVIEW, Ontario. Dec. 16th, 1959.

MEMORANDUM FOR:

Mr. A. Toye,
Bridge Engineer,
Department of Highways,
280 Davenport Road,
TORONTO, Ontario.

Attention: Mr. B. Davis.

RE: (W.P. 83-60) Highway 53, Port Colborne to Welland,
District No. 4, Township of Humberstone.

Attached please find two copies of Design Data for Culvert,
PL-DB-58, for the above mentioned Work Project. For further
detailed information please contact, Mr. J. Ford, Project
Design Engineer.

J. Ford
J. Ford,
PROJECT DESIGN ENGINEER,
For:
D. W. Farren,
SENIOR PROJECT DESIGN ENGINEER,

JF/dln

c.c. A. Rutka,
c.c. R.L. Richardson,

Attach.

Contract # 60-188

Mr. G. A. Wrong,
Principal Soils Engr.
Mr. A. G. Sternac,
Foundation Section.

June 15, 1962.

Embankment Failure, Hwy. #58,
Sta. 85± to 88±, Contract 60-188
Walland to Port Colborne.

(D.H.C. FOUNDATION INVESTIGATION
W.J. 62-P-52)

Attention: Mr. F. F. Weber.

In answer to your memo dated Feb. 1, 1962, requesting a foundation investigation at the site of the embankment failure on Hwy. #58 between Stations 85± and 88±, we have the following comments:

The requested investigation was completed on May 22nd of this year. One borehole was carried out some 18' Rt. of Sta. 86+85 and detailed sampling showed the following subsoil conditions:

From groundlevel (Elev. 578.0) downwards, the subsoil consists of - 6 in. of crushed gravel, followed by 3'-0 of granular borrow, followed by grey limestone rock fill to a depth of 15 feet. At this depth, an organic peat deposit with wood and other decayed vegetation was found. The peat deposit extends approximately to a depth of 21 feet where a bluish-grey, soft deposit of clay begins. This clay deposit extends at least to 43 feet below groundlevel, at which point the boring was terminated.

In view of the above, we feel that no remedial measures can be suggested and that this failure has to be treated as a maintenance problem. Given time, the compressible peat layer will consolidate and cracking of the pavement due to lateral displacements, should cease.

AGS/ndef

A. G. Sternac
A. G. Sternac,
PRINCIPAL FOUNDATION ENGINEER

cc: Mr. T. J. Kovich

Foundations Office
Gen. Files.

FIELD BORING LOG

BILLING CO. D.H.O. DATUM ELEV. TOOL PUMP SEW B.H. NO. 1
 DRILLER J. Downing GROUND ELEV. 578.0 JOB NO. 62-R-52
 ENGINEER G.M. CASING SIZE NA DATE MAY 8/62
 SITE LOCATION Hwy #5B (W. side)
 HOLE LOCATION 18' RT OF STA BEARS
 REMARKS

DEPTH FEET		DESCRIPTION	SAMPLE TYPE, NO. & RECOVERY	METHOD OR BLOWS & DISTANCE
FROM	TO			
0	5	DRIVE 1/2 CASING - 30 OF GRANULAR BORING (6" CRUSHED GRAVEL ON TOP)		
0	5	ROCK FILL UNDERLYING GRAVEL WASH OUT		
5	6.8	HAMMER BORING - SAND & GRAVEL FILL	SS-1	22-25 10' 1/2
5	7.0	DRIVE CASING & WASH OUT		
7	8.5	GREY SAND, GRAVEL & LIMESTONE ROCK FILL	SS-2	10-15-11
7	8.5	DRIVE CASING & WASH OUT (LOOSING WATER IN HOLE)		
8.5	10.0	GREY & BROWN SAND & GRAVEL & LIMESTONE ROCK FILL	SS-3	9-16-30
END OF DAY				

FIELD BORING LOG

DRILLING CO. DHO DATUM ELEV. 7220.16 ft B.H. NO. 1
 DRILLER J. Daddag GROUND ELEV. 578.0 JOB NO. 62-F-52
 ENGINEER G.M. CASING SIZE NX DATE MAY 22/62
 SITE LOCATION NAY 958 (WELAND)
 HOLE LOCATION 18' AT OF S.A. 66165
 REMARKS

DEPTH FEET		DESCRIPTION	SAMPLE TYPE, NO. & RECOVERY	METHOD OR BLOWS & DISTANCE
FROM	TO			
		WATER LEVEL = 5'-5" Below GL AT START OF DAY		
8.5	10.0	DRIVE CASING & WASH OUT		
10	11.5	GREENISH GREY SAND, GRAVEL & LIMESTONE ROCK - FINE	SS-4	18-21-45
11.5	13.0	HAMMER BOUNCING (CHUNKS OF ROCK FINE) REMARKS - SAMPLE LOST - PROBABLY AS ABOVE (SS. BENT)	SS-5	29-24-20
10	13.0	DRIVE CASING & WASH OUT (WASHING HAS WATER AT 13.0)		
13	14.5	SAND, GRAVEL & LIMESTONE ROCK FINE WITH POCKETS OF BROWN & BLACK PEAT - ORGANIC & FINE SMEARING	SS-6	2-87-26
13	14.5	DRIVE CASING & WASH OUT (DARK BROWN WATER)		
14.5	16.0	FIN AS ABOVE CHANGING TO DARK BROWN PEAT WITH ROCKS & ORGANICS AT 15'-5"	SS-7	8-38.5- TH. 12.7
14.5	16.0	DRIVE CASING & WASH OUT - DARK BROWN FINE SMEARING WATER		
16.0	17.5	BLACK-BROWN PEAT & IN CHUNKS OF WOOD & PARTLY DECAYED VEGETATION (FINE LOSS)	T.B. P 80% RECOVERY	
17.5	19.0	VANE 26" each at 18.0 - LG 7" rock at 3" - Remoulded	1240 psi 10 psi	
16	17.0	WASH OUT (DRIVE CASING TO 16.0) BROWN - BLACK WATER		

FIELD BORING LOG

DRILLING CO. Don DATUM ELEV. Top of Point B.H. NO. 1
 DRILLER J. Dunning GROUND ELEV. 578.0 JOB NO. 62-1-52
 ENGINEER G.M. CASING SIZE 1.5 DATE MAY 12/62
 SITE LOCATION Hwy 400 (WINDWARD)
 HOLE LOCATION 18' RT OF STA 86+85
 REMARKS

DEPTH FEET		DESCRIPTION	SAMPLE TYPE, NO. & RECOVERY	METHOD OF BLOWS & DISTANCE
FROM	TO			
19	20.5	PEAT (BROWN & GRAY) WITH WOOD & DECAYING VEGETATION (100% RECOVERY)	T-9	P
20.5	22.0	VAR. 40" each @ 6 in - CG 28" each @ 3 in - REMAINED		
18	23.0	DRIVE CASING & WASH OUT - CHANGE GRAY COLOR (Silt?)		
22	23.5	BROWN-GREY CLAY - SOFT - HIGHLY PLASTIC	T-10	P
23.5	25.0	VAR. 29" each @ 6 in - CG 10" each @ 6 in - REMAINED		
22.0	25.0	DRIVE CASING WASH OUT - LOSING WATER - NONE		
25	26.5	GREY CLAY - HIGHLY COMP. SILENT	T-11	P
26.5	28.0	VAR. 12" each @ 6 in - CG 14" each @ 3 in - REMAINED		
28	30	WASH OUT		
30	31.5	GREY CLAY - HIGHLY COMP. SILENT	T-12	P
31.5	33.0	VAR. 20" each @ 6 in - CG 5" each @ 6 in - REMAINED		
30	40	WASH OUT - GREY WATER WITH PINK TINGE		
40	41.5	GREY TO PINK CLAY - SOFT - HIGH PLASTICITY	T-13	P
41.5	43.0	VAR. 27" each @ 6 in - 12" each @ 3 in END OF HOLE & DAY		

Mr. G. A. Wrong,
Principal Soils Engr.
Mr. A. G. Sternac,
Foundation Section.

June 15, 1962.

Embankment Failure, Hwy. #58,
Sta. 85+ to 88+, Contract 60-18
Welland to Port Colborne.

(D.H.C. FOUNDATION INVESTIGATION
W.J. 62-P-52)

Attention: Mr. P. F. Weber.

In answer to your memo dated Feb. 1, 1962, requesting a foundation investigation at the site of the embankment failure on Hwy. #58 between Stations 85+ and 88+, we have the following comments:

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cc: Mr. T. J. Kovich

A. G. Sternac,
PRINCIPAL FOUNDATION ENGINEER

Foundations Office
Gen. Files.