

#69-F-23

W.P. 909-67-1

H.W.Y. #7

AND STONEY CREEK

CULVERT

MEMORANDUM

To: Mr. B. R. Davis,
Bridge Engineer,
Bridge Office,
Admin. Bldg.

FROM: Foundation Section,
Materials & Testing Office,
Room 107, Lab. Bldg.

ATTENTION: Mr. S. McCombie

DATE: May 15, 1969

OUR FILE REF:

IN REPLY TO

MAY 20 1969

SUBJECT:

FOUNDATION INVESTIGATION REPORT

For

The Proposed Culvert at the
Crossing of Hwy. #7 and Stoney Creek
West of Reaboro, Twp. of Ops
District No. 7 (Port Hope) *See Victoria*
W.J. 69-P-23 -- W.P. 909-67-1

1. Introduction:

A request to conduct a foundation investigation at the above mentioned site, was contained in a memo from Mr. W. S. Melinyshyn, Regional Bridge Location Engineer (Central Region), dated April 2, 1969. The site is located on Lot 10, Concession 9, Township of Ops, County of Victoria, west of Reaboro. An investigation was subsequently carried out.

This report presents information on the subsoil conditions, as well as recommendations pertaining to foundation design.

A detailed borehole log and drawing of the site will be submitted, in due course, after completion of laboratory testing and draughting.

2. Site and Geology:

The ground in the immediate vicinity of the site, is flat lying to gently undulating in relief, varying between about elevations 840 and 844. The surrounding land is presently being utilized as pasture.

Stoney Creek, in the vicinity of Hwy. #7, is a southerly flowing, meandering stream approximately 10 to 12 feet wide and 2 to 3 feet deep. A rigid frame box culvert, about 20 feet wide, carries existing Hwy. #7 over the creek. The structure is in poor condition. Hwy. #7 is located on an earth fill embankment approximately 4 to 6 feet in height. The C.N.R. main line is

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(cont'd.) ...

2. Site and Geology: (cont'd.) ...

located approximately 500 feet north-east of the crossing.

Physiographically the site is situated in the area known as the "Schomberg Clay Plains". This region is a topographic basin located along the slope of the Oak Ridge moraine. The surficial strata in this area is composed of stratified deposits of clay and silt (varved clay) of glacial lacustrine origin. The thickness of this subsoil is quite variable, being on the average, about 15 feet. The stratified deposit is underlain by drumlinized till plains. The small drumlins are completely covered; some of the larger ones, however, have escaped burial and protrude to within a few feet of ground surface. The overburden, which is quite extensive in the vicinity of the site, is underlain by limestone bedrock of the Trenton Formation, Ordovician Period.

3. Subsoil Conditions:

A detailed borehole, which was accompanied by a dynamic cone penetration test, was put down during the course of the investigation. A brief review of the subsoil conditions encountered is presented in tabular form as follows:

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(cont'd.) ...

3. Subsoil Conditions: (cont'd.) ...

| <u>Deposit</u> : | <u>Approx. Range (Elev.)</u> | <u>Average Thickness</u> |
|--|----------------------------------|-------------------------------------|
| Organic Silt, trace of Clay - (Creek Bed Deposit) - Soft ('N' - 6 blows/ft.) | 842.5 to 837.5 | 5' |
| <u>Clayey Silt</u> , trace of Sand & Gravel - Very Stiff to Stiff * (Cu = >2,000 p.s.f., decreasing to 1,300 p.s.f. with depth) | 837.5 to 824.5 | 13' |
| Stratified <u>Silty Clay</u> , trace of Sand & Gravel - Firm to Stiff (Cu = 800 to 1,400 p.s.f.) | 824.5 to 819.0 | 5.5' |
| Silty Sand & Gravel (<u>Glacial Till</u>) (Very bouldery below elev. 812) - - Dense to Very Dense - ('N' - 32 to >100 blows/ft.) | 819.0 - | Penetrated for a depth of 14.3'. |

Note: Bedrock not encountered.

The groundwater level across the site, at the time of the investigation, was at approximately the creek water level - i.e., at about elevation 841.

* Cu - Undrained Shear Strength of Cohesive Deposit (p.s.f.)

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(cont'd.) ...

4. Recommendations:

It is proposed to construct a 20-ft. wide concrete rigid frame culvert at the crossing of relocated Hwy. #7 and Stoney Creek. The new centre-line of the revised Hwy. #7 will be some 70 ft. south of the existing Hwy. #7 centre-line.

The subsoil at the site consists of 5 ft. of organic silt, followed by about 13 ft. of very stiff to stiff clayey silt with traces of sand and gravel underlain by 5 to 6 ft. of firm to stiff stratified silty clay deposit. The stratified stratum is underlain by a glacial till (dense to very dense silty sand and gravel) deposit.

The proposed single-span rigid frame concrete culvert can be founded within the very stiff to stiff clayey silt stratum with an allowable load of 1.5 t.s.f. A temporary stream diversion may be required during the construction of the culvert. Any seepage from the surficial organic deposit can be controlled by ordinary pumping methods.


No stability problems are anticipated for the proposed approaches with standard 2:1 slopes, provided all surficial organic deposits are removed.

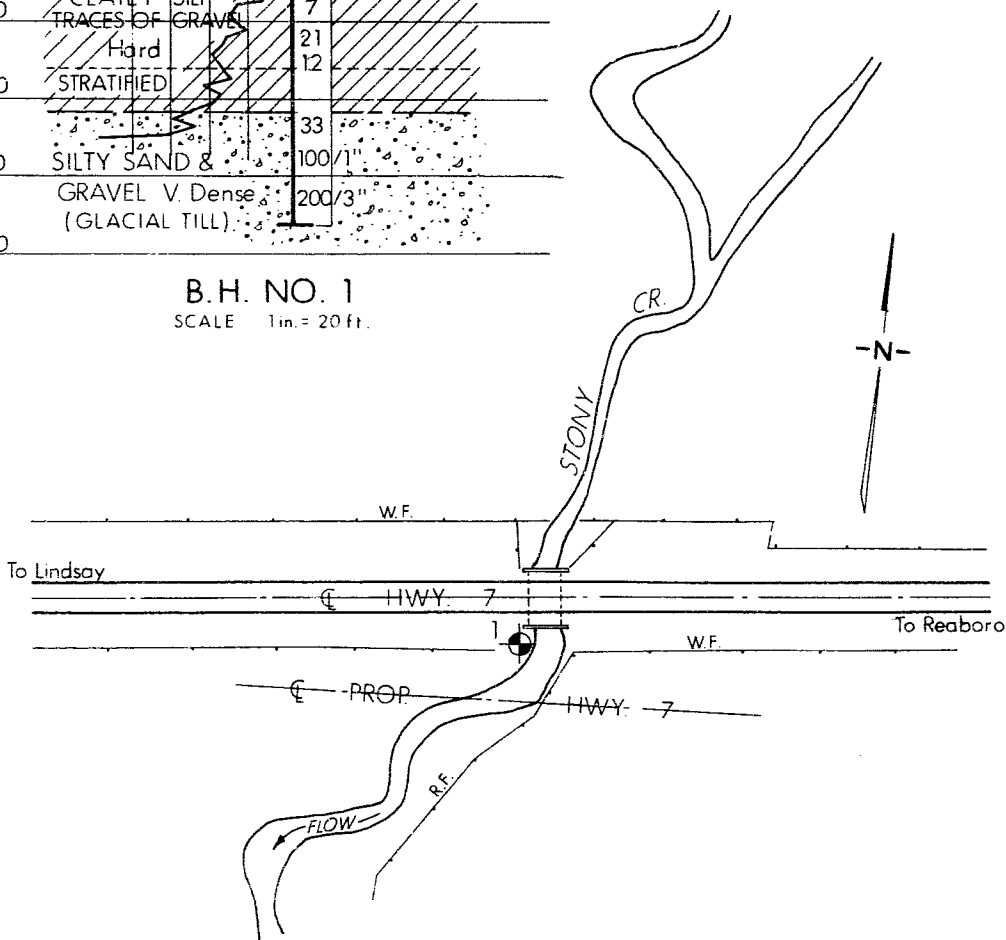
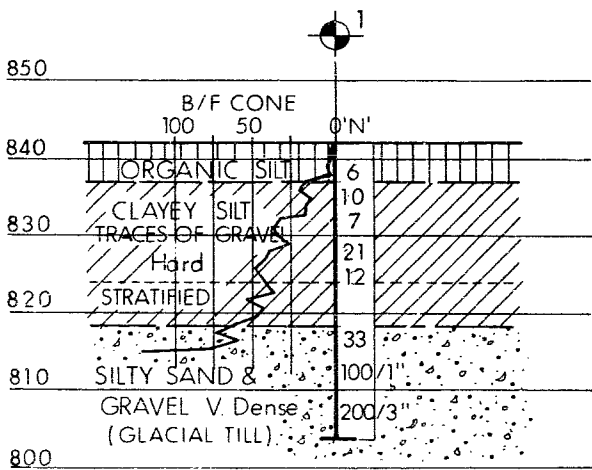
If you have any further queries, or if any of the foregoing requires clarification, please contact our Office.

ETD/MdeF

cc: Messrs. B. R. Davis (2)
H. A. Tregaskes
D. W. Farren
G. K. Hunter (2)
D. P. Collins
W. S. Melinyshyn
T. J. Kovich
B. A. Singh

Foundations Files
Gen. Files


M. Devata,
SUPERVISING FOUNDATION ENGR.
For:
A. G. Stermac,
PRINCIPAL FOUNDATION ENGR.



DEPARTMENT OF HIGHWAYS
**MATERIALS and
TESTING
DIVISION**

DATE

APPROVED

DRAWING NO.