

Mr. L. D. Fisher,
Eng. Office Supervisor,
District #4,
Hamilton, Ontario.

Foundations Office,
Design Services Branch,
West Bldg., Downsview.

December 7, 1972.

Glover Road Underpass
Site #56-206, W.P. 210-63,
District #4, Hamilton

The above-mentioned structure was visited by the writer on November 15, 1972, at your request to inspect the approach embankments immediately adjacent to the north and south abutments where settlements have occurred. Following is a summary of observations made during this visit:

- 1) The structure was constructed in 1968 under Contract 68-50. The abutments are supported on spread footings founded on compacted granular fill placed to an elevation about 3 - 4 ft. higher than the original ground surface, extending backwards to the back of the wing walls. The maximum embankment height is about 25 ft. and the fill material consists of cohesive soil (clayey silt, sand and gravel). A 20 ft. long approach slab extends from behind the abutment back walls.
- 2) A depression in the pavement extends for about 60 ft. behind each abutment. The maximum depth of the depression is about 18 inches. Some asphalt patching has already been done and concrete curbs which have broken due to settlement have been replaced by asphalt. Photographs which were taken at the time of these remedial measures show a 6 - 8 inch void under the approach slab. Apparently, settlements have progressed gradually from the time the bridge was completed to the present time.
- 3) It is evident that the settlement has occurred within the approach fill material other than the granular pad on which the abutment foundations are constructed. The cause of the settlement is either inadequate compaction, or poor drainage which has allowed water to accumulate and soften the fill material, or both. Since the earth fill was placed in November 1968 and was left over the winter it is also possible that the upper zone became softened during this period.

December 7, 1972.

- 4) In order to improve the situation it is recommended that the following steps be taken:
- a) The void under the approach slab should be filled with grout. (For advice and assistance on this operation contact J. Slubicki, Equipment Engineer, Services Branch, Downsview - Telephone 248-3231.)
 - b) Adequate drainage must be provided so as to ensure complete drainage of the granular material under the pavement and in the shoulders at all times (including winter when frost penetration will be about 4 ft.).
 - c) If Step b) is carried out properly, settlements should continue at a decreasing rate, thus progressive patching and filling should eventually result in an acceptable road surface.

HGS/ao

K. G. Selby
K. G. Selby,

cc: Foundations Files
Documents

✓ SUPERVISING FOUNDATIONS ENGINEER.

MEMORANDUM

CC: GEN. FILES

23-69-50

W.P. 206-63-2

To: Mr. B. R. Davis,
Bridge Engineer,
Bridge Division.

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

Attention: Mr. S. McCombie

DATE: February 1, 1966

OUR FILE REF.

IN REPLY TO FEB 14 1966

SUBJECT:

FOUNDATION INVESTIGATION REPORT
For

Glover Road Underpass of Q.E.W.
District #4 (Hamilton)

W.J. 66-F-6 -- W.P. 210-63 *Included with*
206-63-2

Attached, we are forwarding to you, our detailed foundation investigation report on the subsoil conditions existing at the above structure site.

We believe that you will find the factual data and recommendations contained therein, adequate for your design requirements.

Should additional information be required, please feel free to contact our Office.

AGS/MdeF
Attach.

cc: Messrs. B. R. Davis (2)
H. A. Tregaskes
D. W. Farren
G. K. Hunter (2)
H. Greenland
T. J. Kovich
A. Watt

Foundations Office
Gen. Files ✓

A. G. Stermac
A. G. Stermac,
PRINCIPAL FOUNDATION ENGINEER

FOUNDATION INVESTIGATION REPORT

For

Glover Road Underpass of Q.E.W.

District #4 (Hamilton)

W.J. 66-F-6 -- W.P. 210-63

A request was received from the Bridge Location Section (in a memorandum from Mr. W. A. Melinyshyn, dated December 1, 1965), to conduct a foundation investigation for the proposed Q.E.W.-Glover Road Underpass. Presented in this report are the results of the subsequent field investigation, together with laboratory test results and recommendations for embankments and structure foundations.

The site is a portion of the Niagara Fruit Belt lying between the Niagara Escarpment and Lake Ontario, in the Township of Saltfleet, about 3 miles east of the easterly limits of the City of Hamilton. During the Pleistocene period the site was inundated by Lake Iroquois which carved the present relatively flat topography from the underlying glacial till. The glacial till extends to the bedrock (Queenston Shale) which is at a depth of about 37 feet below ground surface.

Observations carried out during the time of the field investigation, indicated that the water level in the boreholes was approximately between elev. 260.0 and elev. 256.0. The exact water levels are shown on the borehole logs.

cont'd. /2

The entire site is underlain by a hard clayey silt with some sand and occasional gravel. 'N' values varied from 31 to more than 100 blows per foot. The liquid limit varied from 24% to 31%, the plastic limit from 14% to 18%, and the water content from 10% to 16%.

The subsoil is suitable for the use of spread footing type foundations. For the piers, spread footings at elevation 260 or below, will support an allowable load of 3 t.s.f. The abutments could be supported on spread footings founded on a well-compacted granular fill (allowable load 2 t.s.f.), or on displacement piles (12") driven to, but not beyond elevation 255. A 12" Ø pile could carry an allowable load of 30 tons.

No problems are anticipated for the proposed 20-foot fill embankments, provided that standard 2:1 side slopes are used. Because of the low permeability of the subsoil, dewatering should not be a problem.

The investigation was conducted in January, 1966, using equipment owned and operated by Dominion Soil Investigation Limited, under the supervision of Mr. L. Palmer, Project Foundation Engineer, who also prepared this report. Mr. M. Devata, Senior Foundation Engineer, generally supervised the entire project and reviewed this report.

February 1966

APPENDIX I

~~CONFIDENTIAL~~

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS & TESTING DIVISION

RECORD OF BOREHOLE NO. 1

FOUNDATION SECTION

JOB 66-F-6

LOCATION W. & Glover Rd (Sta. 595+28, 171' Rt. of E)

ORIGINATED BY L.P.

W.P. 210-63

BORING DATE Jan. 10, 1966.

COMPILED BY L.P.

DATUM Contours

BOREHOLE TYPE Penndrill

CHECKED BY M.D. *dk*

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT					LIQUID LIMIT — WL PLASTIC LIMIT — WP WATER CONTENT — W			BULK DENSITY P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS / FOOT		20	40	60	80	100	WP	W	WL		
265.0	Groundlevel															
0	Clayey silt - some sand occasional gravel, hard, brown.		1	SS	100	11"										
			2	SS	100	11"										
254.0			3	SS	106	9"										
11.0	Grey		4	SS	65											
			5	SS	54	250										
			6	SS	89											
			7	SS	75	240										
			8	SS	67	6"										
228.8			9	SS	100	2"										
36.2	End of borehole.															

Elev. 256.5
Gr3%Sa16%
Si51%Cl 30%

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS & TESTING DIVISION

RECORD OF BOREHOLE NO.

2

FOUNDATION SECTION

JOB 66-F-6

LOCATION QEW & Glover Rd. (Sta. 595+33, 151' Lt. of E)ORIGINATED BY L.P.

W.P. 210-63

BORING DATE Jan. 11, 1966.COMPILED BY L.P.DATUM ContoursBOREHOLE TYPE PenndrillCHECKED BY M.D. *dk*

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT	LIQUID LIMIT — WL PLASTIC LIMIT — WP WATER CONTENT — W WATER CONTENT % 10 20 30	BULK DENSITY P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS / FOOT					
264.0	Groundlevel									
0	Clayey silt, some sand, occasional gravel, hard, brown.		1	SS	48	260				Ground waterlevel 260
			2	SS	77					
			3	SS	72/9"					
252.0	Grey		4	SS	43	250				Grl 2% Sal 3% Si 45% Cl 30%
12.0			5	SS	45					
			6	SS	48					
			7	SS	43					
			8	SS	68					
			9	SS	90					
224.0						230				
40.0	End of borehole.					220				

RECORD OF BOREHOLE NO. 3

MATERIALS & TESTING DIVISION

LOCATION GLW & Glover Rd. (Sta. 595+75, 81.5' Lt. of E)

ORIGINATED BY L.P.

BORING DATE Jan. 13, 1966.

COMPILED BY _____ L.P.

BOREHOLE TYPE Penndrill

CHECKED BY M.D. *ak*

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT	SHEAR STRENGTH P.S.F.	LIQUID LIMIT ——— WL PLASTIC LIMIT ——— WP WATER CONTENT ——— W 	BULK DENSITY P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS / FOOT						
264.0	Groundlevel										Ground waterlevel
0	Clayey silt, some sand, occasional gravel. hard. brown.		1	SS	41	260					260
			2	SS	60						
			3	SS	51						
252.0			4	SS	36						
12.0	Grey		5	SS	49	250					
			6	SS	46						
			7	SS	48	240					
			8	SS	67						
227.5			9	SS	45/6"	230					
36.5	Highly weathered shale.										
224.5											
39.5	End of borehole.										
						220					

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS & TESTING DIVISION

JOB 66-P-6

W. P. 210-63

DATUM Contours

RECORD OF BOREHOLE NO. 4

LOCATION CHEW & Glover Rd (Sta. 595+78.5, 79' Rt. of C)

BORING DATE Jan. 13, 1966

BOREHOLE TYPE Penndrill

ORIGINATED BY L.P.

COMPILED BY L.P.

CHECKED BY _____ M.D. *OK*

FOUNDATION SECTION

SOIL PROFILE			SAMPLES			DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT			LIQUID LIMIT ——— WL PLASTIC LIMIT ——— WP WATER CONTENT ——— W			BULK DENSITY P.C.F.	REMARKS	
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS / FOOT	ELEV. SCALE	SHEAR STRENGTH P.S.F.			wp ——— w ——— WL 10 ——— 20 ——— 30 WATER CONTENT %				
264.0	Groundlevel													
0	Clayey silt, some sand, occasional gravel, hard. brown.		1	SS	42	260							Ground	waterlevel 260
			2	SS	65									
			3	SS	80/9"									
252.0														
12.0	Grey.		4	SS	46	250								
			5	SS	41									
			6	SS	49									
			7	SS	40	240								
			8	SS	49									
228.9						230								
35.1	End of borehole.													Gr3%Sa22% Si47%Cl 28%
						220								

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS & TESTING DIVISION

JOB 66-F-6 (65-F-28)

LOCATION Q.E.W. Sta. 595+07, 100' Lt. Glover Rd.

ORIGINATED BY T.C.

W. P.

BORING DATE March 18, 1965.

COMPILED BY _____ T.C.

DATUM G.S.C.

BOREHOLE TYPE Penndrill

CHECKED BY _____ M.D.

SOIL PROFILE			SAMPLES			DYNAMIC PENETRATION RESISTANCE					LIQUID LIMIT _____ W _L			BULK DENSITY P.C.F.	REMARKS	
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS / FOOT	ELEV. SCALE	BLOWS / FOOT					PLASTIC LIMIT _____ W _P				
							SHEAR STRENGTH P.S.F.					WATER CONTENT _____ W				
												W _P W W _L				
												WATER CONTENT %				
												10 20 30				
265.0	Groundlevel															
0.0	(Brown)		1	SS	34	260									Gr2%Sa18%	
			2	SS	47										Si150%Cl 30%	
			3	SS	44											
253.0	(Grey)		4	SS	34	250									El. 252 ▼ WL Observed in B.H.	
12.0			5	SS	33											
			6	SS	34											
			7	SS	31	240										
		Clayey silt with sand and occasional gravel.		8	SS	41										
		Hard.		9	SS	49	230									
226.8		Refusal														
38.2	End of borehole.					220										

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS & TESTING DIVISION

RECORD OF BOREHOLE NO. 6

FOUNDATION SECTION

JOB 66-F-6

LOCATION QEW & Glover Rd (Sta. 595/78, 134' Rt. of E)

ORIGINATED BY L.P.

W.P. 210-63

BORING DATE Jan. 14, 1966

COMPILED BY L.P.

DATUM Contours

BOREHOLE TYPE Penndrill

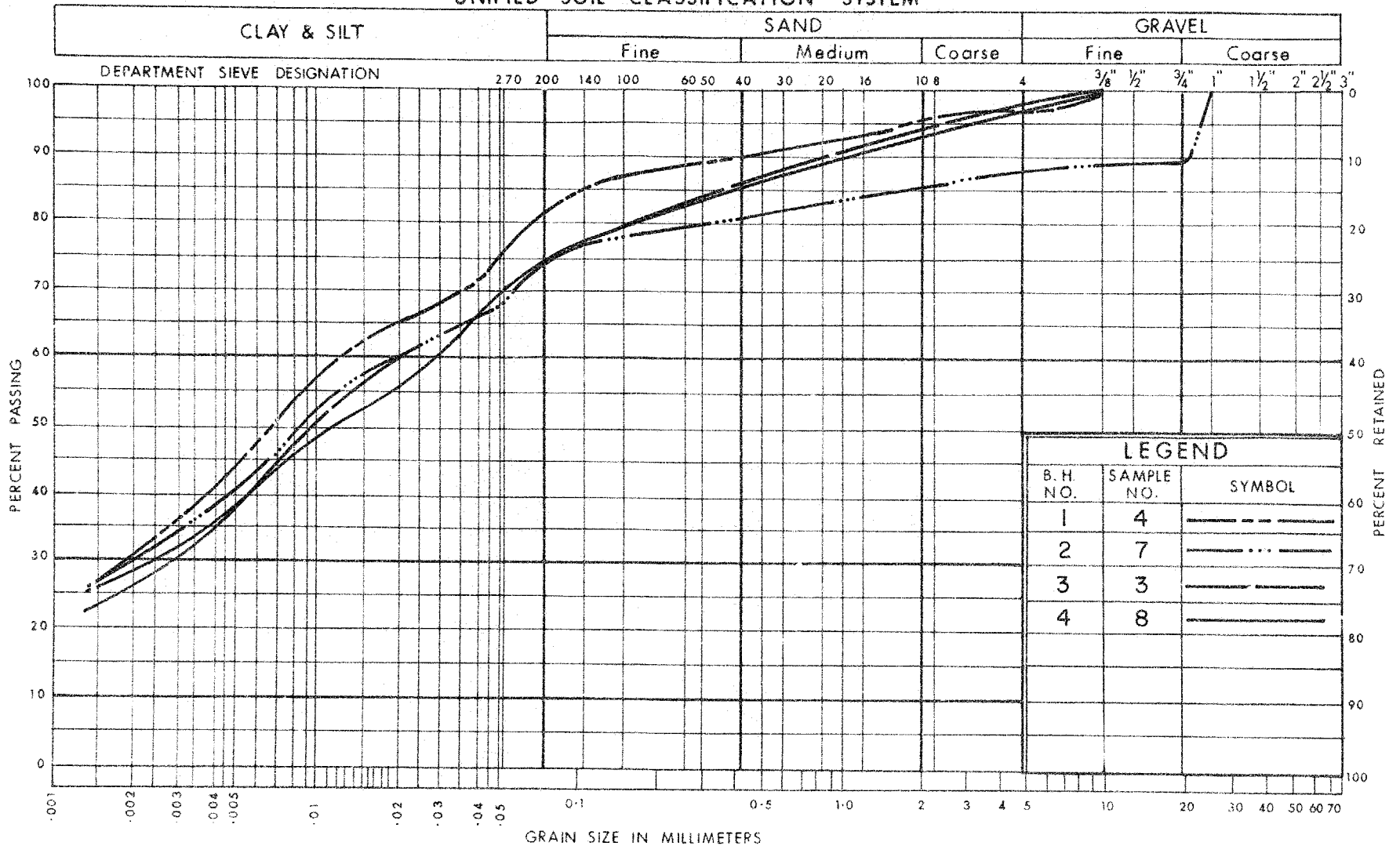
CHECKED BY M.D. *AK*

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE				LIQUID LIMIT — WL PLASTIC LIMIT — WP WATER CONTENT — W				BULK DENSITY P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS / FOOT		SHEAR STRENGTH P.S.F.				Wp — W — WL WATER CONTENT %					
264.0	Groundlevel															
0	Clayey silt, some sand, occasional gravel, hard. brown.		1	SS	42	260									Ground waterlevel 260	
			2	SS	53											
			3	SS	82											
252.5			4	SS	49	250										
11.5	Grey		5	SS	60											
247.5																
16.5	End of borehole.															
						240										
									</							

Ground waterlevel

260

UNIFIED SOIL CLASSIFICATION SYSTEM



DEPARTMENT OF HIGHWAYS
MATERIALS and
TESTING
DIVISION

GRAIN SIZE DISTRIBUTION

W.P. No. 210-63

JOB No. 66-F-6

ABBREVIATIONS USED IN THIS REPORT

PENETRATION RESISTANCE

STANDARD PENETRATION RESISTANCE 'N' - THE NUMBER OF BLOWS REQUIRED TO ADVANCE A STANDARD SPLIT SPOON SAMPLER 12 INCHES INTO THE SUBSOIL, DRIVEN BY MEANS OF A 140 POUND HAMMER FALLING FREELY A DISTANCE OF 30 INCHES.

DYNAMIC PENETRATION RESISTANCE :- THE NUMBER OF BLOWS REQUIRED TO ADVANCE A 2 INCH, 60 DEGREE CONE, FITTED TO THE END OF DRILL RODS, 12 INCHES INTO THE SUBSOIL, THE DRIVING ENERGY BEING 350 FOOT POUNDS PER BLOW.

DESCRIPTION OF SOIL

THE CONSISTENCY OF COHESIVE SOILS AND THE RELATIVE DENSITY OR DENSENESS OF COHESIONLESS SOILS ARE DESCRIBED IN THE FOLLOWING TERMS :-

<u>CONSISTENCY</u>	<u>'N' BLOWS / FT.</u>	<u>c LB. / SQ. FT.</u>	<u>DENSENESS</u>	<u>'N' BLOWS / FT.</u>
VERY SOFT	0 - 2	0 - 250	VERY LOOSE	0 - 4
SOFT	2 - 4	250 - 500	LOOSE	4 - 10
FIRM	4 - 8	500 - 1000	COMPACT	10 - 30
STIFF	8 - 15	1000 - 2000	DENSE	30 - 50
VERY STIFF	15 - 30	2000 - 4000	VERY DENSE	> 50
HARD	> 30	> 4000		

TYPE OF SAMPLE

S.S.	SPLIT SPOON	T.W.	THINWALL OPEN
W.S.	WASHED SAMPLE	T.P.	THINWALL PISTON
S.B.	SCRAPER BUCKET SAMPLE	O.S.	OESTERBERG SAMPLE
A.S.	AUGER SAMPLE	F.S.	FOIL SAMPLE
C.S.	CHUNK SAMPLE	R.C.	ROCK CORE
S.T.	SLOTTED TUBE SAMPLE		
	P.H. SAMPLE ADVANCED HYDRAULICALLY		
	P.M. SAMPLE ADVANCED MANUALLY		

SOIL TESTS

Qu	UNCONFINED COMPRESSION	L.V.	LABORATORY VANE
Q	UNDRAINED TRIAXIAL	F.V.	FIELD VANE
Qcu	CONSOLIDATED UNDRAINED TRIAXIAL	C	CONSOLIDATION
Qd	DRAINED TRIAXIAL	S	SENSITIVITY

ABBREVIATIONS USED IN THIS REPORT

SOIL PROPERTIES

γ	UNIT WEIGHT OF SOIL (SULK DENSITY)
γ_s	UNIT WEIGHT OF SOLID PARTICLES
γ_w	UNIT WEIGHT OF WATER
γ_d	UNIT DRY WEIGHT OF SOIL (DRY DENSITY)
γ'	UNIT WEIGHT OF SUBMERGED SOIL
G	SPECIFIC GRAVITY OF SOLID PARTICLES $G = \frac{\gamma_s}{\gamma_w}$
e	VOID RATIO
n	POROSITY
w	WATER CONTENT
S_r	DEGREE OF SATURATION
w_L	LIQUID LIMIT
w_p	PLASTIC LIMIT
I_p	PLASTICITY INDEX
s	SHRINKAGE LIMIT
I_L	LIQUIDITY INDEX = $\frac{w - w_p}{I_p}$
I_C	CONSISTENCY INDEX = $\frac{w_L - w}{I_p}$
e_{max}	VOID RATIO IN LOOSEST STATE
e_{min}	VOID RATIO IN DENSEST STATE
I_D	DENSITY INDEX = $\frac{e_{max} - e}{e_{max} - e_{min}}$
	RELATIVE DENSITY D_r IS ALSO USED
h	HYDRAULIC HEAD OR POTENTIAL
q	RATE OF DISCHARGE
v	VELOCITY OF FLOW
i	HYDRAULIC GRADIENT
k	COEFFICIENT OF PERMEABILITY
j	SEEPAGE FORCE PER UNIT VOLUME
m_v	COEFFICIENT OF VOLUME CHANGE = $\frac{-\Delta e}{(1+e)\Delta\sigma'}$
c_v	COEFFICIENT OF CONSOLIDATION
C_c	COMPRESSION INDEX = $\frac{\Delta e}{\Delta \log_{10} \sigma'}$
T_v	TIME FACTOR = $\frac{c_v t}{d^2}$ (d, DRAINAGE PATH)
U	DEGREE OF CONSOLIDATION
τ_f	SHEAR STRENGTH
c'	EFFECTIVE COHESION INTERCEPT
ϕ'	EFFECTIVE ANGLE OF SHEARING RESISTANCE, OR FRICTION
c_u	APPARENT COHESION
ϕ_u	APPARENT ANGLE OF SHEARING RESISTANCE, OR FRICTION
μ	COEFFICIENT OF FRICTION
S_t	SENSITIVITY

GENERAL

π	= 3.1416
e	BASE OF NATURAL LOGARITHMS 2.7183
$\log_e a$ OR $\ln a$	NATURAL LOGARITHM OF a
$\log_{10} a$ OR $\log a$	LOGARITHM OF a TO BASE 10
t	TIME
g	ACCELERATION DUE TO GRAVITY
V	VOLUME
W	WEIGHT
M	MOMENT
F	FACTOR OF SAFETY

STRESS AND STRAIN

u	PORE PRESSURE
σ	NORMAL STRESS
σ'	NORMAL EFFECTIVE STRESS ($\bar{\sigma}$ IS ALSO USED)
τ	SHEAR STRESS
ϵ	LINEAR STRAIN
γ	SHEAR STRAIN
ν	POISSON'S RATIO (μ IS ALSO USED)
E	MODULUS OF LINEAR DEFORMATION (YOUNG'S MODULUS)
G	MODULUS OF SHEAR DEFORMATION
K	MODULUS OF COMPRESSIBILITY
η	COEFFICIENT OF VISCOSITY

EARTH PRESSURE

d	DISTANCE FROM TOP OF WALL TO POINT OF APPLICATION OF PRESSURE
δ	ANGLE OF WALL FRICTION
K	DIMENSIONLESS COEFFICIENT TO BE USED WITH VARIOUS SUFFIXES IN EXPRESSIONS REFERRING TO NORMAL STRESS ON WALLS
K_o	COEFFICIENT OF EARTH PRESSURE AT REST

FOUNDATIONS

B	BREADTH OF FOUNDATION
L	LENGTH OF FOUNDATION
D	DEPTH OF FOUNDATION BENEATH GROUND
N	DIMENSIONLESS COEFFICIENT USED WITH A SUFFIX APPLYING TO SPECIFIC GRAVITY, DEPTH AND COHESION ETC. IN THE FORMULA FOR BEARING CAPACITY
k_s	MODULUS OF SUBGRADE REACTION

SLOPES

H	VERTICAL HEIGHT OF SLOPE
D	DEPTH BELOW TOE OF SLOPE TO HARD STRATUM
β	ANGLE OF SLOPE TO HORIZONTAL

MEMORANDUM

To: Mr. A. Stermac,
Principal Foundation Engineer,
Room 107, Lab. Bldg.

FROM: Bridge Division,
Downsview, Ontario.

DATE: December 1, 1965.

OUR FILE REF.

IN REPLY TO

SUBJECT: Gray's Side Road Underpass, W.P. 207-63,
Millens Road Underpass, W.P. 208-63,
Fruitland Road Underpass, W.P. 209-63,
Glover Road Underpass, W.P. 210-63,
Hwy. Q.E.W. - Dist. 4.

Attached please find a plan showing the proposed underpasses with the probable location of footings shown in red.


Would you kindly arrange foundation investigations at the above sites and provide us with the information necessary to design the structures.

All structures will carry the side-roads over the existing Q.E.W. with approximately 20' of fill on the approaches.

Your office has completed a preliminary foundation report (Q.E.W. from Stoney Creek Traffic Circle to St. Catharines) under W.J. 65-F-28.

WSM/sp

cc. A. Crowley
R. Forrest


W. S. Melinyshyn,
Regional Bridge Location Engineer.

COMPLETION DATE FEB 13 1966

Mr. H. S. Hollingsworth,
Regional Bridge Location Eng.,
Bridge Division, Admin. Bldg.

Foundations Section,
Materials & Footing Div.,
Room 107, Lab. Bldg.

June 28, 1966

W.P. 207-63,	Gray's Rd. Underpass	(W.P. 66-F-1)
W.P. 208-63,	Williams Rd. Underpass	(W.P. 66-F-7) ✓
W.P. 210-63,	Claver Rd. Underpass	(W.P. 66-F-6) ✓

We have reviewed the preliminary drawings D-5907-F1, D-5912-F1, and D-5993-F1, for the above mentioned structures and submit the following comments pertaining to abutment foundations on granular fills:

1) In our opinion, constructing the proposed proposed abutments on granular fills for the above mentioned projects, is quite satisfactory. In this case, the fill material below the tops of the footings should consist of well compacted C.B.C. class 'A' material and should extend for a horizontal distance of at least 10 ft. from the footing edges in the plane of the footing tops. This portion of the fill should be built with side slopes of 2:1. The remainder of the fill should be completed to about profile grade for a distance of about 50 ft. behind the abutments before re-excavating for the abutment footings. A design load of 2 t.s.f. may be used for the abutment foundations.

2) It is believed that the designer has taken into account the cost of C.B.C. class 'A' material for these projects at the approach fill locations. Mr. T. J. Kevich, Regional Materials Engineer, indicated to us that the estimated cost of the material will be in the order of \$2.50/ton.

3) In order to reduce the differential settlements between the piers and abutments, consideration should be given to constructing the fills for as long a period as possible, in advance of the bridge construction. This Section would like to install settlement plates at all of the above sites prior to the commencement of approach fill operations.

ED/MLP

cc: Foundations Office
Gen. Files

H. Dorcas,
SENIOR FOUNDATION ENG.
For:
A. G. Stewman,
PRINCIPAL FOUNDATION ENG.

MEMORANDUM

Mr. A. G. Stermac,
Principal Foundation Engineer,
Room 107,
Lab. Building.

FROM: Bridge Division,
Downsview, Ontario

DATE: June 21, 1966

OUR FILE REF.

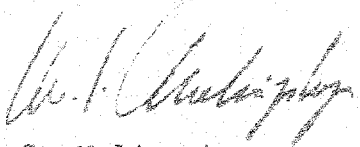
IN REPLY TO:

SUBJECT:

W.P. 207-63, Site 36-203
Gray's Road Underpass
W.P. 208-63, Site 36-204
Millens Road Underpass
W.P. 210-63, Site 36-206
Glover Road Underpass
Q.E.W. District 4

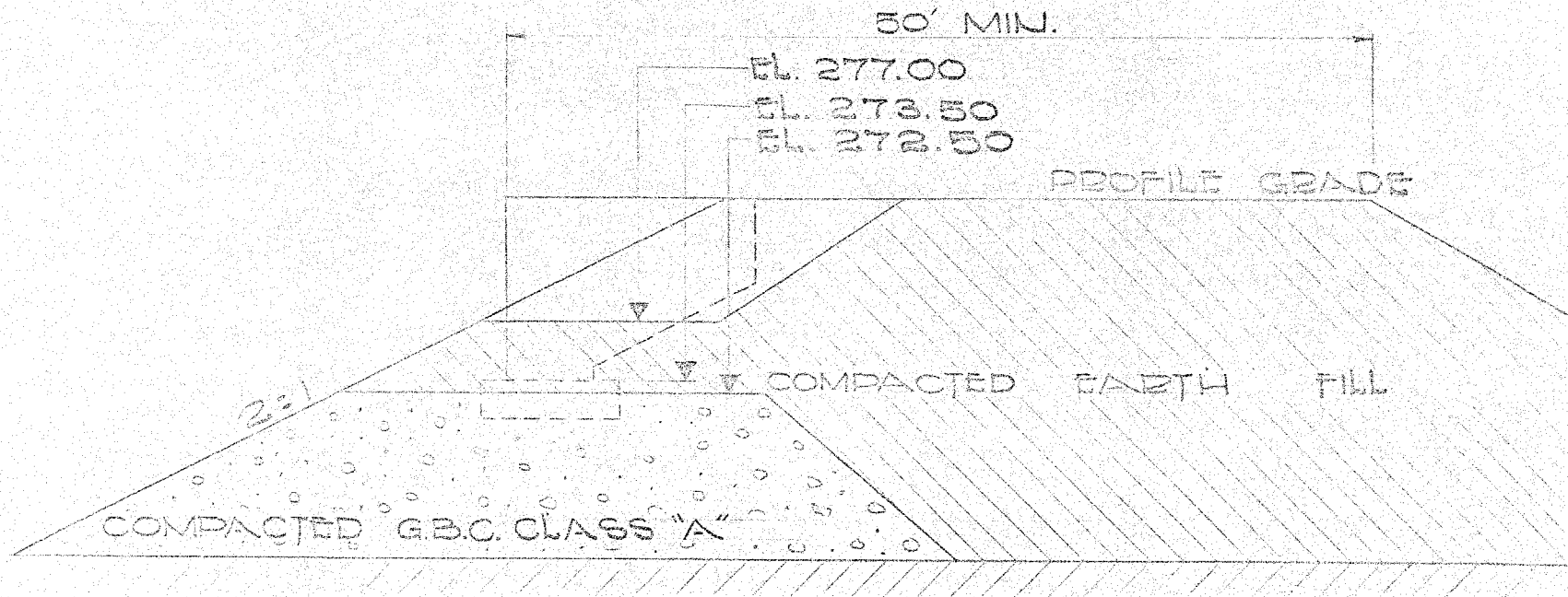
Herewith is one print each of our preliminary drawings
D-5907-P1, D-5912-P1 and D-5903-P1 for the above structures.
Please note that it is proposed to construct the abutments
on spread footings on granular fill. Is this satisfactory
to your department?

JFW/pr
Encl.


W. S. Melinyshyn,
Regional Bridge Location Engineer

The following is the suggested treatment for the approach fills at the abutment location. Mr D McCune prepared the sketch as per the recommendations of M. Devata.

M. Devata
Jan 7th 1967



COMPACTED EARTH FILL AND
COMPACTED G.B.C. CLASS "A"
TO BE PLACED AT SAME TIME

66-F-6
GLOVED ROAD U'PASS
SUGGESTED APPROACH
FILL TREATMENT, Dist #4, S.E.W.

MEMORANDUM

To: Mr. A. Stermac,
Principal Foundation Engineer,
Room 107, Lab. Bldg.

From: Bridge Division,
Downsview, Ontario.

Date: December 1, 1965.

Our File Ref.

In Reply To

SUBJECT: Gray's Side Road Underpass, W.P. 207-63,
Millens Road Underpass, W.P. 208-63,
Fruitland Road Underpass, W.P. 209-63,
Glover Road Underpass, W.P. 210-63,
Hwy. Q.E.W. - Dist. 4.

66-F-6

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WSM/sp

J. S. Melnyshyn
W. S. Melnyshyn,

Regional Bridge Location Engineer.

cc. A. Crowley
R. Forrest

COMPLETION DATE FEB 23 1966

66-F-6

W.P. # 210-63

Q.E.W. &

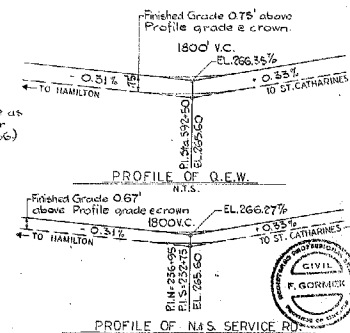
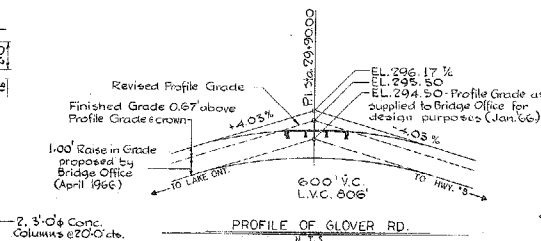
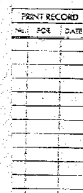
GLOVER RD.

TO CONDITION OF ORIGINAL DOCUMENTS



1. Detour Glover Road.
2. Construct both Service Roads in vicinity of the Bridge.
3. Shift Traffic to the North Service Road & existing Westbound Q.E.W. Lane. Construct south half of Bridge.
4. Shift Traffic to South Service Road & existing Eastbound Q.E.W. Lane & complete the North half of Bridge.

Approach Fills to be constructed 6 Month before Bridge construction.



B.M. EL. 265.09
Geodetic Datum - N. & W. in S. root clamp of
1.5 ft. Elm 68 ft. Rt. Sta. 591+56.00 (Q.E.W.)

[illegible]

GLOVER ROAD UNDERPASS

KING'S HIGHWAY No. Q.E.W. DIST. No. 4
CO. WENTWORTH
TWP. SALT FLEET LOT 10 & 11 CON. 1 & B.F. CON.

PRELIMINARY

APPROVED		107 No.	36-206	W.P. No.	210-63
BRIDGE ENGINEER		CONTRACT			
DESIGN	FIG.	CHECK			
DRAWING	T.B.	LOADING	H20-55	DRAWING	D-5903-P1
DATE	10-16-66				