

G.I.-30 SEPT. 1976

GEOCRES No. 31E - 143DIST. 52 REGION W.P. No. GWP: 217-89-00(D)CONT. No. W. O. No. STR. SITE No. HWY. No. 69LOCATION Southwest Service Rd. Swamp
CrossingNo of PAGES - =====OVERSIZE DRAWINGS TO BE INCLUDED WITH THIS REPORT. REMARKS:

**GEOTECHNICAL FOUNDATION REPORT
EMBANKMENT SECTION OVER SWAMP AREA
SOUTHWEST SERVICE ROAD
STATIONS 9+400 TO 9+650
W.P. 217-89-00
DISTRICT 52, HUNTSVILLE, ONTARIO**

PREPARED FOR:

R.V. ANDERSON ASSOCIATES LIMITED

TROW CONSULTING ENGINEERS LTD.

**Brampton, Calgary, Cambridge, Hamilton, Iqaluit, Kingston, London,
Markham, Montreal, North Bay, Orillia, Ottawa, Sudbury, Thunder Bay, Winnipeg**

**Project: SO7404G/C
Date: October 27, 1996**

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M E M O R A N D U M #1

SO7404G/C

TO: T.H. McColm, P.Eng.
Project Manager
R.V. Anderson

DATE: October 27, 1998

FROM: I.W. Gore, P.Eng.
Principal Geotechnical Engineer
Trow Consulting Engineers Ltd.

SUBJECT: Geotechnical Foundation Report
Embankment Section over Swamp Area
Southwest Service Road
Stations 9+400 to 9+650
W.P. 217-89-00
District 52, Huntsville, Ontario

This memorandum addresses the geotechnical foundation report for the design and construction of the embankment section over a swamp area between approximately station 9+400 to 9+650, along the proposed Southwest Service Road. This service road will be constructed as part of W.P. 217-89-00, four lane expansion of Hwy. 69 from the Musquash River to Tower Road.

1.0 INTRODUCTION

Along the proposed Southwest Service Road, an embankment section is required to fill two "swamp" areas between approximate stations 9+400 to 9+650. The first swamp area is between approximate stations 9+400 to 9+525 and the second swamp area is between approximate stations 9+575 to stations 9+650. Shallow bedrock is evident south of the first swamp, i.e. south of station 9+400 and north of the second swamp, i.e. north of station 9+650. Between the two swamps, i.e. between station 9+525 and 9+575, on the higher ground, shallow bedrock again exists, along the proposed centre line alignment.

The existing ground in the south swamp (~ Elevation 197.5 m), is flat and poorly drained with a small drainage creek running along the south side (~ station 9+445). The second swamp area to the north is not as extensive with a higher ground level at ~ Elevation 200.0 m and surficial "swampy" type vegetation.

The proposed road grade over the south swamp section is at Elevation 205.0 m, rising northerly to Elevation 208.0 m. As such, about 9.5 m of embankment fill (maximum) will be required. In the second swamp, at the northend, the proposed grade rises northerly from Elevation 209.0 m to Elevation 210.0 m, requiring a maximum fill embankment height of 9 m.

2.0 FIELD WORK

The field work comprised two sampled boreholes and two auger probes, with accompanying dynamic cone penetration tests, all extended to bedrock. The drilling was completed using a track mounted soils drill, equipped with hollow stem flight augers, on July 6, 1998.

The locations of the boreholes, probes and dynamic cone penetration tests are noted on the enclosed logs and the attached site plan, Dwg. 1. Details of the soil strata encountered in the boreholes and interpreted in the adjacent probes and dynamic cones, are also included on the logs. Further information on soil descriptions are contained on Dwgs. 2A and 2B.

3.0 SUBSURFACE CONDITIONS

3.1 South Swamp (~ Stations 9+400 to 9+525)

Based on the borehole data, it is apparent that the overburden soils, between the outcropping bedrock, consists of an approximately 3 m thick deposit of soft silty clay, beneath a veneer of peat and sandy silt. Underlying the clay, deposits of loose to compact silts and sand were encountered. From the bedrock outcrops at the north and south ends, the rock surface drops off to a depth of 12 m or so, in the centre of this swamp section.

3.2 North Swamp (~ Stations 9+575 to 9+650)

In the second (northerly) swamp, the subsoil conditions are different. Between bedrock outcroppings at the north and south ends, the subsoil, beneath a thin 1 m thick zone of peat and soft clay, consists of loose to compact sand, changing to compact to dense glacial till. Assumed bedrock, in the centre of the gulley was established at a depth of approximately 7.5 m below grade.

3.3 Subsoil Details

A summary of the various subsoils encountered along the site is provided below. A typical interpreted soil stratigraphy is included on Dwg. 1.

- Organics

A surficial layer of organics was encountered within all boreholes. The depth of organics, which comprise mostly peat, was measured to be in the order of 300 mm to 1000 mm thick.

- Sandy Silt/Silty Sand

Within the south gulley, an underlying deposit of compact, sandy silt was encountered beneath the organics, extending to a depth of approximately 3 m below grade (~El. 195 m). Similarly the loose/compact silty sand deposit was proved to extend to a depth of approximately 3.3 m (~El. 196.6 m) in the borehole advanced within the northerly gulley.

- Silty Clay

A deposit of silty clay was intercepted at all three test locations within the south swamp area. The thickness of the clay is about 2 m thick towards the edge of the swamp, increasing to 3 m thick beneath the deepest overburden area, in the centre section. The clay appears to extend to a maximum depth of approximately 5 m below grade, i.e. down to ~El. 192.6 m.

In the northerly gulley, a very thin, soft clay deposit (contaminated with organics, was proved to a depth of 1 m below grade).

The undrained shear strength of the clay deposit is in the order of 20 kPa to 25 kPa with a moisture content of 42% to 57%. Atterberg limits confirm a plastic limit of about 20% with a corresponding liquid limit of 50%. Based on a careful examination of the recovered samples, as well as laboratory testing, the clay is similar to the clay soil established in the boreholes advanced beneath the adjacent NBL and SBL lanes of Highway 69, north of the Musquash River (previous Trow reports SO7404G/BX, dated April 15/98 and BRGE0011546C, dated August 12/98). In these previous reports detailed laboratory testing was completed on the clay and these parameters have been used to assist in the analysis in this embankment study.

- Sand/Sand & Gravel

A basal deposit of generally compact sand and/or sand and gravel was encountered beneath the clay in all boreholes. This deposit is thickest in the central sections of the swamps, extending to depths of 12 m, approximate elevation 185 m (south swamp) to 7.6 m, approximate elevation 192.3 m (north swamp).

- Bedrock

As noted previously, shallow bedrock exists on both sides of each gulley/swamp section, as well as between the two swamp sections, i.e. approximately station 9+525 to 9+575. Probable bedrock was encountered beneath the middle of each swamp/gulley at depths of 12 m, approximate elevation 185 m (south swamp) and 7.6 m, approximate elevation 192.3 m (north swamp).

4.0 GROUNDWATER

Groundwater was encountered within 1 m of existing grade within the two swampy sections and the areas are poorly drained and likely, in the spring and other wet periods of the year, the ground will be inundated with ponding water.

5.0 RECOMMENDATIONS

5.1 Stability and Settlement

5.1.1 South Swamp Section (~ Stations 9+425 to 9+575)

The suitability of the proposed 9 m high rock fill embankment in this section will be limited by the parameters of a soft compressible clay zone, which is present between the shallow rock. The average undrained shear strength of the clay is 22.5 kPa and as such, instability and failure of any rock fill embankment could occur, with fill heights exceeding about 5.5 m.

In order to construct embankments to the design height of 9 m, it will be necessary to incorporate large, stabilizing rock fill berms, typically at half height, extending for a width in the order of 15 m. Consolidation of the embankment fill should also be considered. Based on all the detailed analyses completed previously for the proposed SBL and NBL alignment of Highway 69, the clay deposit is compressible. As such, it is estimated that the consolidation settlement of the underlying clay deposit will be in the order of 200 mm in the centre of the swamp section (~ Stations 9+475) gradually reducing to zero at each end, where bedrock is shallow and the clay is absent. It is estimated that 50% of this settlement will occur in the first year after full height has been attained, with the remaining settlement occurring at a reduced rate over the next 2.5 years.

In consideration of the potential instability problems and the estimated settlement, it will probably be more practical to subexcavate and remove the problem clay deposit, i.e. down to the underlying non cohesive, granular silts and sands. This will require subexcavations to a depth of about 5 m in the central section of the swamp, i.e. down to approximate Elevation 192.5 m (between ~ station 9+430 to 9+500) and slightly less, down to 3 m depth at each end, towards the shallow bedrock. The rock fill embankment may then be placed directly over the silt and sand deposits without risk of instability. Furthermore, consolidation settlement will be eliminated since the clay has been removed and hence, any settlement of the underlying granular subsoils will tend to be elastic and take place during construction.

5.1.2 North Swamp Section (~ Stations 9+575 to 9+650)

Since any significant clay deposits are absent beneath this section of the swamp, design of the proposed 9 m high rock fill embankment will be more straightforward. It is recommended that the upper organics and soft organic contaminated clay be subexcavated down to the underlying non cohesive, granular silty sand, i.e. subexcavate to approximately 1 m depth, down to approximate elevation 199 m and place the rock fill directly on the exposed silty sand.

As such, no instability problems are expected and any settlement of the subsoil should be minimal and should take place during construction.

5.1.3 Embankment Design

Since the proposed rock fill embankments are 9 m high, it is recommended that they be constructed with a side slope of 1.25H:1V and a 2 m wide "bench" incorporated at mid height.

Settlement of the 9 m high rock fill embankment should be expected over the first 2 to 3 years after construction. It is likely that this settlement could be in the order of 1% to 2% of the height, i.e. 150 mm to 300 mm beneath the south swamp embankment (total rock fill of approximately 14 m after subexcavation of the clay) and 100 mm to 200 mm beneath the north swamp embankment (total rock fill of approximately 10 m after subexcavation of the upper 1 m of organics and clay).

To accommodate future grade raises and pavement over clays and to compensate for this anticipated rockfill settlement, possible consolidation of the underlying materials, the rockfill embankment should be constructed 1 m wider than the required design cross section on each side, to the bottom of the subgrade level.

5.2 Construction Considerations

It is expected that temporary excavations for the upper peat and underlying clay (~ 5 m beneath the south swamp and ~ 1 m beneath the north swamp) will be temporarily stable

at slopes of 1.5H:1V. Subexcavations and backfilling with rock fill should be carried out concurrently and under water, if necessary.

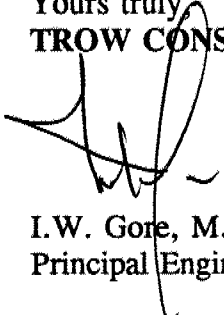
5.3 Raising the Grade

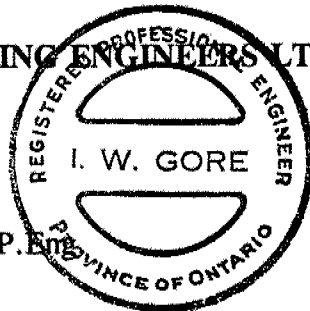
Rock fill placed below the groundwater within the embankment excavation, may be end dumped. However, once the rock fill is 0.3 m above any standing water in the excavation, placement and compaction of the fill should be completed according to OPSS standards and MTO practices.


5.4 Miscellaneous

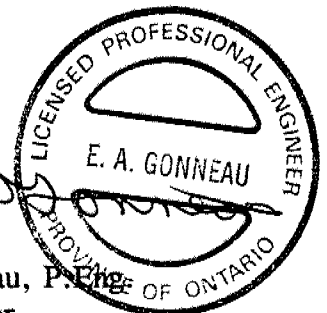
The field investigation was supervised by Mr. E.A. Gonneau, P.Eng., Project Engineer. The memorandum report was written by Mr. I.W. Gore, P.Eng., Principal Geotechnical Engineer, and reviewed by Mr. E.A. Gonneau and S.E. Gonsalves, P.Eng.

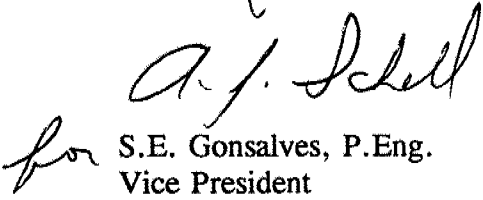
Yours truly
TROW CONSULTING ENGINEERS LTD.


I.W. Gore, M.Sc., P.Eng.
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IWG:lstp.43

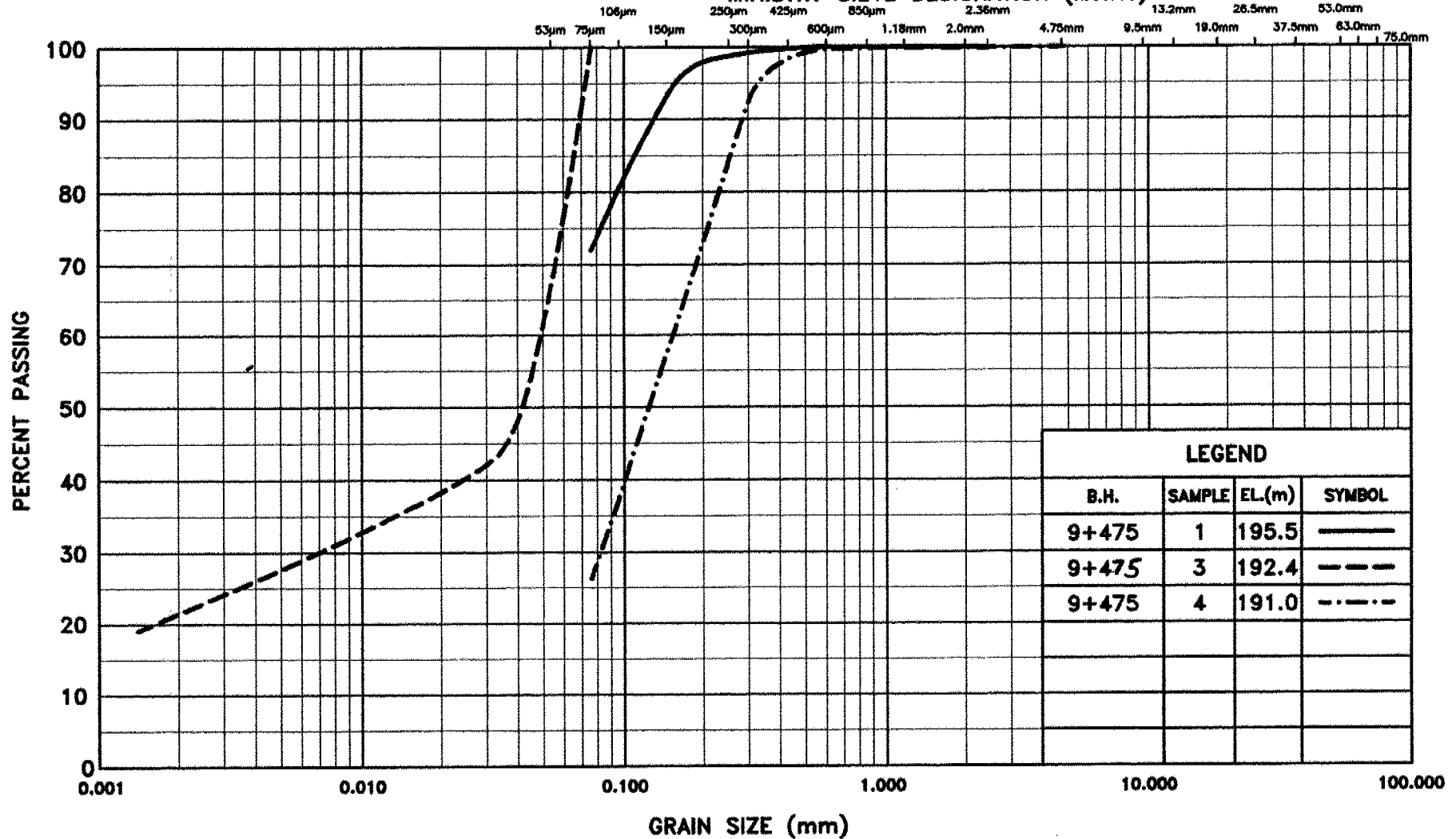
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R.V. Anderson (2 copies)
Trow Brampton (1 copy)

UNIFIED SOIL CLASSIFICATION

CLAY AND SILT	SAND			GRAVEL	
	FINE	MEDIUM	COARSE	FINE	COARSE

MINISTRY SIEVE DESIGNATION (Metric)



Ministry of
Transportation

METRIC

GRAIN SIZE DISTRIBUTION

9+475, SS-1
9+475, TW-3
9+475, SS-4

SANDY SILT
SILT with CLAY
SAND with SILT

FIGURE 1

W.P 217-89-00

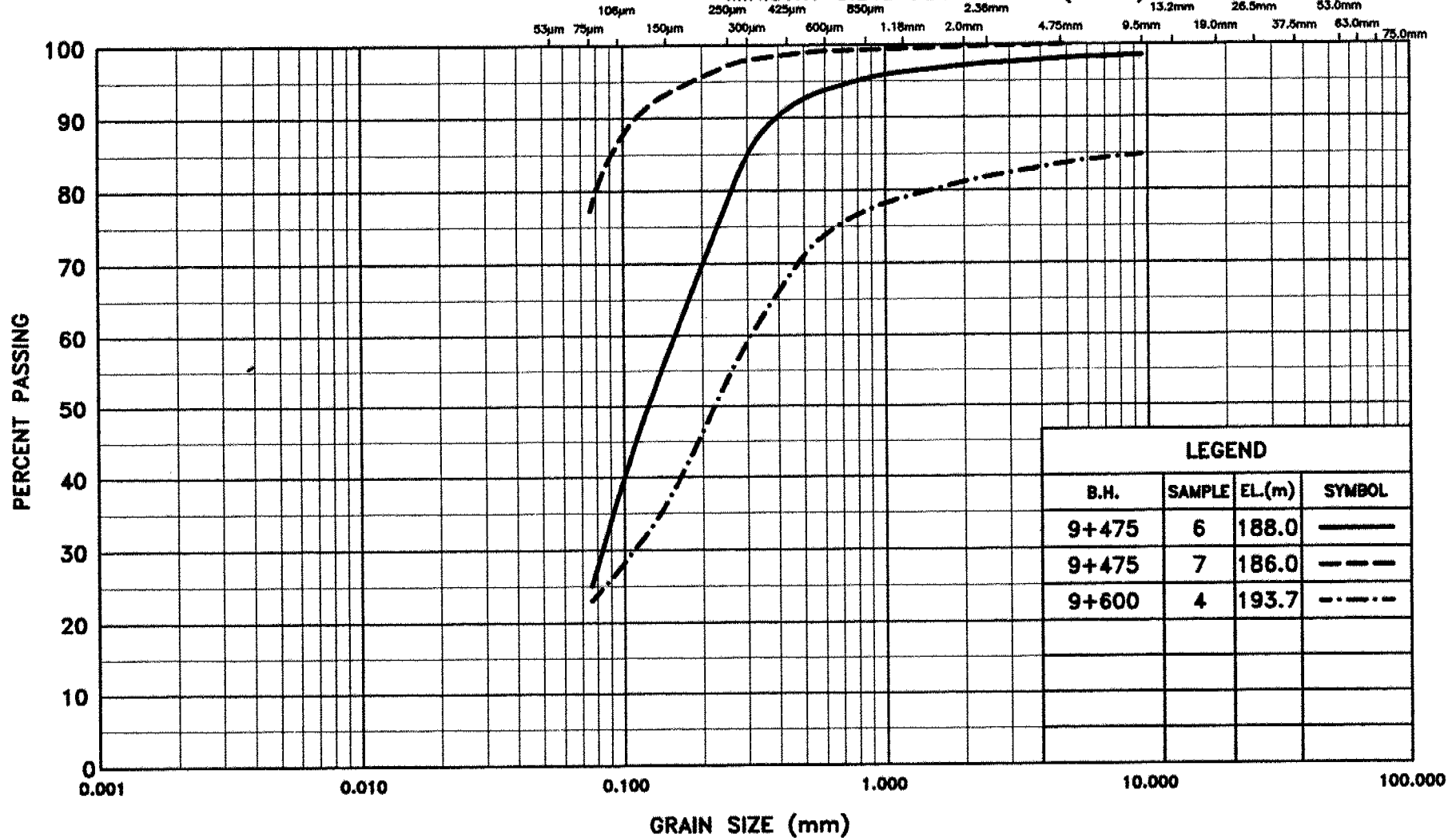


PROJ. No. S07404G/C

UNIFIED SOIL CLASSIFICATION

CLAY AND SILT	SAND			GRAVEL	
	FINE	MEDIUM	COARSE	FINE	COARSE

MINISTRY SIEVE DESIGNATION (Metric)



Ministry of
Transportation

METRIC

GRAIN SIZE DISTRIBUTION

9+475, SS-6 SAND with SILT
 9+475, SS-7 SANDY SILT
 9+600, SS-2 SANDY SILT TILL

FIGURE 2

W.P 217-89-00



PROJ. No. S07404G/C

NOTES ON SAMPLE DESCRIPTIONS

1. All descriptions included in this report follow the I.S.S.M.F.E. as suggested in the Canadian Foundation Manual. The laboratory grain-size analysis also follows this classification system. Others may designate the unified classification system as their source; a comparison of the two is shown for your information. Please note that, with the exception of those samples where the grain-size analysis has been carried out, all samples are classified visually and the accuracy of visual examination is not sufficient to differentiate between the classification systems or exact grain sizing.

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UNIFIED SOIL CLASSIFICATION	Fines (silt or clay)				Sand			Gravel		Cobbles																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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2. **FILL:** Where fill is designated on the borehole log, it is defined as indicated by the sample recovered during the boring process. The reader is cautioned that fills are heterogeneous in nature and variable in density or degree of compaction. The borehole description may therefore not be applicable as a general description of the site fill material. All fills should be expected to contain obstructions such as large concrete pieces of subsurface basements, floors, tanks, etc.; none of these may have been encountered in the borehole. Since boreholes cannot accurately define the contents of fill, test pits are recommended to provide supplementary information. Despite the use of test pits, the heterogeneous nature of fill will leave some ambiguity as to the exact and correct composition of the fill. Most fills contain pockets, seams, or layers of organically contaminated soil. This organic material can result in the generation of methane gas and/or significant on-going and future settlements. Some fill material may be contaminated by toxic waste that renders it unacceptable for deposition in any but designated land fill sites. Unless specifically stated, the fill on this site has not been tested for contaminants that may be considered hazardous. This testing and a potential hazard study can be carried out if you so request. In most residential/commercial areas undergoing reconstruction, buried oil tanks are common but are not detectable using conventional geotechnical procedures.
3. **TILL:** The term till on the borehole logs indicate that the material originates from a geological process associated with glaciation. As a result of this geological process, the till must be considered heterogeneous in composition and, as such, may contain pockets and/or seams of material such as sand, gravel silt or clay. As till often contains cobbles (60 to 200 mm) or boulders (over 200 mm), contractors may encounter them during excavation, even if they are not indicated by the borings. It should be appreciated that normal sampling equipment cannot differentiate the size, or type of any obstruction. Because of the horizontal and vertical variability of till, the sample description may be applicable to a very limited areas; caution is therefore essential when dealing with sensitive excavations or dewatering programs in till material.

NOTES ON SAMPLE DESCRIPTIONS (Cont'd)



Project No: S07404G/C

Drawing No:2B

4. The following table gives a description of the soil based on particle sizes. With the exception of those samples where grain-size analyses have been performed, all samples are classified visually. The accuracy of visual examination is not sufficient to differentiate between this classification system or exact grain size.

Soil Classification		Terminology	Proportion
Clay	< 0.002 mm	"trace" (eg. trace sand)	1% - 10%
Silt	0.002 to 0.06 mm	"some" (eg. some sand)	10% - 20%
Sand	0.06 to 2 mm	adjective (eg. sandy)	20% - 35%
Gravel	2 to 60 mm	and (eg. and sand)	> 35%
Cobbles	60 to 200 mm	noun (eg. boulders)	> 35% and
Boulders	> 200 mm		main fraction

Classification system as suggested in the Canadian Foundation Engineering Manual, 3rd Edition, unless otherwise noted.

The compactness of cohesionless soils and the consistency of cohesive soils are defined by the following:

Cohesionless Soil		Cohesive Soil	
Compactness	Standard Penetration Resistance "N" Blows/0.3 m	Consistency	Undrained Shear Strength (kPa)
Very Loose	0 to 4	Very Soft	< 12
Loose	4 to 10	Soft	12 - 25
Compact	10 to 30	Firm	25 - 50
Dense	30 to 50	Stiff	50 - 100
Very Dense	Over 50	Very Stiff	100 - 200
		Hard	> 200

5. Rock Coring

Where rock drilling was carried out, the term RQD (Rock Quality Designation) is used. The RQD is an indirect measure of the number of fractures and soundness of the rock mass. It is obtained from the rock cores by summing the length of core recovered, counting only those pieces of sound core that are 100 mm or more in length. The RQD value is expressed as a percentage and is the ratio of the summed core lengths to the total length of core run. The classification based on the RQD value is given below.

RQD Classification	RQD
Very poor quality	< 25
Poor quality	25 - 50
Fair quality	50 - 75
Good quality	75 - 90
Excellent quality	90 - 100

$$\text{Recovery Designation \% Recovery} = \frac{\text{Length of Core Per Run}}{\text{Total Length of Run}} \times 100$$

RECORD OF BOREHOLE 9 + 425 1 OF 1

METRIC

W.P. 217-89-00 LOCATION Station 9+425, on centreline of Southwest Service Road ORIGINATED BY I.D.
 DIST 52 HWY 69 BOREHOLE TYPE Standard auger / Dynamic cone COMPILED BY M.D.
 DATUM Geodetic DATE July 6, 1998 CHECKED BY I.G.

SOIL PROFILE			SAMPLES		GROUND WATER CONDITIONS	ELEVATION SCALE (metres)	SPT TEST (N-Value)				PLASTIC LIMIT	NATURAL MOISTURE CONTENT	LIQUID LIMIT	UNIT WEIGHT	REMARKS & GRAIN SIZE DISTRIBUTION
ELEV. DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE			CONE PENETRATION TEST								
						20	40	60	80						
197.40	GROUND SURFACE														
197.00	Probable PEAT														
197.00															
195.27	Probable SILTY CLAY														
195.27															
194.50	Probable SAND														
194.50															
2.90	END OF AUGER PROBE & CONE TEST DUE TO REFUSAL TO AUGER & DYNAMIC CONE ON BEDROCK OR BOULDER														
<p>Note:</p> <p>1) This cone test & auger probe forms part of the Highway 69, Southwest Service Road Embankment Foundation Investigation.</p> <p>2) Auger probe drilled at U.T.M. coordinates 4 987 338.7 N, 283 005.9 E.</p> <p>3) Auger probe drilled ~0.3 m north of cone test 9+425.</p>															



RECORD OF BOREHOLE 9 + 475 1 OF 1

METRIC

W.P. 217-89-00

LOCATION Station 9+475, on centreline of Southwest Service Road

ORIGINATED BY I.D.

DIST 52 HWY 69

BOREHOLE TYPE Standard auger / CME-55

COMPILED BY M.D.

DATUM Geodetic

DATE July 6, 1998

CHECKED BY I.G.

SOIL PROFILE			SAMPLES		GROUND WATER CONDITIONS	ELEVATION SCALE (metres)	SPT TEST (N-Value) CONE PENETRATION TEST				PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT			UNIT WEIGHT kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION		
ELEV. DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE			20	40	60	80	wp	w	wl		GR	SA	(SI & CL)
197.40	GROUND SURFACE																
0.00	PEAT (very soft)																
196.89																	
0.51	SANDY SILT, brown-grey. (compact)																
195.30			1	SS	10										0%	28%	72%
2.10	SILTY CLAY, with bands of wet SILT, grey-brown. (soft)																
192.60			2	SS	0												
4.80																	
192.60	SILT, occasional thin CLAY seams, grey, wet. (loose)		3	TW										16.50	0%	0%	100%
4.80																	
191.30	SAND, with SILT layers, grey-brown, wet. (loose to compact)		4	SS	7										0%	74%	26%
6.10																	
187.65			5	SS	5												
5.75	SANDY SILT, occasional gravel sizes, grey, wet. (dense)																
187.65			6	SS	22										2%	73%	25%
5.75																	
185.27			7	SS	61										0%	23%	77%
12.13	END OF BOREHOLE DUE TO REFUSAL TO AUGER ON BEDROCK OR BOULDER																
12.13	Note: 1) This borehole forms part of the Highway 69, Southwest Service Road Embankment Foundation Investigation. 2) Borehole drilled at U.T.M. coordinates 4 987 379.4 N, 283 035.0 E. 3) Water level was at surface & hole was open to ~6.6 m depth on																



RECORD OF BOREHOLE 9 + 497 1 OF 1

METRIC

W.P. 217-89-00 LOCATION Station 9 + 497, on centreline of Southwest Service Road ORIGINATED BY I.D.
 DIST 52 HWY 69 BOREHOLE TYPE Standard auger / Dynamic cone COMPILED BY M.D.
 DATUM Geodetic DATE July 6, 1998 CHECKED BY I.G.

SOIL PROFILE			SAMPLES		GROUND WATER CONDITIONS	ELEVATION SCALE (metres)	SPT TEST (N-Value)		CONE PENETRATION TEST		PLASTIC LIMIT	NATURAL MOISTURE CONTENT	LIQUID LIMIT	UNIT WEIGHT	REMARKS & GRAIN SIZE DISTRIBUTION
ELEV. DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE			BLOWS/0.3m	20	40	60					
197.60 0.00	GROUND SURFACE														
196.60 1.00	Probable PEAT														
194.56 3.04	Probable SANDY SILT														
192.42 5.18	Probable CLAY with SILT														
190.89 6.71	Probable SAND & GRAVEL														
190.89 7.01	END OF AUGER PROBE DUE TO REFUSAL TO AUGER ON BEDROCK OR BOULDER END OF CONE TEST														

Notes:
 1) This cone test & auger probe forms part of the Highway 69, Southwest Service Road Embankment Foundation Investigation.
 2) Auger probe drilled at U.T.M. coordinates 4 987 489.7 N, 283 091.7 E.
 3) Auger probe drilled ~0.6 m north of cone test 9 + 497.
 4) Water level was at ~0.3 m & probe hole was open to ~2.6 m depth on completion.



RECORD OF BOREHOLE 9 + 600 1 OF 1

METRIC

W.P. 217-89-00 LOCATION Station 9+600, on centreline of Southwest Service Road ORIGINATED BY I.D.
 DIST 52 HWY 69 BOREHOLE TYPE Standard auger / CME-55 COMPILED BY M.D.
 DATUM Geodetic DATE July 6, 1998 CHECKED BY I.G.

SOIL PROFILE		SAMPLES		GROUND WATER CONDITIONS	ELEVATION SCALE (metres)	SPT TEST (N-Value) CONE PENETRATION TEST		PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT		UNIT WEIGHT kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION	
ELEV. DEPTH	DESCRIPTION	STRATA PLOT	NUMBER			TYPE	BLOWS/0.3m	20	40			60
199.90	GROUND SURFACE											
199.90 0.30	PEAT (very soft)											
198.90 1.00	SILTY CLAY, with SILT content, brown grey, wet. (loose to compact)											
	SILTY SAND, with SILT content, grey, wet. (loose to compact)		1	SS	9							
196.60 3.30	SAND & GRAVEL TILL, some cobbles, grey brown, wet. (compact to dense)		2	SS	27							
			3	SS	34							
			4	SS	60							
192.31 7.59	END OF BOREHOLE DUE TO REFUSAL TO AUGER ON BEDROCK OR BOULDER											
<p>Note:</p> <p>1) This borehole forms part of the Highway 69, Southwest Service Road Embankment Foundation Investigation.</p> <p>2) Borehole drilled at U.T.M. coordinates 4 987 489.7 N, 283 091.7 E.</p> <p>3) Water level was at ~0.6 m & hole was open to ~5.4 m depth on completion.</p>												



OVERSIZE DRAWING(S)

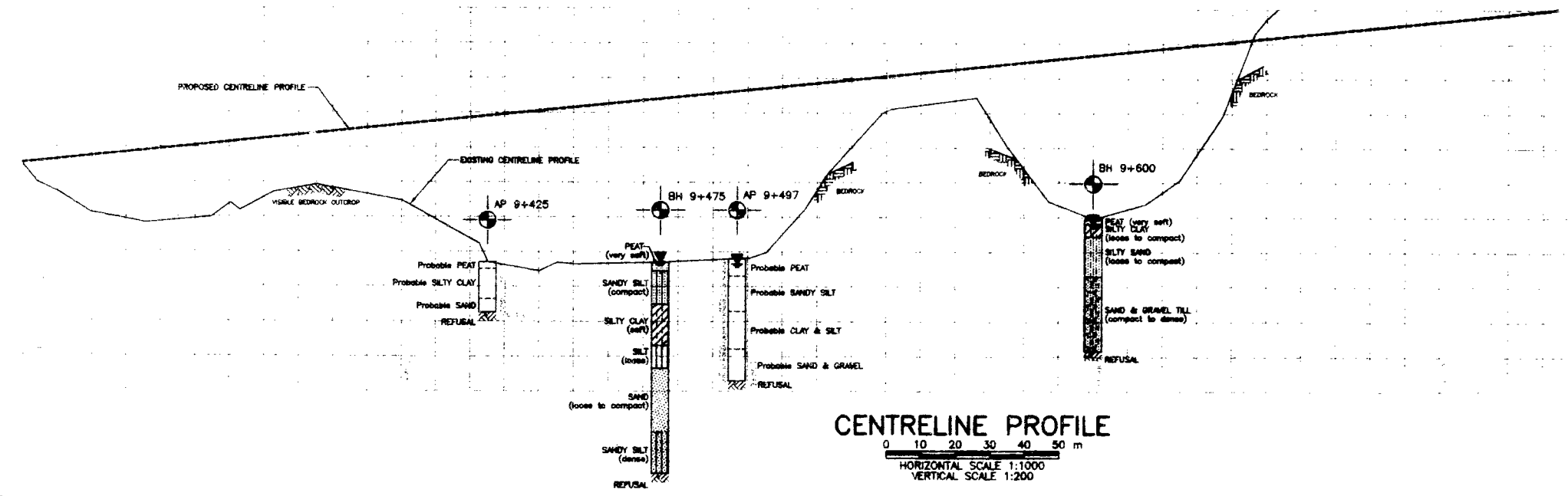
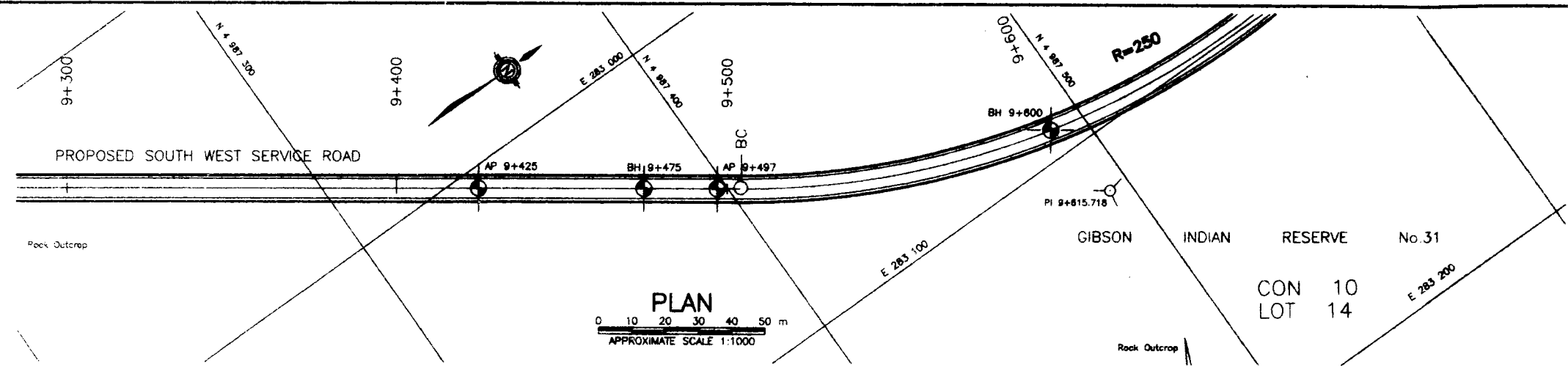


PLATE No.
 DRAWING No.
 CONT No
 WP No

217-89-00

SHEET

METRIC
 DIMENSIONS ARE IN METRES
 AND/OR MILLIMETRES
 UNLESS OTHERWISE SHOWN

TROW CONSULTING ENGINEERS LTD. SUDBURY, ONTARIO PROJ. No. S074046C DWG. No. 1		
MINISTRY OF TRANSPORTATION ENGINEERING OFFICE SURVEYS AND PLANS SECTION		
SITE PLAN & CENTRELINE PROFILE		
SOUTHWEST SERVICE ROAD		
GEOC. TYP. OF GIBSON LOT 14		OUT OF PARRY SOUND COR. 18
SCALE AS SHOWN	DISTRICT HARTWELL	REGION HURON
SURVEY DATE		PLAN DATE SEP/88
SITE		PLAN