

**FOUNDATION INVESTIGATION REPORT
HIGHWAY 427 WIDENING
FROM FASKEN DRIVE TO STEELES AVENUE
HIGH MAST LIGHTING POLES
OVERHEAD SIGN SUPPORTS
TORONTO, ONTARIO
G.W.P. 202-95-00**

Geocres Number: 30M12-291

Report to

SNC-Lavalin

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OHS\199270_HML and OHS FIR_Final.doc

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1 INTRODUCTION

This report presents the factual findings obtained from previous and current foundation investigations conducted for the Ministry of Transportation Ontario (MTO) for the design of High Mast Lighting (HML) poles and bridge structures on Highway 427 from Fasken Drive to Steeles Avenue in Toronto, Ontario. This information has been used to develop foundation recommendations for HML poles and Overhead Sign (OHS) supports for the proposed inside widening of Highway 427.

Thurber carried out this study as a sub-consultant to SNC-Lavalin under the Ministry of Transportation Ontario (MTO) Agreement Number 2004-E-0071.

During the preparation of this report, reference has been made to the subsurface conditions and foundation recommendations from the 1995 report below, which is included in this document as Appendix A:

- MTO report titled “Foundation Investigation Report for High Mast Lighting, Hwy. 427 from Campus Rd/Fasken Dr. To Steeles Ave., W.P. 615-89-00, Hwy. 427, District 6, Toronto, GEOCRE 30M12-224, Jan. 25, 1995.

Reference has also been made to the subsurface conditions from several other reports; a list of referenced reports is included in Appendix B with the borehole logs.

2 PROJECT AND SITE DESCRIPTION

The inside widening of Highway 427 from Fasken Drive to Steeles Avenue includes the installation of a number of high mast lighting poles and overhead signs. Highway 427 is currently a 6-lane highway, surrounded by industrial, commercial and residential properties along the route.

The site is situated within the South Slope physiographic region. The geology generally comprises a till plain consisting of clayey silt to silty clay till (Halton Till) grading into a sandy silt to silty sand

till with depth. The underlying bedrock consists of grey shale with hard siltstone and limestone interlayers of the Georgian Bay Formation.

3 SITE INVESTIGATION AND FIELD TESTING

A site investigation was not carried out as part of the current project. Instead, borehole information from the previous investigations at the site has been used. Tables 1 and 2 at the end of the text outline the reference boreholes to be used to assess the subsurface conditions at the HML poles and OHS supports respectively. These are generally based on the closest available boreholes to each HML pole or OHS support. When the closest available borehole to an HML pole was not included in the 1995 MTO report referenced above, the nearest borehole from the 1995 MTO report with similar stratigraphy has also been included in Table 1 for additional reference. Since the majority of the boreholes were drilled in 1972, it is possible that the current ground surface elevations may differ and the subsurface stratigraphy may include additional fill that is not shown on the reference borehole logs. Additional boreholes include 20 boreholes drilled by MTO in 1994 for the design of HML pole foundations. Furthermore, as part of the current assignment, several boreholes were drilled by Thurber Engineering Ltd. in 2008 for the proposed widened bridge structures. The approximate locations of the HML poles, OHS supports, and boreholes are shown on the Borehole Location Drawings in Appendix C. The project reference numbers for boreholes drilled during previous projects are also shown on the plan.

4 DESCRIPTION OF SUBSURFACE CONDITIONS

Details of the encountered soil stratigraphy are presented on the borehole logs in Appendices A and B obtained from the previous investigations. A general description of the overall stratigraphy is given below. However, the factual data presented in the borehole logs governs any interpretation of the site conditions.

4.1 General

In general, the native soil stratigraphy encountered at this site consists of glacial till; varying in composition from clayey silt to silty clay, with sand and trace gravel. Layers of sandy silt and silty sand were also occasionally encountered in the native soil. Although not encountered at all boreholes, cobbles and boulders are frequently present within glacial till deposits, and should be anticipated to be encountered during foundation construction. Overlying the till, many of the boreholes encountered fill at the ground surface. However, the majority of the boreholes were drilled in 1972, and therefore some of the existing embankment fill was not investigated. The presence of additional fill that is not shown on the borehole logs should be anticipated during construction, as well as differences in the ground surface elevation. Shale bedrock was also encountered below the till in several boreholes. Where encountered, the bedrock elevation ranged from 132.3 m to 162.3 m.

4.2 Groundwater Conditions

Water levels were observed in the boreholes during drilling and in standpipe piezometers following completion of drilling. Standpipe piezometers were installed in several boreholes throughout the site. Groundwater levels are shown on the individual borehole logs, but ranged from elevation 153.3 m to 171.8 m.

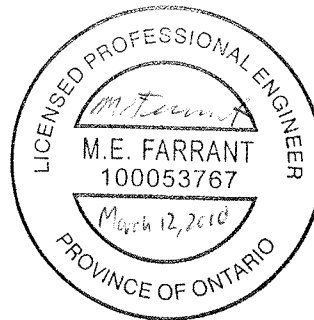
The above values are short-term readings and seasonal fluctuations of the groundwater level are to be expected. In particular, the groundwater level may reach higher elevations after the spring snowmelt or after periods of heavy rainfall. Further, perched water may be encountered at higher levels in pockets or zones of more permeable sands and silts present within the heterogeneous tills, or within the fill.

5 MISCELLANEOUS

Interpretation of the subsurface data and preparation of this report were carried out by Mr. Mark Farrant, P.Eng.

Dr. P.K. Chatterji, P.Eng., a Designated Principal Contact for MTO Foundations Projects, reviewed the report.

THURBER ENGINEERING LTD.



Mark Farrant, P.Eng.
Geotechnical Engineer



P.K. Chatterji, P.Eng.
Review Principal

Table 1 – Reference Borehole Numbers for HML Poles

| HML Pole Number | Reference Borehole Number | Project Reference Number on Borehole Log | Additional Reference Borehole and Project Number |
|------------------------|----------------------------------|---|---|
| P1 | 4 | 273-66 | |
| P2 | 1 | 615-89-00 | |
| P3 | 1 | 615-89-00 | |
| P4 | 2 | 615-89-00 | |
| P5 | 2 | 615-89-00 | |
| P6 | 18 | 657-93-01 | 2 (615-89-00) |
| P7 | 27 | 657-93-01 | 13 (404-65) |
| P8 | 4 | 615-89-00 | |
| P9 | 4 | 615-89-00 | |
| P10 | 4 | 615-89-00 | |
| P11 | 3 | 387-65 | 7 (280-65) |
| P12 | 18 | 387-65 | 5 (615-89-00) |
| P13 | 5 | 615-89-00 | |
| P14 | 1 | 659-93-01 | 4 (48-71-22) |
| P15 | 10 | 213-65 | |
| P16 | 6 | 660-93-01 | 6 (48-71-22) |
| P17 | 6 | 48-71-22 | |
| P18 | 6 | 615-89-00 | |
| P19 | 6 | 615-89-00 | |
| P20 | 7 | 615-89-00 | |
| P21 | 7 | 615-89-00 | |
| P22 | 8 | 615-89-00 | |
| P23 | 9 | 615-89-00 | |
| P24 | 9 | 615-89-00 | |
| P25 | 1 | 126-60 | |
| P26 | 1 | 126-60 | |
| P27 | 7 | 126-60 | |
| P28 | 5 | 126-60 | |

Table 1 – Continued

| HML Pole Number | Reference Borehole Number | Project Reference Number on Borehole Log | Additional Reference Borehole and Project Number |
|------------------------|----------------------------------|---|---|
| P29 | 10 | 615-89-00 | |
| P30 | 10 | 615-89-00 | |
| P31 | 10 | 615-89-00 | |
| P32 | 11 | 615-89-00 | |
| P33 | 11 | 615-89-00 | |
| P34 | 12 | 615-89-00 | |
| P35 | 2 | 604-89-00 | |
| P36 | 2 | 604-89-00 | |
| P37 | 13 | 615-89-00 | |
| P38 | 13 | 615-89-00 | |
| P39 | 14 | 615-89-00 | |
| P40 | 15 | 615-89-00 | |
| P41 | 15 | 615-89-00 | |
| P42 | 15 | 615-89-00 | |
| P43 | 1 | 49-71-04 | |
| P44 | 16 | 615-89-00 | |
| P45 | 1 | 49-71-07 | |
| P46 | 7 | 49-70-05/06 | 1 (49-71-07) |
| P47 | 17 | 615-89-00 | |
| P48 | 18 | 615-89-00 | |
| P49 | 18 | 615-89-00 | |

Table 2 – Reference Borehole Numbers for OHS Supports

| OHS Support Station Number | Direction | Support Structure Type | Reference Borehole Number | Project Reference Number on Borehole Log |
|-----------------------------------|------------------|-------------------------------|----------------------------------|---|
| 20+411 | NB | Tri-chord | 4, 6 | 273-66 |
| 20+800 | SB | Cantilever | 1 | 615-89-00 |
| 20+871 | NB | Tri-Chord | 2 | 615-89-00 |
| 22+050 | NB | Cantilever | 5 | 615-89-00 |
| 22+588 | SB | Tri-chord | 5, 6 | 660-93-01 |
| 22+900 | SB | Cantilever | 6 | 615-89-00 |
| 23+039 | SB | Tri-chord | 6 | 615-89-00 |
| 23+059 | NB | Tri-chord | 6 | 615-89-00 |
| 23+200 | NB | Cantilever | 7 | 615-89-00 |
| 23+429 | NB | Tri-chord | 8 | 615-89-00 |
| 23+845 | NB | Cantilever | 1 | 126-60 |
| 23+909 | SB | Cantilever | 7 | 126-60 |
| 24+322 | SB | Tri-chord | 11 | 615-89-00 |
| 24+809 | SB | Cantilever | 2 | 604-89-00 |
| 24+900 | NB | Tri-chord | 2 | 604-89-00 |
| 25+275 | NB | Tri-chord | 14 | 615-89-00 |
| 25+800 | SB | Cantilever | 5 | 49-71-04 |
| 25+900 | NB | Cantilever | 16 | 615-89-00 |
| 26+235 | SB | Tri-chord | 17 | 615-89-00 |
| 26+691 | NB | Tri-chord | 18 | 615-89-00 |
| 26+781 | SB | Tri-chord | 19 | 615-89-00 |
| 27+151 | NB | Tri-chord | CNH-01, 2 | 202-95-00, 153-80-02 |
| 27+350 | SB | Cantilever | 2 | 153-80-03 |
| 27+750 | SB | Cantilever | 20 | 615-89-00 |

Appendix A

1995 MTO Report for High Mast Lighting Poles

ENGINEERING MATERIALS OFFICE
FOUNDATION DESIGN SECTION

WP 615-89-00 DIST 6
HWY 427 STR SITE -

High Mast Lighting
Hwy. 427 from Campus Rd./Fasken Dr. to Steeles Ave.

DISTRIBUTION

V.F. Boehnke (3)
D. Billings
W. Peck (2)
B. Peltier (3)
M. Holowka
J. Robinson
E.A. Joseph
F. Bacchus (Cover Only)
File

GEOCRE 30M12-224

DATE **JAN 25 1995**

GEOCREs No
30M12-224

FOUNDATION INVESTIGATION REPORT
For
High Mast Lighting
Hwy. 427 from Campus Rd/Fasken Dr. to Steeles Ave.
W.P. 615-89-00
Hwy. 427, District 6, Toronto

INTRODUCTION

This report presents soil information for the proposed high mast lights at the above mentioned sites. Soil information was obtained from previous subsurface investigations in the area and supplemented by drilling 20 new boreholes (BH1 through BH 20). The details of the previous investigations are provided in Table 2 (Reference Borehole Number). This report is produced at the request of Central Region Structural Section.

SITE DESCRIPTION

The high mast lighting poles will be located along the proposed Highway 427 alignment from Campus Road/Fasken Drive to Steeles Ave. The area is situated in the City of Etobicoke in the Region of Metro Toronto.

The site lies within the physiographic region known as the South Slope (after Chapman and Putnam, 1984) and it consists largely of glacial deposits.

INVESTIGATION PROCEDURES

The fieldwork for the supplementary investigation was carried out between 94 08 09 and 94 08 19 and consisted of 20 sampled boreholes (BH 1 through BH 20) advanced to depths ranging from 9.2 to 12.6m below ground surface. All boreholes except one, were drilled in the median of Hwy 427. Only Borehole 3 was drilled near 409E - 427S ramp.

The boreholes were advanced using a CME 55 track-mounted auger machine equipped with solid and hollow stem augers.

Sampling was carried out at each borehole location by means of a 50mm O.D. split spoon sampler driven into the soil according to the specifications of the Standard Penetration Test (ASTM D 1586).

Groundwater levels were obtained by monitoring the levels in the open boreholes throughout the duration of the field investigation. All boreholes were backfilled at the completion of the fieldwork.

SUBSURFACE CONDITIONS

General

The soil generally consists of glacial till deposits as the native soil. At some locations glacial till is overlain by fill material. The native soil generally consists of clayey silt with layers of silt, sandy silt and silty sand. The glacial deposits occasionally contain cobbles and boulders. The site for the proposed high mast light poles covers a stretch of six kilometres. Hence, the composition of the till is variable. However, the composition of till within short distances are consistent. For soil condition detail at any high mast light location, reference is made to the attached log sheets and Table 1 (Reference Borehole Numbers).

The locations of the boreholes are shown on the attached drawings DWG 6158900 A - C.

Groundwater Conditions

In the previous and recent studies, groundwater was encountered in almost all boreholes. Groundwater table elevation ranged from 153.8m (HML Pole 16, BH 7, W.P. 280-65) to 171.8m (HML Pole 54, BH 9, W.P. 615-89-00). However, in some boreholes groundwater didn't establish shortly after their completion. For groundwater information at each HML locations reference is made to the attached borehole logs.

W.P. 615-89-00

TABLE 1
REFERENCE BOREHOLE NUMBERS

| HML Pole Numbers | Reference B.H. No | Project Numbers on B.H. Logs | Ground Elev. at Boreholes | Existing Grade at HML | Final Grade |
|------------------|-------------------|------------------------------|---------------------------|-----------------------|-------------|
| P1 | 4 | W.P. 273-66 | 167.4 | 168.6 | 169.9 |
| P2 | 1 | W.P. 615-89-00 | 165.9 | 166.6 | 168.5 |
| P3 | 1 | W.P. 615-89-00 | 165.9 | 165.3 | 167.2 |
| P4 | 2 | W.P. 615-89-00 | 164.5 | 164.5 | 166.3 |
| P5 | 2 | W.P. 615-89-00 | 164.5 | 164.5 | 166.3 |
| P6 | 10 | W.P. 404-65 | 160.3 | 164.8 | 164.8 |
| P7 | 17 | W.P. 403-65 | 159.7 | 160.5 | 160.5 |
| P8 | 19 | W.P. 403-65 | 161.3 | 159.6 | 159.5 |
| P9 | 10 | W.P. 404-65 | 160.3 | 159.7 | 159.8 |
| P10 | 3 | W.P. 615-89-00 | 163.0 | 161.4 | 161.8 |
| P11 | 12 | W.P. 404-65 | 163.4 | 161.9 | 162.2 |
| P12 | 13 | W.P. 404-65 | 163.6 | 165.3 | 165.4 |
| P13 | 14 | W.P. 404-65 | 161.1 | 171.2 | 171.0 |
| P14 | 14 | W.P. 404-65 | 161.1 | 167.7 | 169.3 |
| P15 | 4 | W.P. 615-89-00 | 166.7 | 168.6 | 168.2 |
| P16 | 7 | W.P. 280-65 | 155.7 | 170.0 | 171.1 |
| P17 | 12 | W.P. 280-65 | 155.6 | 170.5 | 171.9 |
| P18 | 5 | W.P. 615-89-00 | 171.8 | 171.8 | 173.1 |
| P19 | 4 | W.P. 48-71-22 | 173.0 | 172.4 | 174.1 |
| P20 | 10 | W.P. 213-65 | 165.9 | 173.1 | 174.6 |

J&B ①

J&B ③

J&B ②

| | | | | | |
|-----|----|----------------|-------|-------|-------|
| P21 | 7 | W.P. 48-71-22 | 165.3 | 172.0 | 174.1 |
| P22 | 6 | W.P. 48-71-22 | 171.1 | 170.9 | 172.7 |
| P23 | 6 | W.P. 615-89-00 | 168.7 | 169.5 | 171.1 |
| P24 | 6 | W.P. 615-89-00 | 168.7 | 168.0 | 169.6 |
| P25 | 7 | W.P. 615-89-00 | 166.3 | 166.7 | 168.2 |
| P26 | 7 | W.P. 615-89-00 | 166.3 | 165.9 | 167.5 |
| P27 | 8 | W.P. 615-89-00 | 165.5 | 165.5 | 166.9 |
| P28 | 9 | W.P. 615-89-00 | 164.6 | 164.8 | 166.5 |
| P29 | 9 | W.P. 615-89-00 | 164.6 | 165.5 | 165.5 |
| P30 | 1 | W.P. 126-60 | 168.4 | 164.3 | 166.0 |
| P31 | 8 | W.P. 126-60 | 168.1 | 168.8 | 168.5 |
| P32 | 7 | W.P. 126-60 | 168.0 | 168.6 | 169.0 |
| P33 | 5 | W.P. 126-60 | 168.2 | 163.4 | 165.2 |
| P34 | 10 | W.P. 615-89-00 | 163.1 | 165.8 | 165.8 |
| P35 | 10 | W.P. 615-89-00 | 163.1 | 162.9 | 164.6 |
| P36 | 11 | W.P. 615-89-00 | 162.1 | 162.4 | 164.0 |
| P37 | 11 | W.P. 615-89-00 | 162.1 | 161.9 | 163.5 |
| P38 | 12 | W.P. 615-89-00 | 161.4 | 161.4 | 163.2 |
| P39 | 2 | W.P. 604-89-00 | 162.9 | 161.8 | 163.5 |
| P40 | 13 | W.P. 615-89-00 | 162.5 | 162.3 | 164.2 |
| P41 | 13 | W.P. 615-89-00 | 162.5 | 162.8 | 165.0 |
| P42 | 14 | W.P. 615-89-00 | 163.7 | 163.3 | 165.6 |
| P43 | 14 | W.P. 615-89-00 | 163.7 | 164.1 | 165.9 |
| P44 | 15 | W.P. 615-89-00 | 164.4 | 166.7 | 166.7 |
| P45 | 15 | W.P. 615-89-00 | 164.4 | 164.5 | 166.4 |
| P46 | 6 | W.P. 49-71-04 | 169.7 | 169.8 | 170.2 |
| P47 | 1 | W.P. 49-71-04 | 168.8 | 169.7 | 170.0 |
| P48 | 5 | W.P. 49-71-04 | 169.6 | 165.3 | 167.1 |

528 ②

| | | | | | |
|-----|----|----------------|-------|-------|-------|
| P49 | 16 | W.P. 615-89-00 | 165.3 | 166.3 | 166.0 |
| P50 | 1 | W.P. 49-71-07 | 160.9 | 165.3 | 168.0 |
| P51 | 17 | W.P. 615-89-00 | 168.1 | 168.1 | 169.8 |
| P52 | 18 | W.P. 615-89-00 | 171.7 | 170.5 | 172.2 |
| P53 | 18 | W.P. 615-89-00 | 171.7 | 172.9 | 174.5 |
| P54 | 19 | W.P. 615-89-00 | 176.1 | 175.1 | 176.9 |
| P55 | 19 | W.P. 615-89-00 | 176.1 | 177.1 | 179.2 |
| P56 | 1 | W.P. 153-80-02 | 171.9 | 179.4 | 181.4 |
| P57 | 5 | W.P. 153-80-02 | 171.5 | 180.5 | 181.1 |
| P58 | 2 | W.P. 88-78-02 | 172.1 | 179.6 | 180.3 |
| P59 | 20 | W.P. 615-89-00 | 179.4 | 179.4 | 180.0 |

APPENDIX

EXPLANATION OF TERMS USED IN REPORT

N VALUE: THE STANDARD PENETRATION TEST (SPT) N VALUE IS THE NUMBER OF BLOWS REQUIRED TO CAUSE A STANDARD 51mm O.D. SPLIT BARREL SAMPLER TO PENETRATE 0.3m INTO UNDISTURBED GROUND IN A BOREHOLE WHEN DRIVEN BY A HAMMER WITH A MASS OF 63.5kg, FALLING FREELY A DISTANCE OF 0.76m. FOR PENETRATIONS OF LESS THAN 0.3m N VALUES ARE INDICATED AS THE NUMBER OF BLOWS FOR THE PENETRATION ACHIEVED. AVERAGE N VALUE IS DENOTED THUS \bar{N} .

DYNAMIC CONE PENETRATION TEST: CONTINUOUS PENETRATION OF A CONICAL STEEL POINT (51mm O.D. 60° CONE ANGLE) DRIVEN BY 475 J IMPACT ENERGY ON 'A' SIZE DRILL RODS. THE RESISTANCE TO CONE PENETRATION IS MEASURED AS THE NUMBER OF BLOWS FOR EACH 0.3m ADVANCE OF THE CONICAL POINT INTO THE UNDISTURBED GROUND.

SOILS ARE DESCRIBED BY THEIR COMPOSITION AND CONSISTENCY OR DENSENESS.

CONSISTENCY: COHESIVE SOILS ARE DESCRIBED ON THE BASIS OF THEIR UNDRAINED SHEAR STRENGTH (c_u) AS FOLLOWS:

| c_u (kPa) | 0 - 12 | 12 - 25 | 25 - 50 | 50 - 100 | 100 - 200 | > 200 |
|-------------|-----------|---------|---------|----------|------------|-------|
| | VERY SOFT | SOFT | FIRM | STIFF | VERY STIFF | HARD |

DENSENESS: COHESIONLESS SOILS ARE DESCRIBED ON THE BASIS OF DENSENESS AS INDICATED BY SPT N VALUES AS FOLLOWS:

| N (BLOWS/0.3m) | 0 - 5 | 5 - 10 | 10 - 30 | 30 - 50 | > 50 |
|----------------|------------|--------|---------|---------|------------|
| | VERY LOOSE | LOOSE | COMPACT | DENSE | VERY DENSE |

ROCKS ARE DESCRIBED BY THEIR COMPOSITION AND STRUCTURAL FEATURES AND /OR STRENGTH.

RECOVERY: SUM OF ALL RECOVERED ROCK CORE PIECES FROM A CORING RUN EXPRESSED AS A PERCENT OF THE TOTAL LENGTH OF THE CORING RUN.

MODIFIED RECOVERY: SUM OF THOSE INTACT CORE PIECES, 100mm+ IN LENGTH EXPRESSED AS A PERCENT OF THE LENGTH OF THE CORING RUN. THE ROCK QUALITY DESIGNATION (RQD), FOR MODIFIED RECOVERY, IS:

| RQD (%) | 0 - 25 | 25 - 50 | 50 - 75 | 75 - 90 | 90 - 100 |
|---------|-----------|---------|---------|---------|-----------|
| | VERY POOR | POOR | FAIR | GOOD | EXCELLENT |

JOINTING AND BEDDING:

| SPACING | 50mm | 50 - 300mm | 0.3m - 1m | 1m - 3m | > 3m |
|----------|------------|------------|------------|---------|------------|
| JOINTING | VERY CLOSE | CLOSE | MOD. CLOSE | WIDE | VERY WIDE |
| BEDDING | VERY THIN | THIN | MEDIUM | THICK | VERY THICK |

ABBREVIATIONS AND SYMBOLS

FIELD SAMPLING

| | | | |
|----|---------------------|----|---------------------------|
| SS | SPLIT SPOON | TP | THINWALL PISTON |
| WS | WASH SAMPLE | OS | OSTERBERG SAMPLE |
| ST | SLOTTED TUBE SAMPLE | RC | ROCK CORE |
| BS | BLOCK SAMPLE | PH | TW ADVANCED HYDRAULICALLY |
| CS | CHUNK SAMPLE | PM | TW ADVANCED MANUALLY |
| TW | THINWALL OPEN | FS | FOIL SAMPLE |

STRESS AND STRAIN

| | | |
|--------------------------------------|-----|-------------------------------|
| u_w | kPa | PORE WATER PRESSURE |
| r_u | 1 | PORE PRESSURE RATIO |
| σ | kPa | TOTAL NORMAL STRESS |
| σ' | kPa | EFFECTIVE NORMAL STRESS |
| τ | kPa | SHEAR STRESS |
| $\sigma_1, \sigma_2, \sigma_3$ | kPa | PRINCIPAL STRESSES |
| ϵ | % | LINEAR STRAIN |
| $\epsilon_1, \epsilon_2, \epsilon_3$ | % | PRINCIPAL STRAINS |
| E | kPa | MODULUS OF LINEAR DEFORMATION |
| G | kPa | MODULUS OF SHEAR DEFORMATION |
| μ | 1 | COEFFICIENT OF FRICTION |

MECHANICAL PROPERTIES OF SOIL

| | | |
|----------------|-------------------|--------------------------------------|
| m_v | kPa ⁻¹ | COEFFICIENT OF VOLUME CHANGE |
| C_c | 1 | COMPRESSION INDEX |
| C_s | 1 | SWELLING INDEX |
| C_α | 1 | RATE OF SECONDARY CONSOLIDATION |
| c_v | m ² /s | COEFFICIENT OF CONSOLIDATION |
| H | m | DRAINAGE PATH |
| T_v | 1 | TIME FACTOR |
| U | % | DEGREE OF CONSOLIDATION |
| σ'_{VO} | kPa | EFFECTIVE OVERBURDEN PRESSURE |
| σ'_p | kPa | PRECONSOLIDATION PRESSURE |
| τ_f | kPa | SHEAR STRENGTH |
| c' | kPa | EFFECTIVE COHESION INTERCEPT |
| ϕ' | ° | EFFECTIVE ANGLE OF INTERNAL FRICTION |
| c_u | kPa | APPARENT COHESION INTERCEPT |
| ϕ_u | ° | APPARENT ANGLE OF INTERNAL FRICTION |
| τ_R | kPa | RESIDUAL SHEAR STRENGTH |
| τ_r | kPa | REMOULDED SHEAR STRENGTH |
| S_t | 1 | SENSITIVITY = $\frac{c_u}{\tau_r}$ |

PHYSICAL PROPERTIES OF SOIL

| | | | | | | | | |
|----------------|-------------------|--------------------------------|-----------|------|---|-----------|-------------------|---|
| P_s | kg/m ³ | DENSITY OF SOLID PARTICLES | e | 1, % | VOID RATIO | e_{min} | 1, % | VOID RATIO IN DENSEST STATE |
| γ_s | kN/m ³ | UNIT WEIGHT OF SOLID PARTICLES | n | 1, % | POROSITY | I_D | 1 | DENSITY INDEX = $\frac{e_{max} - e}{e_{max} - e_{min}}$ |
| P_w | kg/m ³ | DENSITY OF WATER | w | 1, % | WATER CONTENT | D | mm | GRAIN DIAMETER |
| γ_w | kN/m ³ | UNIT WEIGHT OF WATER | S_r | % | DEGREE OF SATURATION | D_n | mm | n PERCENT - DIAMETER |
| P | kg/m ³ | DENSITY OF SOIL | w_L | % | LIQUID LIMIT | C_u | 1 | UNIFORMITY COEFFICIENT |
| γ | kN/m ³ | UNIT WEIGHT OF SOIL | w_p | % | PLASTIC LIMIT | h | m | HYDRAULIC HEAD OR POTENTIAL |
| ρ_d | kg/m ³ | DENSITY OF DRY SOIL | w_s | % | SHRINKAGE LIMIT | q | m ³ /s | RATE OF DISCHARGE |
| γ_d | kN/m ³ | UNIT WEIGHT OF DRY SOIL | I_p | % | PLASTICITY INDEX = $w_L - w_p$ | v | m/s | DISCHARGE VELOCITY |
| ρ_{sat} | kg/m ³ | DENSITY OF SATURATED SOIL | I_L | 1 | LIQUIDITY INDEX = $\frac{w - w_p}{I_p}$ | i | 1 | HYDRAULIC GRADIENT |
| γ_{sat} | kN/m ³ | UNIT WEIGHT OF SATURATED SOIL | I_C | 1 | CONSISTENCY INDEX = $\frac{w_L - w}{I_p}$ | k | m/s | HYDRAULIC CONDUCTIVITY |
| ρ' | kg/m ³ | DENSITY OF SUBMERGED SOIL | e_{max} | 1, % | VOID RATIO IN LOOSEST STATE | j | kN/m ² | SEEPAGE FORCE |
| γ' | kN/m ³ | UNIT WEIGHT OF SUBMERGED SOIL | | | | | | |

RECORD OF BOREHOLE No 1

1 OF 1

METRIC

W.P. 615-89-00 LOCATION Coords.: N 4 838 995, E 296 386 ORIGINATED BY LO
 DIST 6 HWY 427 BOREHOLE TYPE Hollow Stem Auger COMPILED BY LO
 DATUM Geodetic DATE 1994 08 09 CHECKED BY BB

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | | | WATER CONTENT (%) | 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 | | | |
| 185.9 | Ground Surface | | | | | | | | | | | | | | |
| 0.0 | CLAYEY SILT Trace to some Gravel Some Sand Stiff | | 1 | SS | 12 | | | | | | | | | | |
| | | | 2 | SS | 13 | | | | | | | | | | |
| 183.0 | (FILL MATERIAL) | | 3 | SS | 10 | | | | | | | | | | |
| 2.0 | SANDY SILT Trace of Gravel Trace to some Clay Compact to Dense | | 4 | SS | 35 | | | | | | | | | | |
| 181.5 | (FILL MATERIAL) | | 5 | SS | 23 | | | | | | | | | | |
| 4.4 | Trace Organics | | 6 | SS | 19 | | | | | | | | | | |
| | | | 7 | SS | 20 | | | | | | | | | | |
| | CLAYEY SILT Trace to Some Gravel Some Sand Very Stiff to Hard (GLACIAL TILL) | | 8 | SS | 55 | | | | | | | | | | |
| | Brown Grey | | 9 | SS | 38 | | | | | | | | | | |
| | | | 10 | SS | 34 | | | | | | | | | | |
| 154.8 | | | 11 | SS | 127 | /25cm | | | | | | | | | |
| 11.1 | End of Borehole | | | | | | | | | | | | | | |

+3, x5: Numbers refer to
Sensitivity

20
15-5 (%) STRAIN AT FAILURE
10

RECORD OF BOREHOLE No 2

1 OF 1

METRIC

W.P. 615-89-00 LOCATION Coords.: N 4 839 198 E 296 285 ORIGINATED BY LO
DIST 6 HWY 427 BOREHOLE TYPE Hollow Stem Auger COMPILED BY LO
DATUM Geodetic DATE 1994 08 09 CHECKED BY BB

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | | | NATURAL MOISTURE CONTENT | | | 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 | W _p | W | W _L | | |
| 164.5 | Ground Surface | | | | | | | | | | | | | | | | |
| 0.0 | CLAYEY SILT Traces of Gravel Some Sand Stiff to Very Stiff | | 1 | SS | 23 | * | 164 | | | | | | | | | | |
| | Sand | | 2 | SS | 15 | | | | | | | | | | | | |
| 161.6 | (FILL MATERIAL) | | 3 _w | SS | 18 | | 162 | | | | | | | | | | |
| 2.9 | Trace Organics | | 4 | SS | 17 | | | | | | | | | | | | |
| | | | 5 | SS | 14 | | | | | | | | | | | | |
| | | | 6 | SS | 28 | | 160 | | | | | | | | | | |
| | CLAYEY SILT Traces to Some Gravel Some Sand Stiff to Hard (GLACIAL TILL) | | 7 | SS | 50 | | | | | | | | | | | | |
| | | | 8 | SS | 63 | | | | | | | | | | | | |
| | Brown | | | | | | 158 | | | | | | | | | | |
| | Grey | | 9 | SS | 21 | | | | | | | | | | | | |
| | | | | | | | 156 | | | | | | | | | | |
| 155.1 | | | 10 | SS | 75 | /15cm | | | | | | | | | | | |
| 9.4 | End of Borehole | | | | | | | | | | | | | | | | |
| | WATER LEVEL NOT ESTABLISHED DUE TO THE WALLS CAVING AT 8 FEET. | | | | | | | | | | | | | | | | |

+3, x5: Numbers refer to 20
Sensitivity 15-25 (%) STRAIN AT FAILURE
10

DESIGN SERVICES BRANCH

RECORD OF BOREHOLE NO 19

FOUNDATIONS OFFICE

JOB 72-11017

LOCATION 15,877,178N. 971,365 E.

ORIGINATED BY H.S.

W.P. 403-65

BORING DATE Jan. 28 & 31, 1972 Feb. 4, 7 & 9, 1972

COMPILED BY T.S.T.

DATUM Geodetic

BOREHOLE TYPE Penn Drill

CHECKED BY *so*

| SOIL PROFILE | | SAMPLES | | | ELEV. SCALE | DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT | | | | | LIQUID LIMIT — w_L PLASTIC LIMIT — w_p WATER CONTENT — w | | | BULK DENSITY γ | REMARKS |
|--------------|-------------|--|-------------|--------|-------------|--|----|----|----|----|--|-------|-------|--------------------------|---------|
| ELEV. DEPTH | ELEV. DEPTH | DESCRIPTION | STRAT. PLOT | NUMBER | TYPE | BLOWS/FOOT | 20 | 40 | 60 | 80 | 100 | w_p | w_L | | |
| 161.3 | 529.3 | Ground elevation. | | | | | | | | | | | | | |
| METRIC UNITS | | Het. Mix. of clayey silt, sand & gravel. | | 1 | SS | 25 | | | | | | | | | |
| | | | | 2 | SS | 26 | | | | | | | | | |
| | | Brown | | 3 | SS | 41 | | | | | | | | | |
| | | Grey | | 4 | SS | 20 | | | | | | | | | |
| | | | | 5 | SS | 24 | | | | | | | | | |
| | | Glacial Till. | | 6 | SS | 45 | | | | | | | | | |
| | | | | 7 | SS | 49 | | | | | | | | | |
| | | Very stiff to hard. | | 8 | SS | 123 | | | | | | | | | |
| | | | | 9 | SS | 88 | | | | | | | | | |
| | | | | 10 | SS | 102 1/2" | | | | | | | | | |
| | | | | 11 | SS | 100 1/2" | | | | | | | | | |
| | | | | 12 | SS | 100 1/2" | | | | | | | | | |
| 146.1 | 479.3 | | | 13 | SS | 100 1/2" | | | | | | | | | |
| 15.2 | 50.0 | With shale fragments. | | 14 | SS | 150 1/2" | | | | | | | | | |
| 141.5 | 464.3 | | | 15 | RC | Rec. | | | | | | | | | |
| 19.8 | 65.0 | Shale bedrock. | | | BXL | 95% | | | | | | | | | |
| 140.0 | 459.3 | Sound - grey. | | | | | | | | | | | | | |
| 21.3 | 70.0 | End of borehole. | | | | | | | | | | | | | |

20
15 \diamond 5 % STRAIN AT FAILURE
10

RECORD OF BOREHOLE No 3

1 OF 1

METRIC

W.P. 615-89-00 LOCATION Coors.: N 4 839 483 E 298 019 ORIGINATED BY L.O.
 DIST 6 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY L.O.
 DATUM Geodetic DATE 1994 08 19 CHECKED BY B.B.

| 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 | | | | | |
| 163.0 | | | | | | | | | | | | | | | | | |
| 0.0 | CLAYEY SILT Trace to some Gravel Some Sand | | 1 | SS | 28 | | 162 | | | | | | | | | | |
| 180.9 | (FILL MATERIAL) | | 2 | SS | 21 | | | | | | | | | | | | |
| 2.1 | | | 3 | SS | 14 | | | | | | | | | | | | |
| | Trace Organics | | 4 | SS | 22 | | 160 | | | | | | | | | | |
| | | | 5 | SS | 28 | | | | | | | | | | | | |
| | CLAYEY SILT Trace to some Gravel Some sand Stiff to Hard | | 6 | SS | 31 | | 158 | | | | | | | | | | |
| | (GLACIAL TILL) Sandy Silt Seams | | 7 | SS | 36 | | | | | | | | | | | | |
| | | | 8 | SS | 22 | | | | | | | | | | | | |
| | Brown Grey | | 9 | SS | 19 | | 156 | | | | | | | | | | |
| | | | 10 | SS | 28 | | 154 | | | | | | | | | | |
| 153.4 | | | | | | | | | | | | | | | | | |
| 9.6 | End of Borehole | | | | | | | | | | | | | | | | |

+3, x5: Numbers refer to
Sensitivity

20
15-25 (%) STRAIN AT FAILURE
10

RECORD OF BOREHOLE NO 12

CO-ORDS: N 4 839 511, E 296 165

JOB 72-11016

LOCATION 15,877,662 N. 471,669 E.

ORIGINATED BY V.K.

WP 414-65

BORING DATE Feb. 22, 1972

COMPILED BY F.S.T.

DATA Geodetic

BOREHOLE TYPE Penn Drill,

CHECKED BY

| SOIL PROFILE | | | SAMPLES | | | ELEV. SCALE | DYNAMIC PENETRATION RESISTANCE | | | | | LIQUID LIMIT w_L | | | BULK DENSITY γ | REMARKS | | | | | | | | | | | | | | | | | | | | |
|-------------------------|-------------|-------------|-------------|--------|------|-------------|--------------------------------|--------------|----|-----------------|----|--------------------|---------------------|--|-----------------------|------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| ELEV. DEPTH (m) | ELEV. DEPTH | DESCRIPTION | STRAT. PLOT | NUMBER | TYPE | | BLOWS/FOOT | BLOWS / FOOT | | | | | PLASTIC LIMIT w_p | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | 20 | 40 | 60 | 80 | 100 | WATER CONTENT w | | | | | | | | | | | | | | | | | | | | | | | |
| SHEAR STRENGTH P.S.F. | | | | | | | w_p w w_L | | | WATER CONTENT % | | | P.C.F. | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | 10 20 30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <div>METRIC UNITS</div> | | | | | | | | | | | | | | | | 157.5m | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | El. 516.6 | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | in open | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | B.H. | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | Feb. 28/72 | | | | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

METRIC UNITS

157.5m
 516.6
 in open
 B.H.
 Feb. 28/72

7 37 53 3

DESIGN SERVICES BRANCH

RECORD OF BOREHOLE NO 14

FIELD NO. 14-1

COORDS: N 4839 586, E 296 061

JOB 72-1101b

LOCATION 15,577,505 N. 971,330 E.

ORIGINATED BY V.K.

W.P. 404-65

BORING DATE Feb. 11, 1972

COMPILED BY P.S.P.

DATUM: geodetic

BOREHOLE TYPE Penn. Dril.

CHECKED BY

| SOIL PROFILE | | | SAMPLES | | | ELEV. SCALE | DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT 20 40 60 80 100 | LIQUID LIMIT w_L PLASTIC LIMIT w_p WATER CONTENT w w_p — w — w_L WATER CONTENT % 10 20 30 | BULK DENSITY γ P.C.F. | REMARKS | |
|-----------------|-------------|---|------------|--------|------|-------------|---|--|------------------------------------|---------|--------------|
| ELEV. DEPTH (m) | ELEV. DEPTH | DESCRIPTION | STRAT. PLT | NUMBER | TYPE | | | | | | BLOWS / FOOT |
| 151.1 | 528.6 | Ground elevation. | | | | | | | | | |
| 0.0 | 0.0 | Ill. mixture of clayey silt, sand & gravel. | | 1 | SS | 15 | | | | | |
| | | | | 2 | SS | 42 | | | | | |
| | | | | 3 | SS | 82 | | | | | |
| | | (Brown) | | 4 | SS | 38 | | | | | |
| | | (Grey) | | 5 | SS | 28 | | | | | |
| | | Glacial Till. | | 6 | SS | 28 | | | | | |
| | | Very stiff to hard. | | 7 | SS | 104 | | | | | |
| | | | | 8 | SS | 104 | | | | | |
| | | | | 9 | SS | 186/11" | | | | | |
| 150.4 | 493.6 | | | | | | | | | | |
| 147.7 | 475.0 | Silt to sandy silt. | | 10 | SS | 167 | | | | | |
| 147.3 | 475.0 | | | 11 | SS | 71 | | | | | |
| | | | | 12 | SS | 100 | | | | | |
| 145.9 | 478.6 | | | 13 | SS | 105/14" | | | | | |
| 145.1 | 476.1 | With shale fragments. Probable bedrock. | | | | | | | | | |
| 145.0 | 52.5 | End of borehole. | | | | | | | | | |

METRIC UNITS

2 24 50 27.4
 El. 521.0
 in open B.H.
 Feb. 28/72

RECORD OF BOREHOLE No 4

1 OF 1

METRIC

W.P. 615-89-00 LOCATION Coords.: N 4 839 786 E 295 997 ORIGINATED BY LO
 DIST 8 HWY 427 BOREHOLE TYPE Hollow Stem Auger COMPILED BY LO
 DATUM Geodetic DATE 1994 08 10 CHECKED BY BB

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | | | PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT | | | 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 | W _p | W | W _L | | |
| 188.7 | Ground Surface | | | | | | | | | | | | | | | | |
| 0.0 | CLAYEY SILT Trace to some Gravel Some Sand Stiff | | 1 | SS | 13 | | | | | | | | | | | | |
| | | | 2 | SS | 13 | | | | | | | | | | | | |
| | | | 3 | SS | 12 | | | | | | | | | | | | |
| | | | 4 | SS | 17 | | | | | | | | | | | | |
| | | | 5 | SS | 14 | | | | | | | | | | | | |
| | | | 6 | SS | 18 | | | | | | | | | | | | |
| | | | 7 | SS | 19 | | | | | | | | | | | | |
| -160.5 | (FILL MATERIAL) | | 8 | SS | 28 | | | | | | | | | | | | |
| 5.9 | CLAYEY SILT Trace to some Gravel Some Sand Very Stiff to Hard (GLACIAL TILL) Brown Grey | | 9 | SS | 30 | | | | | | | | | | | | |
| | | | 10 | SS | 30 | | | | | | | | | | | | |
| | | | 11 | SS | 45 | | | | | | | | | | | | |
| 154.1 | | | 12 | SS | 19 | | | | | | | | | | | | |
| 12.6 | End of Borehole | | | | | | | | | | | | | | | | |

+3, x5: Numbers refer to
Sensitivity

20
15-5 (%) STRAIN AT FAILURE
10

DEPARTMENT OF HIGHWAYS- ONTARIO
MATERIALS & TESTING OFFICE

JOB 72-31001

W.P. 280 - 65

DATUM Geodetic

RECORD OF BOREHOLE No. 7

FOUNDATION SECTION

Co-ords: N 4 839 936, E 295 936

Co-ords, 15,879,051 N; 970,920 E.

BORING DATE Feb. 3, 1972

ORIGINATED BY VK

COMPILED BY TST

CHECKED BY CR.

BOREHOLE TYPE Anchor

| ELEV. DEPTH | SOIL PROFILE DESCRIPTION | SAMPLES | | ELEV. SCALE | DYNAMIC PENETRATION RESISTANCE BLOWS/FOOT | | LIQUID LIMIT PLASTIC LIMIT WATER CONTENT | | REMARKS |
|-------------|-----------------------------------|---------|------|-------------|---|----|--|----|---------|
| | | NUMBER | TYPE | | 20 | 40 | 60 | 80 | |
| 155.7 | | | | | | | | | |
| 0.0 | Ground Level | | | 510 | | | | | |
| | Sand & Gravel | 1 | SS | | | | | | |
| | Het. mix. of clayey silt and sand | 2 | SS | | | | | | |
| | Glacial Till | 3 | SS | | | | | | |
| | Stiff to Hard | 4 | SS | | | | | | |
| | Sand & Gravel | 5 | SS | | | | | | |
| | | 6 | SS | | | | | | |
| | | 7 | SS | | | | | | |
| | | 8 | SS | | | | | | |
| | | 9 | SS | | | | | | |
| | | 10 | SS | | | | | | |
| | | 11 | SS | | | | | | |
| 469.3 | with shale frag. | | | 490 | | | | | |
| 41.5 | End of Borehole Probably Bedrock | | | 480 | | | | | |

METRIC UNITS

153.8 m =
504.5 ft
2F 29 35 15

34 24 31 12

DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS & TESTING OFFICE

JOB 72-1106h

W.P. 280 - 65

DATUM Gendetic

LOCATION

BORING DATE Feb. 1, 1972

BOREHOLE TYPE Auger, BTL Core

RECORD OF BOREHOLE No. 12

Co-ORDS N 4839 961, E 295 924
Corner 13. 15, 879, 138 N: 910, 884 E

FOUNDATION SECTION

ORIGINATED BY VK

COMPILED BY TST

CHECKED BY

| ELEV. DEPTH (m) | ELEV. DEPTH | SOIL PROFILE DESCRIPTION | STRAT. PLT. | SAMPLES | | | ELEV. SCALE | DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT | | | | LIQUID LIMIT PLASTIC LIMIT WATER CONTENT | | | BULK DENSITY | REMARKS |
|-----------------|-------------|--|-------------|---------|------|--------------|-------------|---|----|----|-----|--|----------------|----------------|--------------|-------------|
| | | | | NUMBER | TYPE | BLOWS / FOOT | | 40 | 60 | 80 | 100 | W _p | W _L | W _p | | |
| 155.6 | 510.5 | Ground Level | | | | | | | | | | | | | | |
| 0.0 | 0.0 | | | | | | | | | | | | | | | |
| METRIC UNITS | | Het. mix. of clayey silt sand and gravel | | 1 | SS | 9 | | | | | | | | | | 0 29 57 11 |
| | | | | 2 | SS | 37 | | | | | | | | | | 505.0 |
| | | | | 3 | SS | 45 | | | | | | | | | | (M) 154.0 |
| | | Glacial Till | | 4 | SS | 10 | | | | | | | | | | |
| | | Stiff to Hard | | 5 | SS | 13 | | | | | | | | | | |
| | | | | 6 | SS | 46 | | | | | | | | | | |
| | | Sand and Gravel | | 7 | SS | 52 | | | | | | | | | | 21 33 32 11 |
| | | | | 8 | SS | 132 | | | | | | | | | | |
| | | | | 9 | SS | 100 | | | | | | | | | | |
| | | | | 10 | SS | 100 | | | | | | | | | | |
| | | | | 11 | SS | 100 | | | | | | | | | | |
| | | | | 12 | SS | 100 | | | | | | | | | | |
| | | | | 13 | SS | 100 | | | | | | | | | | |
| | | | | 14 | SS | 100 | | | | | | | | | | |
| 140.4 | 160.5 | | | | | | | | | | | | | | | |
| 15.2 | 50.0 | Weathered | | | | | | | | | | | | | | |
| | | shale bedrock sound | | 15 | RC | 100 | | | | | | | | | | |
| 137.3 | 150.5 | | | | | | | | | | | | | | | |
| 18.3 | 60.0 | End of Borehole | | | | | | | | | | | | | | |

20
10-5 % STRAIN AT FAILURE
10

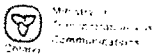
RECORD OF BOREHOLE No 5

1 OF 1

METRIC

W.P. 615-89-00 LOCATION Coords.: N 4 840 151, E 295 829 ORIGINATED BY LO
 DIST 6 HWY 427 BOREHOLE TYPE Hollow Stem Auger COMPILED BY LO
 DATUM Geodetic DATE 1994 08 10 CHECKED BY BB

| 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 | | | | | |
| 171.8 | Ground Surface | | | | | | | | | | | | | | | | |
| 0.0 | | | | | | | | | | | | | | | | | |
| | | | 1 | SS | 19 | | | | | | | | | | | | |
| | Layer of Sand | | 2 | SS | 18 | | | | | | | | | | | | |
| | | | 3 | SS | 7 | | | | | | | | | | | | |
| | | | 4 | SS | 13 | | | | | | | | | | | | |
| | | | 5 | SS | 15 | | | | | | | | | | | | |
| | CLAYEY SILT Traces of Gravel Some Sand Stiff to Hard | | 6 | SS | 37 | | | | | | | | | | | | |
| | | | 7 | SS | 11 | | | | | | | | | | | | |
| 8.1 | | | 8 | SS | 14 | | | | | | | | | | | | |
| | | | 9 | SS | 18 | | | | | | | | | | | | |
| | | | 10 | SS | 24 | | | | | | | | | | | | |
| 181.7 | (FILL MATERIAL) | | | | | | | | | | | | | | | | |
| 10.1 | CLAYEY SILT Trace to some Gravel Some Sand Hard to Very Stiff (GLACIAL TILL) Brown Grey | | 11 | SS | 80 | | | | | | | | | | | | |
| 159.2 | | | 12 | SS | 23 | | | | | | | | | | | | |
| 12.8 | End of Borehole | | | | | | | | | | | | | | | | |



RECORD OF BOREHOLE No 4

METRIC

W P 48-71-22 LOCATION Sta. 406 + 50; o/s 26.0' Lt. (Imperial Chainage)
DIST 5 HWY 427/409 BOREHOLE TYPE Cone Test, Solid Stem Auger ORIGINATED BY TS
DATUM Geodetic DATE 88 03 29 COMPILED BY TS
CHECKED BY

OFFICE REPORT ON SOIL EXPLORATION

| 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 Y KN/m ³ | REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL |
|--------------|----------------------|---|------------|--------|------|----------------------------|-----------------|---|---------------------------------|--|-----------------------------------|--|--|
| (feet) | ELEV DEPTH (m) | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | | | 'N' VALUES | 20 40 60 80 100 | SHEAR STRENGTH ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL x LAB VANE | | | |
| 567.6 | 173.0 | Ground Surface | | | | | | | | | | | |
| 0.0 | 0.0 | Irregular Mixture of Clayey Silt, Some Sand, Trace Gravel (Fill) | | 1 | SS | 40 | | | | | | | |
| | | Some Organics | | 2 | SS | 12 | | | | | | 20.2 | 14 14 40.32 |
| | | | | 3 | SS | 10 | | | | | | | |
| | | | | 4 | SS | 22 | | | | | | | |
| | | Brown/Grey Stiff to Very Stiff | | 5 | SS | 20 | | | | | | | |
| 537.6 | 163.9 | | | | | | | | | | | | |
| 30.0 | 9.1 | Het. Mixture of Clayey Silt, Sand and Gravel (Glacial Till) | | 6 | SS | 37 | | | | | | | |
| | | | | 7 | SS | 71 | | | | | | | |
| 526.1 | 160.4 | | | | | | | | | | | | |
| 41.5 | 12.6 | Brown Grey | | 8 | SS | 31 | | | | | | 22.6 | |
| | | End of Borehole | | | | | | | | | | | |

+3, x5: Numbers refer to
Sensitivity

20
15 \diamond 5 (%) STRAIN AT FAILURE
10

DESIGN SERVICES BRANCH

FOUNDATIONS OFFICE

RECORD OF BOREHOLE No 10

Co-ords: N 4840 425, E 295 701

JOB 77-11022

LOCATION Co-ord's 880,601 N. 970,150 E.

W.P. 213-65

BORING DATE March 3, 1972

ORIGINATED BY V.K.

DATUM Geodetic

BOREHOLE TYPE Auger and Sample with C.H.F. Machine.

COMPILED BY V.K.

CHECKED BY

METRIC UNITS

| SOIL PROFILE | | | SAMPLES | | | ELEV. SCALE | DYNAMIC PENETRATION RESISTANCE | | | | LIQUID LIMIT | | BULK DENSITY | REMARKS |
|-----------------|-------------|--|-------------|--------|------|-------------|--------------------------------|----|----|----|--------------|-----|--------------|---------|
| ELEV. DEPTH (m) | ELEV. DEPTH | DESCRIPTION | STRAT. PLOT | NUMBER | TYPE | | BLOWS / FOOT | 20 | 40 | 60 | 80 | 100 | | |
| 165.9 | 544.3 | Ground level. | | | | | | | | | | | | |
| 0.0 | 0.0 | Het. mix. of clayey silt, sand and grav. Glacial Till. | | 1 | SS | | 33 | | | | | | | |
| | | | | 2 | SG | | 18 | | | | | | | |
| 162.5 | 533.3 | Brown Grey | | 3 | SS | | 50 | | | | | | | |
| 3.4 | 11.0 | Stiff to hard. | | 4 | SS | | 13 | | | | | | | |
| | | | | 5 | SS | | 12 | | | | | | | |
| | | | | 6 | SS | | 21 | | | | | | | |
| | | | | 7 | SS | | 15 | | | | | | | |
| | | | | 8 | SS | | 42 | | | | | | | |
| | | | | 9 | SS | | 18 | | | | | | | |
| 155.5 | 510.3 | Silty sand, trace of cl. & gra. Compact. | | 10 | SS | | 23 | | | | | | | |
| 11.4 | 34.0 | | | 11 | SS | | 100/5" | | | | | | | |
| 154.3 | 506.3 | Het. mix. of clayey silt, sand & gravel. hard. | | 12 | SS | | 22 | | | | | | | |
| 11.6 | 38.0 | Fragments of shale | | 13 | SS | | 160/5" | | | | | | | |
| 144.5 | 474.2 | | | 14 | SS | | 100/5" | | | | | | | |
| 21.4 | 70.1 | End of borehole. | | | | | | | | | | | | |

20
15 \diamond 5 % STRAIN AT FAILURE
10

DESIGN SERVICES BRANCH

RECORD OF BOREHOLE No 7

FOUNDATIONS OFFICE

JOB 72-11023

LOCATION

Co-ords: N4840593, E 298629

W.P. 26-60-00 48-71-22

BORING DATE

Nov. 8, 1972

ORIGINATED BY VK

DATUM Geodetic

BOREHOLE TYPE

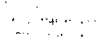
Auger & sample with CME Machine

COMPILED BY VK

CHECKED BY *SK*

| SOIL PROFILE | | SAMPLES | | | ELEV. SCALE | DYNAMIC PENETRATION RESISTANCE | | LIQUID LIMIT W_L | | BULK DENSITY | REMARKS |
|--------------|-------------|-----------------------------|--------|------|-------------|--------------------------------|----|--------------------|----|--------------|---------|
| ELEV. DEPTH | DESCRIPTION | STRAT. PLOT | NUMBER | TYPE | | 20 | 40 | 60 | 80 | | |
| 165.3 | 542.3 | Ground Level | | | | | | | | | |
| 0.0 | 0.0 | | | | | | | | | | |
| | | | 1 | SS | 13 | | | | | | |
| | | | 2 | SS | 17 | | | | | | |
| | | | 3 | SS | 35 | | | | | | |
| | | | 4 | SS | 33 | | | | | | |
| | | | 5 | SS | 20 | | | | | | |
| | | | 6 | SS | 22 | | | | | | |
| | | | 7 | SS | 25 | | | | | | |
| | | | 8 | SS | 13 | | | | | | |
| | | | 9 | SS | 12 | | | | | | |
| 151.0 | 505.3 | | | | | | | | | | |
| 11.3 | 37.0 | Silty sand with few gravel. | 10 | SS | 180 | | | | | | |
| 152.2 | 499.3 | Very Dense | | | | | | | | | |
| 13.1 | 43.0 | | 11 | SS | 36 | | | | | | |
| 146.7 | 481.3 | | 12 | SS | 185 | | | | | | |
| 18.6 | 61.0 | Bedrock | | | | | | | | | |
| | | Weathered Shale | | | | | | | | | |
| 141.0 | 472.3 | | 13 | EXL | 90% | | | | | | |
| 143.2 | 469.8 | Sound Shale | | | | | | | | | |
| 22.1 | 72.5 | End of Borehole | | | | | | | | | |

20
15 \diamond 5 % STRAIN AT FAILURE
10



METRIC

ORIGINATED BY

COMPILED BY TS

CHECKED BY _____

OFFICE REPORT ON SOIL EXPLORATION

* 3, x 5: Numbers refer to Sensitivity

FOUNDATIONS OFFICE

JOB 72-11017

LOCATION 15,877,430 N. 971,755 E.

ORIGINATED BY H.S.

WP 403-65

BORING CATÉ Jan. 31 & Feb. 1, 1972

COMPILED BY T.S.T.

DATUM Geodetic

BOREHOLE TYPE Penn Drill & Conc Penetration

CHECKED BY

| SOIL PROFILE | | SAMPLES | | ELEV. SCALE | DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT 20 40 60 80 100 | LIQUID LIMIT — w_L PLASTIC LIMIT — w_p WATER CONTENT — w w_u — w — w_L | BULK DENSITY γ P.C.F. | REMARKS |
|----------------------|-------------|---|--------|-------------|---|---|------------------------------------|---------|
| ELEV DEPTH (m) | DESCRIPTION | STRAT. PLCT | NUMBER | | | | | |
| 159.7 | 524.0 | Ground elevation. | | | | | | |
| | | Het. mix. of clayey silt, with sand and gravel. | | | | | | |
| | | Glacial Till. | | | | | | |
| | | Brown | | | | | | |
| | | Grey | | | | | | |
| | | | 1 | SS | 10 | | | |
| | | | 2 | SS | 11 | | | |
| | | | 3 | SS | 58 | | | |
| | | | 4 | SS | 52 | | | |
| | | | 5 | SS | 52 | | | |
| | | | 6 | SS | 45 | | | |
| | | | 7 | SS | 59 | | | |
| | | | 8 | SS | 82 | | | |
| | | | 9 | SS | 100 | 1/2" | | |
| | | | 10 | SS | 100 | 1/2" | | |
| 149.0 | 489.0 | | | | | | | |
| 10.7 | 35.0 | Silt to sandy silt. Very dense. Grey | | | | | | |
| 147.1 | 482.5 | | 11 | SS | 67 | | | |
| 12.6 | 41.5 | | | | | | | |
| 146.1 | 479.3 | | | | | | | |
| 13.6 | 44.7 | End of borehole. Probable bedrock | | | | | | |

15 $\frac{20}{10}$ 5 % STRAIN AT FAILURE

ORIGINATED BY Y.K.

COMPILED BY T.S.T.

CHECKED BY _____

METRIC UNITS

15 ϕ 5 % STRAIN AT FAILURE

RECORD OF BOREHOLE No 6

1 OF 1

METRIC

W.P. 815-89-00 LOCATION Coords: N 4 840 964, E 295 487 ORIGINATED BY LO
 DIST 8 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY LO
 DATUM Geodetic DATE 1994 08 11 CHECKED BY BB

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | | | PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT | | | 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 | W _p | W | W _L | | |
| 168.7 | Ground Surface | | | | | | | | | | | | | | | | |
| 0.0 | CLAYEY SILT Trace Gravel Some Sand Silt | | 1 | SS | 15 | | | | | | | | | | | | |
| 168.9 | (FILL MATERIAL) | | 2 | SS | 11 | | | | | | | | | | | | |
| 1.8 | | | 3 | SS | 14 | | | | | | | | | | | | |
| | | | 4 | SS | 21 | | | | | | | | | | | | |
| | Brown | | 5 | SS | 29 | | | | | | | | | | | | |
| | Grey | | 6 | SS | 15 | | | | | | | | | | | | |
| | CLAYEY SILT TO SILT Trace to some Gravel Trace to some Sand Firm to Hard (GLACIAL TILL) | | 7 | SS | 11 | | | | | | | | | | | | |
| | | | 8 | SS | 11 | | | | | | | | | | | | |
| | | | 9 | SS | 6 | | | | | | | | | | | | |
| | | | 10 | SS | 25 | | | | | | | | | | | | |
| 158.3 | | | 11 | SS | 40 | | | | | | | | | | | | |
| 10.4 | End of Borehole | | | | | | | | | | | | | | | | |

RECORD OF BOREHOLE No 7

1 OF 1

METRIC

W.P. 815-89-00 LOCATION Coor. N 4 841 287, E 295 339 ORIGINATED BY LQ
 DIST 6 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY LQ
 DATUM Geodetic DATE 1994 08 11 CHECKED BY BB

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | | | PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT | | | 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 | W _p | W | W _L | | |
| 166.3 | Ground Surface | | | | | | | | | | | | | | | | |
| 0.0 | CLAYEY SILT Trace Gravel Some Sand Firm to Stiff | | 1 | SS | 4 | | | | | | | | | | | | |
| 164.2 | (FILL MATERIAL) | | 2 | SS | 9 | | | | | | | | | | | | |
| 2.1 | | | 3 | SS | 29 | | | | | | | | | | | | |
| | Brown | | 4 | SS | 30 | | | | | | | | | | | | |
| | Grey | | 5 | SS | 16 | | | | | | | | | | | | |
| | CLAYEY SILT TO SILT Trace Gravel Trace to some Sand Stiff to Hard (GLACIAL TILL) | | 6 | SS | 14 | | | | | | | | | | | | |
| | Silty Sand Seams | | 7 | SS | 13 | | | | | | | | | | | | |
| | | | 8 | SS | 16 | | | | | | | | | | | | |
| | | | 9 | SS | 34 | | | | | | | | | | | | |
| 156.7 | | | 10 | SS | 34 | | | | | | | | | | | | |
| 9.6 | End of Borehole | | | | | | | | | | | | | | | | |

RECORD OF BOREHOLE No 8

1 OF 1

METRIC

W.P. 615-89-00 LOCATION Coords.: N 4 841 472 E 295 251 ORIGINATED BY LO
DIST 6 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY LO
DATUM Geodetic DATE 1994 08 11/12 CHECKED BY BB

| 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 | | | SHEAR STRENGTH kPa | | | | | | | | | | WATER CONTENT (%) |
| | | | | | | | | 20 | 40 | 60 | 80 | 100 | | | | | | |
| 165.5 | Ground Surface | | | | | | | | | | | | | | | | | |
| 0.0 | CLAYEY SILT Trace Gravel Some Sand Trace Organics | | | | | | | | | | | | | | | | | |
| 164.1 | (FILL MATERIAL) | | 1 | SS | 23 | | | | | | | | | | | | | |
| 1.4 | | | 2 | SS | 21 | | | | | | | | | | | | | |
| | Gray | | 3 | SS | 15 | | | | | | | | | | | | | |
| | Brown | | 4 | SS | 11 | | | | | | | | | | | | | |
| | CLAYEY SILT Trace Gravel Trace to some Sand Stiff to Hard (GLACIAL TILL) | | 5 | SS | 8 | | | | | | | | | | | | | |
| | | | 6 | SS | 12 | | | | | | | | | | | | | |
| | Silty Sand | | 7 | SS | 16 | | | | | | | | | | | | | |
| | | | 8 | SS | 27 | | | | | | | | | | | | | |
| 157.7 | | | 9 | SS | 40 | | | | | | | | | | | | | |
| 7.8 | SILTY SAND TO SAND Traces to Clay Compact | | | | | | | | | | | | | | | | | |
| 155.9 | | | 10 | SS | 26 | | | | | | | | | | | | | |
| 9.6 | End of Borehole | | | | | | | | | | | | | | | | | |

RECORD OF BOREHOLE No 9

1 OF 1

METRIC

W.P. 815-89-00 LOCATION Coords.: N 4 841 589, E 295 169 ORIGINATED BY LO
DIST 8 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY LO
DATUM Geodetic DATE 1994 08 12 CHECKED BY BB

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | | | PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT | | | 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 | W _p | W | W _L | | |
| 164.6 | Ground Surface | | | | | | | | | | | | | | | | |
| 0.0 | CLAYEY SILT Traces to some Gravel Traces to some Sand Stiff to Hard (GLACIAL TILL) | | 1 | SS | 10 | | | | | | | | | | | | |
| | | | 2 | SS | 7 | | | | | | | | | | | | |
| | | | 3 | SS | 11 | | | | | | | | | | | | |
| | Searns of Silty Sand | | 4 | SS | 11 | | | | | | | | | | | | |
| | | | 5 | SS | 23 | | | | | | | | | | | | |
| | | | 6 | SS | 24 | | | | | | | | | | | | |
| | | | 7 | SS | 24 | | | | | | | | | | | | |
| | | | 8 | SS | 60 | /1cm | | | | | | | | | | | |
| 157.5 | | | | | | | | | | | | | | | | | |
| 7.1 | SANDY SILT Traces of Clay Dense to Compact | | 9 | SS | 29 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| 155.0 | | | 10 | SS | 12 | | | | | | | | | | | | |
| 9.6 | End of Borehole | | | | | | | | | | | | | | | | |

+3, x⁵: Numbers refer to
Sensitivity

20
15-5 (%) STRAIN AT FAILURE
10

Co-ORDS: N 4841828, E 295134

LOCATIONS: 5,885,263 N; 968,288 E.

BORING DATE March 8, 1972

BOREHOLE TYPE Auger & sample with C.M.E.

ORIGINATED BY VK

COMPILED BY VK

CHECKED BY

15 \diamond 5 % STRAIN AT FAILURE

FOUNDATIONS OFFICE

JOB 72-1024

LOCATION

Co-ORDS: N 4 841 846, E 295 053

Co-ords. 5,885,320 N; 968,022 E.

W.P. 126-60

BORING DATE March 13, 1972

ORIGINATED BY VK

DATUM Geodetic

BOREHOLE TYPE Auger & sample with C.M.E.

COMPILED BY... VK

CHECKED BY

| SOIL PROFILE | | | | SAMPLES | | | ELEV. SCALE | DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT 20 40 60 80 100 | LIQUID LIMIT w_L PLASTIC LIMIT w_p WATER CONTENT w w_p — w — w_L WATER CONTENT % 15 30 45 | BULK DENSITY γ P.C.F. | REMARKS |
|-----------------------|----------------|---|-------------|---------|------|------------|-------------|---|--|------------------------------------|---------|
| ELEV. DEPTH (m) | ELEV. DEPTH | DESCRIPTION | STRAT. PLOT | NUMBER | TYPE | BLOWS/FOOT | | | | | |
| 0.0 | 551.1 | Ground Level | | | | | 550 | | | | |
| 0.0 | 551.1 | Het. mix. of clayey silt, sand & gravel. | | 1 | SS | 40 | | | | | |
| | | | | 2 | SS | 65 | | | | | |
| | | | | 3 | SS | 32 | | | | | |
| 164.0 | 538.1 | Brown Grey | | 4 | SS | 30 | 540 | | | | |
| 4.0 | 13.0 | | | 5 | SS | 11 | | | | | |
| | | Glacial Till | | 6 | TW | PM | | | | | |
| | | | | 7 | TW | PM | 530 | | | | |
| | | Firm to Hard | | 8 | S | 17 | | | | | |
| | | | | 9 | SS | 66 | 520 | | | | |
| | | | | 10 | SS | 41 | | | | | |
| 155.0 | 508.6 | | | 11 | SS | 23 | 510 | | | | |
| 17.0 | 42.5 | Silty sand to sandy silt, with some clay & occ. gravel. | | 12 | SS | 13 | | | | | |
| | | | | 13 | SS | 13 | 500 | | | | |
| | | Compact to Very Dense | | 14 | SS | 58 | 490 | | | | |
| 145.9 | 478.6 | | | 15 | SS | 147 | 480 | | | | |
| 22.1 | 72.5 | Het. mix. of clayey silt with sand & gravel (Glacial Till) (shale fragments throughout) | | 16 | SS | 100 | 470 | | | | |
| 142.5 | 467.6 | Hard | | | | | | | | | |
| 25.5 | 83.5 | Shale Bedrock | | | | | | | | | |
| 141.3 | 463.6 | Sound | | 17 | BXL | 90% | | | | | |
| 26.7 | 87.5 | End of Borehole | | | | | 460 | | | | |

15 $\frac{20}{10}$ 5 % STRAIN AT FAILURE

DESIGN SERVICES BRANCH

RECORD OF BOREHOLE NO 5

FOUNDATIONS OFFICE

JOB 72-11024

LOCATION

Co-ords: N 4 841 866, E 295 119

W.P. 126-60

BORING DATE

March 7, 1972

ORIGINATED BY VK

DATUM Gendetic

BOREHOLE TYPE

Auger & sample with C.M.E.

COMPILED BY VK

CHECKED BY

METRIC UNITS

| SOIL PROFILE | | SAMPLES | | | ELEV. SCALE | DYNAMIC PENETRATION RESISTANCE | | | | | LIQUID LIMIT | | | BULK DENSITY | REMARKS |
|-----------------|-------------|---|-------------|--------|-------------|--------------------------------|----|----|----|----|--------------|---------------|---------------|--------------|---------|
| ELEV. DEPTH (m) | ELEV. DEPTH | DESCRIPTION | STRAT. PLOT | NUMBER | TYPE | BLOWS/FOOT | 20 | 40 | 60 | 80 | 100 | PLASTIC LIMIT | WATER CONTENT | | |
| 166.2 | 551.8 | Ground Level | | | | | | | | | | | | | |
| 0.0 | 0.0 | Met. mix. of clayey silt with sand and gravel. | | 1 | SS | 36 | | | | | | | | | |
| | | | | 2 | SS | 37 | | | | | | | | | |
| | | | | 3 | SS | 38 | | | | | | | | | |
| 164.2 | 538.8 | Brown Grey | | 4 | SS | 21 | | | | | | | | | |
| 4.0 | 13.0 | Glacial Till | | 5 | SS | 29 | | | | | | | | | |
| | | Stiff to Hard | | 6 | SS | 12 | | | | | | | | | |
| | | | | 7 | SS | 81 | | | | | | | | | |
| | | | | 8 | SS | 51 | | | | | | | | | |
| | | | | 9 | SS | 120 | | | | | | | | | |
| | | | | 10 | SS | 94 | | | | | | | | | |
| | | | | 11 | SS | 36 | | | | | | | | | |
| | | | | 12 | SS | 17 | | | | | | | | | |
| 152.5 | 500.3 | Silty sand to sandy silt, with some clay and occ. gravel | | 13 | TM | PM | | | | | | | | | |
| 15.7 | 51.5 | Dense to Very Dense | | 14 | SS | 30 | | | | | | | | | |
| | | | | 15 | SS | 61 | | | | | | | | | |
| | | | | 16 | SS | 170 | | | | | | | | | |
| 146.2 | 479.8 | Met. mix. of clayey silt, sand and gravel. (Glacial Till) | | | | | | | | | | | | | |
| 21.9 | 72.0 | shale fragments below el. 474.4 - 474.5 m | | | | | | | | | | | | | |
| 142.9 | 468.8 | Hard | | 17 | SS | 100 | | | | | | | | | |
| 25.3 | 83.0 | Shale Bedrock | | 18 | RYT | 80% | | | | | | | | | |
| 141.4 | 463.8 | Sound | | 19 | BXL | 80% | | | | | | | | | |
| 26.8 | 88.0 | End of Borehole | | | | | | | | | | | | | |

20
15
10
% STRAIN AT FAILURE

RECORD OF BOREHOLE No 10

1 OF 1

METRIC

W.P. 615-89-00 LOCATION Coords.: N 4 842 042 E 295 018 ORIGINATED BY LO
DIST 8 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY LO
DATUM Geodetic DATE 1994 08 12 CHECKED BY BB

| 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 | | | | | |
| 163.1 | Ground Surface | | | | | | | | | | | | | | | | |
| 0.0 | CLAYEY SILT | | | | | * | | | | | | | | | | | |
| 0.3 | Trace Gravel | | | | | | | | | | | | | | | | |
| | Some Sand | | | | | | | | | | | | | | | | |
| | Stiff | | | | | | | | | | | | | | | | |
| 162.0 | (GLACIAL TILL) | | 1 | SS | 9 | | 162 | | | | | | | | | | |
| 1.1 | SILTY SAND TO SANDY SILT | | | | | | | | | | | | | | | | |
| | Trace of Clay | | 2 | SS | 22 | | | | | | | | | | | | |
| | Compact | | | | | | | | | | | | | | | | |
| 160.2 | | | 3 | SS | 13 | | | | | | | | | | | | |
| 2.9 | SAND | | | | | | 160 | | | | | | | | | | |
| | Poorly Graded | | 4 | SS | 10 | | | | | | | | | | | | |
| | Trace of Fines | | | | | | | | | | | | | | | | |
| | Loose | | | | | | | | | | | | | | | | |
| 159.4 | | | | | | | | | | | | | | | | | |
| 3.7 | CLAYEY SILT | | 5 | SS | 19 | | | | | | | | | | | | |
| | Trace to some Gravel | | | | | | | | | | | | | | | | |
| | Some Sand | | 6 | SS | 26 | | | | | | | | | | | | |
| | Stiff to Hard | | | | | | | | | | | | | | | | |
| | (GLACIAL TILL) | | 7 | SS | 27 | | 158 | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | 8 | SS | 35 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | 158 | | | | | | | | | | |
| | | | 9 | SS | 48 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | 154 | | | | | | | | | | |
| 153.5 | | | 10 | SS | 11 | | | | | | | | | | | | |
| 9.6 | End of Borehole | | | | | | | | | | | | | | | | |
| | * Water Level Not Established Due to the Walls Caving at 12 Feet. | | | | | | | | | | | | | | | | |

RECORD OF BOREHOLE No 11

1 OF 1

METRIC

W.P. 615-89-00 LOCATION Coords.: N 4 842 341, E 294 896 ORIGINATED BY T.G.
DIST 6 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY L.O.
DATUM Geodetic DATE 1994 08 15 CHECKED BY B.B.

| 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 | | | | | |
| 162.1 | Ground Surface | | | | | | | | | | | | | | | | |
| 0.0 | CLAYEY SILT TO SILT Traces of Sand Very Stiff | | 1 | SS | 23 | | | | | | | | | | | | |
| 160.7 | | | | | | | | | | | | | | | | | |
| 1.4 | SILTY SAND TO SAND Traces of fines Dense to Very Dense | | 2 | SS | 37 | | | | | | | | | | | | |
| 159.6 | | | | | | | | | | | | | | | | | |
| 2.5 | CLAYEY SILT TO SILT Traces of Sand Hard | | 3 | SS | 52 | | | | | | | | | | | | |
| 158.1 | | | | | | | | | | | | | | | | | |
| 4.0 | SAND - Poorly Graded, Traces of Fines, Very Dense | | 5 | SS | 61 | | | | | | | | | | | | |
| 157.7 | | | | | | | | | | | | | | | | | |
| 4.4 | CLAYEY SILT Trace of Gravel Some Sand Hard to Very Stiff (GLACIAL TILL) | | 6 | SS | 30 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | 7 | SS | 89 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | 8 | SS | 67 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | 9 | SS | 29 | | | | | | | | | | | | |
| 153.5 | | | | | | | | | | | | | | | | | |
| 8.6 | SANDY SILT Trace Gravel Trace Sand Occasional Seams of Sand Dense | | 10 | SS | 45 | | | | | | | | | | | | |
| 152.5 | | | | | | | | | | | | | | | | | |
| 9.6 | End of Borehole | | | | | | | | | | | | | | | | |

+3, x5: Numbers refer to
Sensitivity

20
15-5 (%) STRAIN AT FAILURE
10

RECORD OF BOREHOLE No 12

1 OF 1

METRIC

W.P. 815-89-00 LOCATION Coords.: N 4 842 571, E 294 803 ORIGINATED BY L.O.
 DIST 6 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY L.O.
 DATUM Geodetic DATE 1994 05 19 CHECKED BY B.B.

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | | | 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 | 20 40 60 80 100 | 20 40 60 80 100 | 20 40 60 80 100 | | |
| 161.4 | Ground Surface | | | | | | | | | | | | | |
| 0.0 | SANDY SILT Some Clay Very Stiff | | | | | | | | | | | | | |
| 180.4 | | | 1 | SS | 24 | | | | | | | | | |
| 1.0 | CLAYEY SILT TO SILT Some Sand Very Stiff to Hard (GLACIAL TILL) | | 2 | SS | 25 | | | | | | | | | |
| | | | 3 | SS | 19 | | | | | | | | | |
| | | | 4 | SS | 22 | | | | | | | | | |
| | Some Gravel | | 5 | SS | 100 | /30cm | | | | | | | | |
| | | | 6 | SS | 102 | /25cm | | | | | | | | |
| 156.1 | | | 7 | SS | 100 | /28cm | | | | | | | | |
| 5.3 | SANDY SILT Trace to some Gravel Very Dense | | 8 | SS | 88 | | | | | | | | | |
| 154.3 | | | | | | | | | | | | | | |
| 7.1 | SAND TO GRAVELLY SAND Traces of fines Very Dense | | 9 | SS | 77 | | | | | | | | | |
| 152.1 | | | | | | | | | | | | | | |
| 9.3 | End of Borehole | | | | | | | | | | | | | |

+3, x3: Numbers refer to
Sensitivity

20
15-5 (%) STRAIN AT FAILURE
10

RECORD OF BOREHOLE No 2

1 OF 1

METRIC

W.P. 804-89-00 FORMERLY 49-71-02 LOCATION Coords: N 4 842 634.4, E 294 775.1

ORIGINATED BY BRL

DIST 6 HWY 427 BOREHOLE TYPE Hollow Stem Auger

COMPILED BY BRL

DATUM Geodetic DATE 79/07/09

CHECKED BY

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT | | | UNIT WEIGHT 7 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 | | | | | | | W _p W W _L | | |
| | | | | | | | | SHEAR STRENGTH kPa ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL * LAB VANE | | | | | | | WATER CONTENT (%) 10 20 30 | | |
| 162.9 | Ground Surface | | | | | | | | | | | | | | | | |
| 0.0 | Glacial Till, Grey Very Stiff | | | | | | | | | | | | | | | | |
| 161.7 | | | | | | | | | | | | | | | | | |
| 1.2 | Silt, Grey, Compact to Dense With Occasional Thin Clay Layers | | 1 | SS | 20 | | | | | | | | | 0 49 49 2 | | | |
| | Clayey Silt | | 2 | SS | 35 | | | | | | | | | | | | |
| 158.3 | | | | | | | | | | | | | | | | | |
| 4.6 | Glacial Till Heterogeneous Mixture of Silt, Sand, Clay and Gravel Very Dense | | 3 | SS | 60 | /13cm | | | | | | | | 6 35 49 10 | | | |
| | | | 4 | SS | 60 | /10cm | | | | | | | | | | | |
| | | | 5 | SS | 70 | | | | | | | | | | | | |
| | | | 6 | SS | 60 | /10cm | | | | | | | | 23 48 29 0 | | | |
| | Shale Fragments | | 7 | SS | 111 | /23cm | | | | | | | | | | | |
| 151.0 | | | | | | | | | | | | | | | | | |
| 150.6 | Weathered Shale | | 8 | SS | 80 | /15cm | | | | | | | | | | | |
| 12.3 | End of Borehole | | | | | | | | | | | | | | | | |
| | Note: Borehole Caved in at 1.2 m Shortly After Completion of Boring | | | | | | | | | | | | | | | | |

RECORD OF BOREHOLE No 13

1 OF 1

METRIC

W.P. 615-89-00 LOCATION Coords.: N 4 842 931, E 294 659 ORIGINATED BY T.G.
DIST 8 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY L.O.
DATUM Geodetic DATE 1994 08 15 CHECKED BY B.B.

| 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 | | | | | |
| 162.5 | Ground Surface | | | | | | | | | | | | | | | | |
| 0.0 | CLAYEY SILT TO SILT Trace Gravel Trace to some Sand Very Stiff to Hard | | 1 | SS | 58 | | 182 | | | | | | | | | | |
| | | | 2 | SS | 17 | | | | | | | | | | | | |
| | | | 3 | SS | 122 | | 160 | | | | | | | | | | |
| | | | 4 | SS | 125 | | | | | | | | | | | | |
| | | | 5 | SS | 149 | /23cm | 158 | | | | | | | | | | |
| 157.3 | | | 6 | SS | 150 | /28cm | | | | | | | | | | | |
| 5.2 | SILTY SAND Some Gravel Some Fines Dense | | 7 | SS | 32 | | | | | | | | | | | | |
| 156.6 | | | 8 | SS | 150 | | 156 | | | | | | | | | | |
| 5.9 | CLAYEY SILT Traces of Gravel Some Sand Hard | | 9 | SS | 112 | /8cm | 154 | | | | | | | | | | |
| 155.4 | | | 10 | SS | 100 | /8cm | | | | | | | | | | | |
| 7.1 | BEDROCK Weathered Gray Shale Hard | | | | | | | | | | | | | | | | |
| 152.9 | | | | | | | | | | | | | | | | | |
| 9.6 | End of Borehole | | | | | | | | | | | | | | | | |

RECORD OF BOREHOLE No 14

1 OF 1

METRIC

W.P. 815-89-00 LOCATION Coords.: N 4 843 234, E 294 581 ORIGINATED BY T.C.
DIST 6 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY L.O.
DATUM Geodetic DATE 1994 08 17 CHECKED BY B.B.

| SOIL PROFILE | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | | | PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT | | | 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 | W _p | W | W _L | | |
| 163.7 | Ground Surface | | | | | | | | | | | | | | | |
| 0.0 | CLAYEY SILT TO SILT Traces of Gravel Some Sand Hard (GLACIAL TILL) | | 1 | SS | 50 | | | | | | | | | | | |
| | | | 2 | SS | 129 | | | | | | | | | | | |
| | | | 3 | SS | 130 | | | | | | | | | | | |
| | | | 4 | SS | 119 | | | | | | | | | | | |
| | | | 5 | SS | 55 | | | | | | | | | | | |
| 158.5 | | | 6 | SS | 120 | /8cm | | | | | | | | | | |
| 5.2 | BEDROCK Grey Weathered Shale Hard | | 7 | SS | 55 | | | | | | | | | | | |
| | | | 8 | SS | 106 | /23cm | | | | | | | | | | |
| | | | 9 | SS | 118 | /15cm | | | | | | | | | | |
| 154.5 | | | 10 | SS | 128 | /10cm | | | | | | | | | | |
| 9.2 | End of Borehole | | | | | | | | | | | | | | | |

+3, x5: Numbers refer to
Sensitivity

20
15-5 (%) STRAIN AT FAILURE
10

RECORD OF BOREHOLE No 15

1 OF 1

METRIC

W.P. 815-89-00 LOCATION Coords.: N 4 843 449, E 294 548 ORIGINATED BY I.C.
 DIST 8 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY L.O.
 DATUM Geodetic DATE 1994 08 17 CHECKED BY B.B.

| 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 | | | SHEAR STRENGTH kPa | | | | | | | | | |
| 164.4 | Ground Surface | | | | | | | 20 | 40 | 60 | 80 | 100 | | | | | |
| 0.0 | CLAYEY SILT Trace Gravel Some Sand | | | | | | 164 | | | | | | | | | | |
| 163.4 | (GLACIAL TILL) | | | | | | | | | | | | | | | | |
| 1.0 | SILTY SAND TO SAND Traces of Fines Compact | | 1 | SS | 28 | | | | | | | | | | | | |
| 162.3 | | | 2 | SS | 27 | | | | | | | | | | | | |
| 2.1 | BEDROCK Weathered Gray Shale Hard | | 3 | SS | 65 | | 162 | | | | | | | | | | |
| | | | 4 | SS | 103 | | | | | | | | | | | | |
| | | | 5 | SS | 117 | /28cm | | | | | | | | | | | |
| | | | 6 | SS | 117 | /25cm | 160 | | | | | | | | | | |
| | | | 7 | SS | 140 | /28cm | | | | | | | | | | | |
| | | | 8 | SS | 120 | /13cm | 158 | | | | | | | | | | |
| | | | 9 | SS | 120 | /10cm | 156 | | | | | | | | | | |
| 155.1 | | | 10 | SS | 128 | /13cm | | | | | | | | | | | |
| 9.3 | End of Borehole | | | | | | | | | | | | | | | | |

RECORD OF BOREHOLE No. 6

Co-ORDS: N 4843 579, E 294 564
 Zone 15, 891, 000, F 945, 411

49-21-04

COMPILED BY: BSL

DIST 6 HWY 427 BOREHOLE TYPE Hollow Stem Auger

COMPILED BY: BSL

DATUM Geodetic DATE July 11, 1979

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 (m) | ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | 'N' VALUES | | | 20 40 60 80 100 | | | | | | | | | | SHEAR STRENGTH | | | WATER CONTENT (%) | | |
| | | | | | | | | | | | | | | | | | | | ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE | | | 10 20 30 | | |
| METRIC UNITS | | | | | | | | | | | | | | | | | | | | | | | | |
| 169.7 | 556.7 | Ground Surface | | | | | | | | | | | | | | | | | | | | | | |
| 0.0 | 0.0 | Clay: intermediate plasticity, brown, very stiff. | | 1 | SS | 20 | | 550 | | | | | | | | | | | | | | | | |
| 100.9 | 547.7 | | | 2 | SS | 31 | | | | | | | | | | | 6 39 41 14 | | | | | | | |
| 2.7 | 9.0 | Glacial Till: Heterogeneous mixture of clay, silt, sand & gravel. Brown Grey, very stiff to hard | | 3 | SS | 35 | | 540 | | | | | | | | | | | | | | | | |
| | | | | 4 | SS | 100/5" | | | | | | | | | | | 14 44 31 11 | | | | | | | |
| | | | | 5 | SS | 58 | | 530 | | | | | | | | | | | | | | | | |
| | | Becoming more cohesive. Containing frequent shale fragments. | | 6 | SS | 37 | | | | | | | | | | | 5 2 47 46 | | | | | | | |
| | | | | 7 | SS | 46 | | 520 | | | | | | | | | | | | | | | | |
| | | | | 8 | SS | 63 | | | | | | | | | | | | | | | | | | |
| | | | | 9 | SS | 107 | | 510 | | | | | | | | | | | | | | | | |
| 154.6 | 507.2 | | | 10 | SS | 116 | | | | | | | | | | | | | | | | | | |
| 15.1 | 49.5 | End of Borehole | | | | | | | | | | | | | | | | | | | | | | |
| | | Note: Hole open to 44 feet on completion. | | | | | | | | | | | | | | | | | | | | | | |

METRIC UNITS

RECORD OF BOREHOLE No 1

Co-ords: N 4 043 591, E 294 493

49-71-04

LOCATION Co-ords. N 15,891,045, E 966,184

ORIGINATED BY

6 HWY 427

BOREHOLE TYPE Hollow Stem Auger

COMPILED BY BPL

Geotechnical

DATE July 16, 1979

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 (m) | ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | 'N' VALUES | | | 20 40 60 80 100 | | | | | | | | | | SHEAR STRENGTH | | | WATER CONTENT (%) | | |
| | | | | | | | | | | | | | | | | | | | ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE | | | 10 20 30 | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| 168.8 | 553.8 | Ground Surface | | | | | | | 550 | | | | | | | | | | | | | | | |
| 166.4 | 545.8 | | | 1 | SS | 23 | | | | | | | | | | | | | | | | | | |
| 2.4 | 8.0 | Glacial Till: Heterogeneous mixture of clay, silt, sand & gravel. Hard | <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><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| | | | | | | | | | | | | | | | | | | | | |

METRIC UNITS

RECORD OF BOREHOLE NO. 5

Co-ords: N 4 843 605, E 294 562

49-71-04

Co-ords: N 11, 961, 581, 044, 517

BOREHOLE TYPE Hollow Stem Auger

COMPLETED BY BRJ

Condition

DATE July 11, 1979

CHECKED BY

| SOIL PROFILE | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | | | UNIT WEIGHT Y | REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL |
|----------------|------------|---|------------|--------|-------------------------|-----------------|--|----|----|----|-----|------------------|--|
| ELEV DEPTH (m) | ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | 'N' VALUES | 20 | 40 | 60 | 80 | 100 | | |
| 169.6 | 556.4 | Ground Surface | | | | | | | | | | | |
| 0.0 | 0.0 | Clay: low to intermediate plasticity, very stiff, brown. | | 1 | SS | 21 | | | | | | | |
| 166.2 | 545.4 | | | 2 | SS | 25 | | | | | | | |
| 3.4 | 11.0 | Glacial Till: Heterogeneous mixture of clay, silt, sand & gravel. Hard. | | 3 | SS | 44 | | | | | | | 3 12 70 15 |
| | | silt, very dense | | 4 | SS | 100/4" | | | | | | | |
| | | | | 5 | SS | 165 | | | | | | | 0 10 85 5 |
| | | | | 6 | SS | 53 | | | | | | | |
| | | | | 7 | SS | 36 | | | | | | | |
| | | containing numerous shale fragments | | 8 | SS | 62 | | | | | | | |
| 154.5 | 506.9 | | | 9 | SS | 134 | | | | | | | |
| 15.1 | 49.5 | End of Borehole | | 10 | SS | 80 | | | | | | | |

Note:

- 1) Hole caved in at 21 feet after completion.
- 2) Refusal to augering at 46 feet.

METRIC UNITS

RECORD OF BOREHOLE No 16

1 OF 1

METRIC

W.P. 615-89-00 LOCATION Coords.: N 4 843 738 E 294 508 ORIGINATED BY T.C.
DIST 8 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY L.O.
DATUM Geodetic DATE 1984 08 17 CHECKED BY B.B.

| SOIL PROFILE | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | | | PLASTIC UNIT LIMIT | | | 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 | W _P | NATURAL MOISTURE CONTENT W | | |
| 165.3 | Ground Surface | | | | | | | | | | | | | | | |
| 0.0 | CLAYEY SILT Trace to some Gravel Some Sand Stiff | | 1 | SS | 12 | | | | | | | | | | | |
| | | | 2 | SS | 11 | | | | | | | | | | | |
| | | | 3 | SS | 8 | | | | | | | | | | | |
| | | | 4 | SS | 12 | | | | | | | | | | | |
| 160.9 | (FILL MATERIAL) | | 5 | SS | 13 | | | | | | | | | | | |
| 4.4 | CLAYEY SILT - (GLACIAL TILL) Trace Gravel Some Sand Very Stiff | | 6 | SS | 18 | | | | | | | | | | | |
| 160.1 | | | 7 | SS | 130 | /23cm | | | | | | | | | | |
| 5.2 | SILTY SAND Trace to some Gravel Traces of Clay Very Dense (GLACIAL TILL) | | 8 | SS | 158 | /25cm | | | | | | | | | | |
| | | | 9 | SS | 129 | /28cm | | | | | | | | | | |
| 158.1 | | | | | | | | | | | | | | | | |
| 158.8 | CL SI-Trace SA, Some GR - (TILL) | | 10 | SS | 121 | /20cm | | | | | | | | | | |
| 9.5 | End of Borehole | | | | | | | | | | | | | | | |

RECORD OF BOREHOLE NO. 1

Co-ords: N 4843 851, E 294 447

49-71-07

LOCATION Co-ords: N15,891,900; E966,035

ORIGINATED BY BRL

DIST 6 HWY 427

BOREHOLE TYPE 3 1/2" Diam. HSA and Cone Test

COMPILED BY BL

DATUM Geodetic

DATE August 10, 1979

CHECKED BY RS

METRIC UNITS

| 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 (m) | DESCRIPTION | STRAT. PLOT | NUMBER | TYPE | | | 20 | 40 | 60 | 80 | 100 | | | |
| 160.9 | Ground Level | | | | | | | | | | | | | |
| 0.0 | Sandy silt, dark gray to grey, compact and slightly cemented. | | 1 | SS | 22 | | | | | | | | | |
| 198.8 | Glacial Till | | 2 | SS | 8 | | | | | | | | | |
| 2.1 | Silty sand, some gravel, very dense | | 3 | SS | 34 | | | | | | | | | |
| | | | 4 | SS | 40 | | | | | | | | | |
| | | | 5 | SS | 1177 | 6" | | | | | | | | |
| | | | 6 | SS | 1267 | 6" | | | | | | | | |
| | | | 7 | SS | 1307 | 6" | | | | | | | | |
| 154.2 | Sand with gr., v. dense | | 8 | SS | 1467 | 9" | | | | | | | | |
| 6.7 | | | 9 | SS | 1507 | | | | | | | | | |
| | Silty clay, some sand, reddish, hard. | | 10 | SS | 1227 | 9" | | | | | | | | |
| 151.6 | | | 11 | SS | 58 | | | | | | | | | |
| 9.3 | Shale bedrock, fine texture and fissile, weathered. | | 12 | SS | 1007 | 5" | | | | | | | | |
| | | | 13 | SS | 1287 | 10" | | | | | | | | |
| | | | 14 | SS | 1007 | 4" | | | | | | | | |
| 148.4 | | | 15 | SS | 1107 | 4" | | | | | | | | |
| 12.5 | | | 16 | SS | 1237 | 6" | | | | | | | | |
| | End of Borehole | | | | | | | | | | | | | |

520

510

500

490

20 38 (42)
53 34 (13)
18 46 (36)

RECORD OF BOREHOLE No 17

1 OF 1

METRIC

W.P. 615-89-00 LOCATION Coords.: N 4 843 984, E 294 488 ORIGINATED BY T.C.
 DIST 6 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY L.O.
 DATUM Geodetic DATE 1994 08 16 CHECKED BY B.B.

| 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 | | | | | |
| 168.1 | Ground Surface | | | | | | | | | | | | | | | | |
| 0.0 | CLAYEY SILT Trace to some Gravel Some Sand Stiff to Hard | | 1 | SS | 26 | | | | | | | | | | | | |
| | | | 2 | SS | 26 | | | | | | | | | | | | |
| | | | 3 | SS | 12 | | | | | | | | | | | | |
| | | | 4 | SS | 11 | | | | | | | | | | | | |
| | | | 5 | SS | 11 | | | | | | | | | | | | |
| 163.7 | (FILL MATERIAL) | | | | | | | | | | | | | | | | |
| 4.4 | SILTY SAND INTERBEDDED WITH CLAYEY SILT Traces of Gravel Compact | | 6 | SS | 12 | | | | | | | | | | | | |
| | | | 7 | SS | 24 | | | | | | | | | | | | |
| | | | 8 | SS | 22 | | | | | | | | | | | | |
| 161.0 | (GLACIAL TILL) | | | | | | | | | | | | | | | | |
| 7.1 | GRAVELLY SAND Traces of Fines Very Dense | | 9 | SS | 54 | | | | | | | | | | | | |
| 158.8 | SANDY SILT, Trace Gravel Trace Clay, Very Dense | | 10 | SS | 105 | /25cm | | | | | | | | | | | |
| 9.6 | End of Borehole | | | | | | | | | | | | | | | | |

+3, x5: Numbers refer to
Sensitivity

20
15-25 (%) STRAIN AT FAILURE
10

RECORD OF BOREHOLE No 18

1 OF 1

METRIC

W.P. 615-89-00 LOCATION Coords.: N 4 844 232 E 294 431 ORIGINATED BY T.G.
DIST 6 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY L.O.
DATUM Geodetic DATE 1984 08 18 CHECKED BY B.B.

| 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 | | | SHEAR STRENGTH kPa | | | | | | | | | | |
| 171.7 | Ground Surface | | | | | | | 20 | 40 | 60 | 80 | 100 | | | | | | |
| 0.0 | CLAYEY SILT Trace Gravel Some Sand Very Stiff | | 1 | SS | 26 | | 170 | | | | | | | | | | | |
| 169.8 | (FILL MATERIAL) | | 2 | SS | 20 | | | | | | | | | | | | | |
| 2.1 | CLAYEY SILT Trace to some Gravel Some Sand Very Stiff to Hard. (GLACIAL TILL) | | 3 | SS | 23 | | | 168 | | | | | | | | | | |
| | | | 4 | SS | 26 | | | | | | | | | | | | | |
| | | | 5 | SS | 32 | | | | | | | | | | | | | |
| | Brown | | 6 | SS | 31 | | | | | | | | | | | | | |
| | Grey | | 7 | SS | 27 | | | | | | | | | | | | | |
| | | | 8 | SS | 39 | | | | | | | | | | | | | |
| | | | 9 | SS | 138 | | | | /25cm | | | | | | | | | |
| 163.1 | | | | | | | | | | | | | | | | | | |
| 8.6 | SILTY SAND TO SAND Traces of Gravel Traces of Fines | | 10 | SS | 61 | | | | | | | | | | | | | |
| 162.1 | | | | | | | | | | | | | | | | | | |
| 9.6 | End of Borehole | | | | | | | | | | | | | | | | | |

| RECORD OF BOREHOLE No 19 | | | | | | | | | | 1 OF 1 | | METRIC | | | | | |
|--------------------------|---|------------|--|------|------------|----------------------------|--------------------|---|--|--------|--|--------|------------------------------------|-------------------------------------|-----------------------------------|--|--|
| W.P. 615-89-00 | | | LOCATION Coords.: N 4 844 556, E 294 384 | | | ORIGINATED BY T.C. | | | | | | | | | | | |
| DIST 8 HWY 427 | | | BOREHOLE TYPE Solid Stem Auger | | | COMPILED BY L.O. | | | | | | | | | | | |
| DATUM Geodetic | | | DATE 1984 08 18 | | | CHECKED BY B.B. | | | | | | | | | | | |
| 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 | | | SHEAR STRENGTH kPa 20 40 60 80 100 ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE | | | | | | | | | |
| 178.1 | Ground Surface | | | | | | | | | | | | | | | | |
| 0.0 | SANDY SILT Trace to some Gravel Some Sand Compact | | 1 | SS | 12 | | | | | | | | | | | | |
| 174.3 | (FILL MATERIAL) | | 2 | SS | 20 | | | | | | | | | | | | |
| 1.8 | CLAYEY SILT Trace to some Gravel Some Sand Stiff to Hard | | 3 | SS | 31 | | | | | | | | | | | | |
| | | | 4 | SS | 14 | | | | | | | | | | | | |
| | | | 5 | SS | 11 | | | | | | | | | | | | |
| 170.9 | (FILL MATERIAL) | | 6 | SS | 18 | | | | | | | | | | | | |
| 5.2 | | | 7 | SS | 28 | | | | | | | | | | | | |
| | Brown Grey | | 8 | SS | 31 | | | | | | | | | | | | |
| | SILT TO CLAYEY SILT Trace Gravel Trace to some Sand Very Stiff to Hard (GLACIAL TILL) | | 9 | SS | 20 | | | | | | | | | | | | |
| 168.5 | | | 10 | SS | 49 | | | | | | | | | | | | |
| 9.6 | End of Borehole | | | | | | | | | | | | | | | | |



TRANSPORTATION AND
COMMUNICATIONS
COMMISSION

RECORD OF BOREHOLE No 1

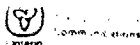
METRIC

W P 153-80-02 LOCATION Co-ords. N 4 844 821.2; E 294 328.3 ORIGINATED BY V.P.
DIST 6 HWY 427 BOREHOLE TYPE Hollow Stem Augers and Cone Test COMPILED BY V.P.
DATUM Geodetic DATE 81-12-10 to 81-12-11 CHECKED BY CP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 SHEAR STRENGTH ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL x LAB VANE | 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 | | | | | | | | |
| 171.9 0.0 | Ground Surface | | | | | | | | | | | | |
| | Mottled | | 1 | SS | 9 | | | | | | | | |
| | | | 2 | SS | 13 | | | | | | | | |
| | | | 3 | SS | 29 | | | | | | | | |
| | Brown Grey (Glacial Till) Silty Clay with Sand trace of Gravel | | 4 | SS | 27 | | | | | | | | |
| | | | 5 | SS | 21 | | | | | | | | |
| | | | 6 | SS | 35 | | | | | | | | |
| | | | 7 | SS | 14 | | | | | | | | |
| | Stiff to Hard | | 8 | SS | 16 | | | | | | | | |
| | | | 9 | SS | 53 | | | | | | | | |
| | | | 10 | SS | 37 | | | | | | | | |
| 160.0 11.9 | Silty Sand Dense | | 11 | SS | 37 | | | | | | | | |
| 158.0 | Boulder | | 12 | BC | - | | | | | | | | |
| 13.9 | Break corebarrel in borehole Abandon hole End of Borehole * Borehole caved at shallow depth. Perched water level at 0.5 metres. | | | | | | | | | | | | |

3, x 5: Numbers refer to
Sensitivity

20
15
10
5 (%) STRAIN AT FAILURE



RECORD OF BOREHOLE No 5

METRIC

W P 153-80-02 LOCATION Co-ords. N 4 844 920.5; E 294 356.5 ORIGINATED BY V.P.
DIST 6 HWY 427 BOREHOLE TYPE Solid Stem Auger/BW Casing and Cone Test COMPILED BY V.P.
DATUM Geodetic DATE 81-12-16 to 81-12-17 CHECKED BY [Signature]

| 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 | | | | | | | | |
| 171.5 | Ground Surface | | | | | | | | | | | |
| 0.0 | (Glacial Till) | | 1 | SS | 12 | | | | | | | |
| | Silty Clay | | 2 | SS | 15 | | | | | | | |
| | Brown Gray | | 3 | SS | 37 | | | | | | | |
| | | | 4 | SS | 35 | | | | | | | |
| | with Sand trace of Gravel | | 5 | SS | 27 | | | | | | | |
| | Stiff to Hard | | 6 | SS | 15 | | | | | | | |
| | Cobble | | 7 | SS | 20 | | | | | | | |
| | Gravel Cobbles & Boulders | | 8 | SS | 41 | | | | | | | |
| 162.4 | | | 9 | SS | 124 | | | | | | | |
| 9.1 | Gray Silty Sand to Sand | | 10 | SS | 77 | | | | | | | |
| | Varying Amounts of Gravel | | 11 | SS | 53 | | | | | | | |
| | occasional Cobbles and Boulders throughout | | 12 | SS | 145 | | | | | | | |
| | Very Dense | | 13 | SS | 148/23 cm | | | | | | | |
| 149.8 | | | 14 | SS | 147/23 cm | | | | | | | |
| 21.7 | End of Borehole | | | | | | | | | | | |
| | * Note: W.L. after 24 hours | | | | | | | | | | | |
| | Refusal to augering at 8.2 metres | | | | | | | | | | | |
| | Move BH 1.2 m south | | | | | | | | | | | |
| | Drive BW casing and run bi-cone 18.3 to 21.3 metres. | | | | | | | | | | | |

* 3, * 5: Numbers refer to Sensitivity

20
15
10
* 5 (%) STRAIN AT FAILURE



RECORD OF BOREHOLE No 2

METRIC

W P 88-78-22 LOCATION Co-ords. N 4 845 140.9; E 294 264.6 ORIGINATED BY R.Z.
DIST 6 HWY 427 BOREHOLE TYPE Hollow Stem Augers COMPILED BY R.Z.
DATUM Geodetic DATE 82 05 14 CHECKED BY *SP*

| 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 | | | | | |
| 172.1 | Ground Level | | | | | | | | | | | | | | | | |
| 0.0 | (Glacial Till) | | | | | | 172 | | | | | | | | | | |
| | Mottled Firm | | 1 | SS | 7 | | | | | | | | | | | | |
| | Silty Clay with Sand | | 2 | SS | 20 | | | | | | | | | | | | |
| | Trace of Gravel | | 3 | SS | 45 | | 170 | | | | | | | | | | 9 21 48 22 |
| | Brown Gray | | 4 | SS | 58 | | | | | | | | | | | | |
| | occ. Sand Seams | | 5 | SS | 47 | | 168 | | | | | | | | | | |
| | Very Stiff to Hard | | 6 | SS | 52 | | | | | | | | | | | | |
| 165.7 | | | 7 | SS | 100/ | 28 cm | 166 | | | | | | | | | | |
| 6.4 | (Glacial Till) | | | | | | | | | | | | | | | | |
| | Silt to Silty Clay | | 8 | SS | 100 | | 164 | | | | | | | | | | 16 38 40 6 |
| | and Sand | | | | | | | | | | | | | | | | |
| | Varying amounts of | | | | | | | | | | | | | | | | |
| | Gravel | | | | | | | | | | | | | | | | |
| | occ. Cobbles and | | | | | | | | | | | | | | | | |
| | Boulders Hard | | 9 | SS | 100/ | 23 cm | | | | | | | | | | | |
| 162.5 | | | | | | | | | | | | | | | | | |
| 9.6 | End of Borehole | | | | | | | | | | | | | | | | |

*3, *5. Numbers refer to
Sensitivity

20
15 5 (% STRAIN AT FAILURE
10

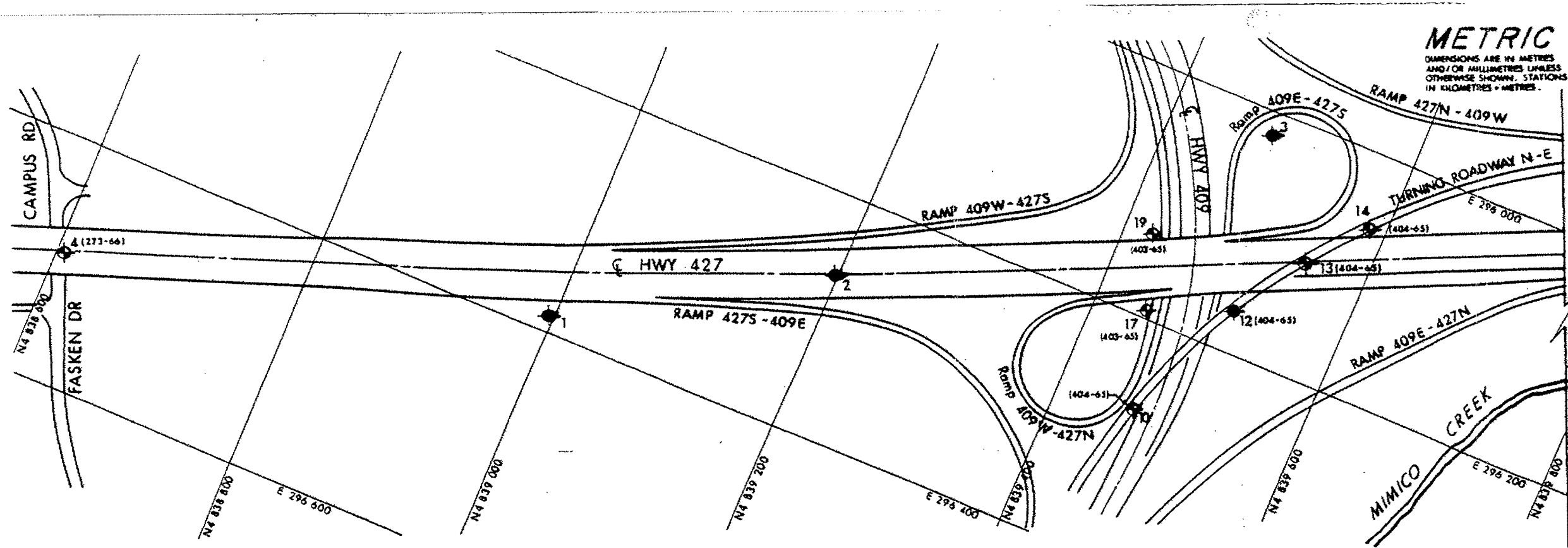
RECORD OF BOREHOLE No 20

1 OF 1

METRIC

W.P. 615-89-00 LOCATION Coords.: N 4 845 292, E 294 270 ORIGINATED BY L.O.
 DIST 8 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY L.O.
 DATUM Geodetic DATE 1994 08 19 CHECKED BY B.B.

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | | | PLASTIC NATURAL LIQUID LIMIT MOISTURE CONTENT LIMIT | | | 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 | W _p | W | W _L | | |
| 179.4 | Ground Surface | | | | | | | | | | | | | | | | |
| 0.0 | CLAYEY SILT Trace Gravel Trace to some Sand Firm to Stiff | | 1 | SS | 8 | | | | | | | | | | | | |
| | | | 2 | SS | 18 | | | | | | | | | | | | |
| | | | 3 | SS | 14 | | | | | | | | | | | | |
| | | | 4 | SS | 6 | | | | | | | | | | | | |
| | | | 5 | SS | 13 | | | | | | | | | | | | |
| | | | 6 | SS | 12 | | | | | | | | | | | | |
| 173.7 | (FILL MATERIAL) | | 7 | SS | 15 | | | | | | | | | | | | |
| 5.7 | CLAYEY SILT Trace Gravel Trace to some Sand Suff to Hard (GLACIAL TILL) | | 8 | SS | 24 | | | | | | | | | | | | |
| | | | 9 | SS | 83 | | | | | | | | | | | | |
| 169.8 | | | 10 | SS | 50 | | | | | | | | | | | | |
| 9.8 | End of Borehole | | | | | | | | | | | | | | | | |

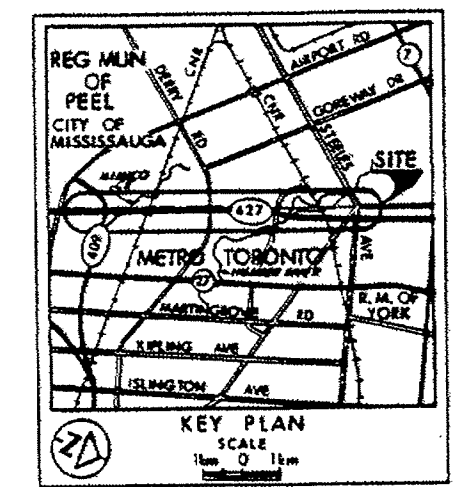


CONT No
WP No 615-89-00

HIGH MAST LIGHTING
HWY 427 FROM CAMPUS RD
FASKEN DR TO STEELES AVE

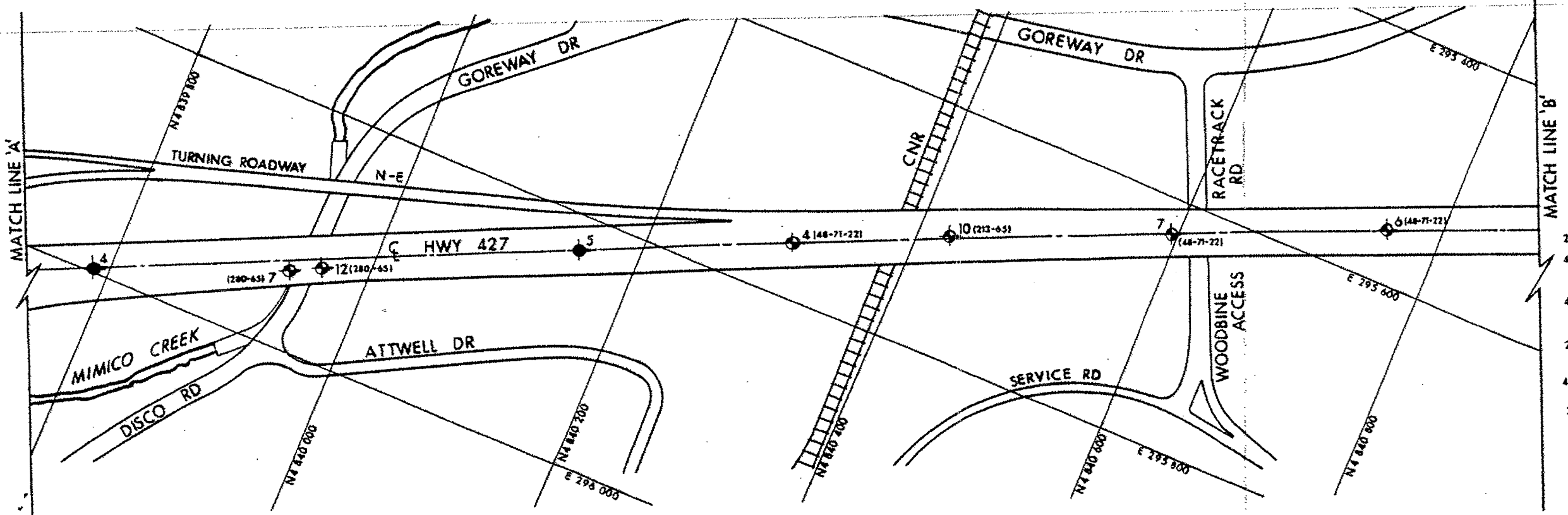
SHEET

BORE HOLE LOCATIONS & SOIL STRATA



LEGEND

- Bore Hole
- ⊕ Dynamic Cone Penetration Test (Cone)
- ⊗ Bore Hole & Cone
- N Blows/0.3m (Std Pen Test, 475 J/blow)
- CONE Blows/0.3m (60° Cone, 475 J/blow)
- ✚ Wt at time of investigation
1972 01, 1972 02, 1972 03, 1972 11,
1988 03 & 1994 08



| No | ELEVATION | CO-ORDINATES NORTH | EAST |
|----|-----------|-----------------------|---------|
| 1 | 165.9 | 4 838 993 | 296 386 |
| 2 | 164.5 | 4 839 198 | 296 265 |
| 3 | 163.0 | 4 839 483 | 296 019 |
| 4 | 166.7 | 4 839 786 | 295 997 |
| 5 | 171.8 | 4 840 151 | 295 829 |
| 6 | 167.4 | 4 838 605 | 296 492 |
| 7 | 159.7 | 4 839 441 | 296 191 |
| 17 | 161.3 | 4 839 425 | 296 133 |
| 19 | 160.3 | 4 839 462 | 296 279 |
| 10 | 163.4 | 4 839 511 | 296 165 |
| 12 | 163.6 | 4 839 549 | 296 106 |
| 13 | 161.1 | 4 839 586 | 296 061 |
| 14 | 155.7 | 4 839 936 | 295 936 |
| 7 | 155.6 | 4 839 961 | 295 924 |
| 12 | 173.0 | 4 840 310 | 295 733 |
| 4 | 171.1 | 4 840 755 | 295 558 |
| 6 | 165.3 | 4 840 593 | 295 629 |
| 7 | 165.9 | 4 840 425 | 295 701 |

NOTE
The boundaries between soil strata have been established
only at Bore Hole locations. Between Bore Holes the
boundaries are assumed from geological evidence.

NOTE: The complete foundation investigation and design report for
this project and other related documents may be examined at the
Engineering Materials Office, Department of Information Services,
this report and related documents is specifically excluded in
accordance with the conditions of Section GC 2.01 of O.P.S. Gen Cond.

| REV. | DATE | BY | DESCRIPTION |
|------|------------|----|-------------|
| 1 | 1994 11 17 | DT | DRWING |

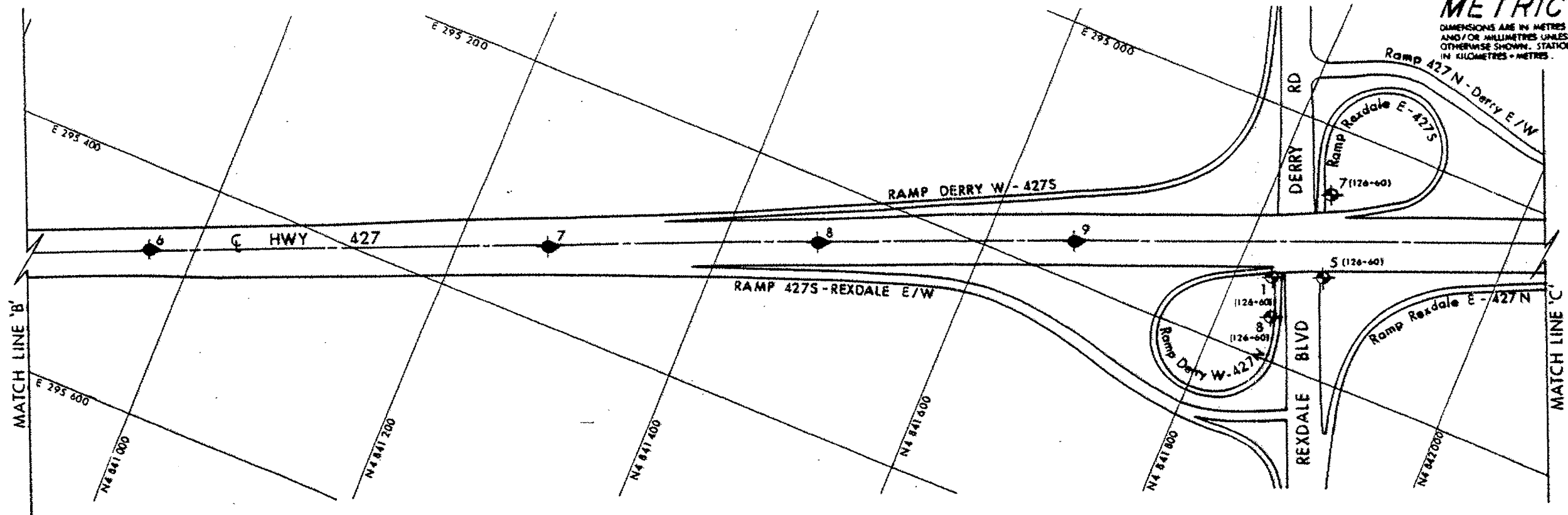
Geocres No 30M12-224

| HWY No | CHECKED BY | DATE | DIST |
|--------|------------|------------|------|
| 427 | KA | 1994 11 17 | 6 |


| DRWING | CHECKED BY | DATE | SITE |
|-------------|------------|------------|------|
| 615-89-00-A | DT | 1994 11 17 | |

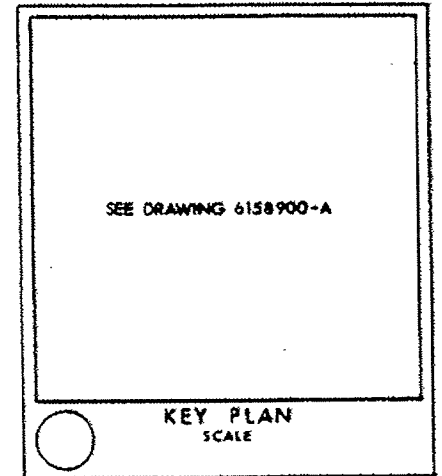
PLANS
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NOTE
For Soil details refer to
Record of Borehole Sheets



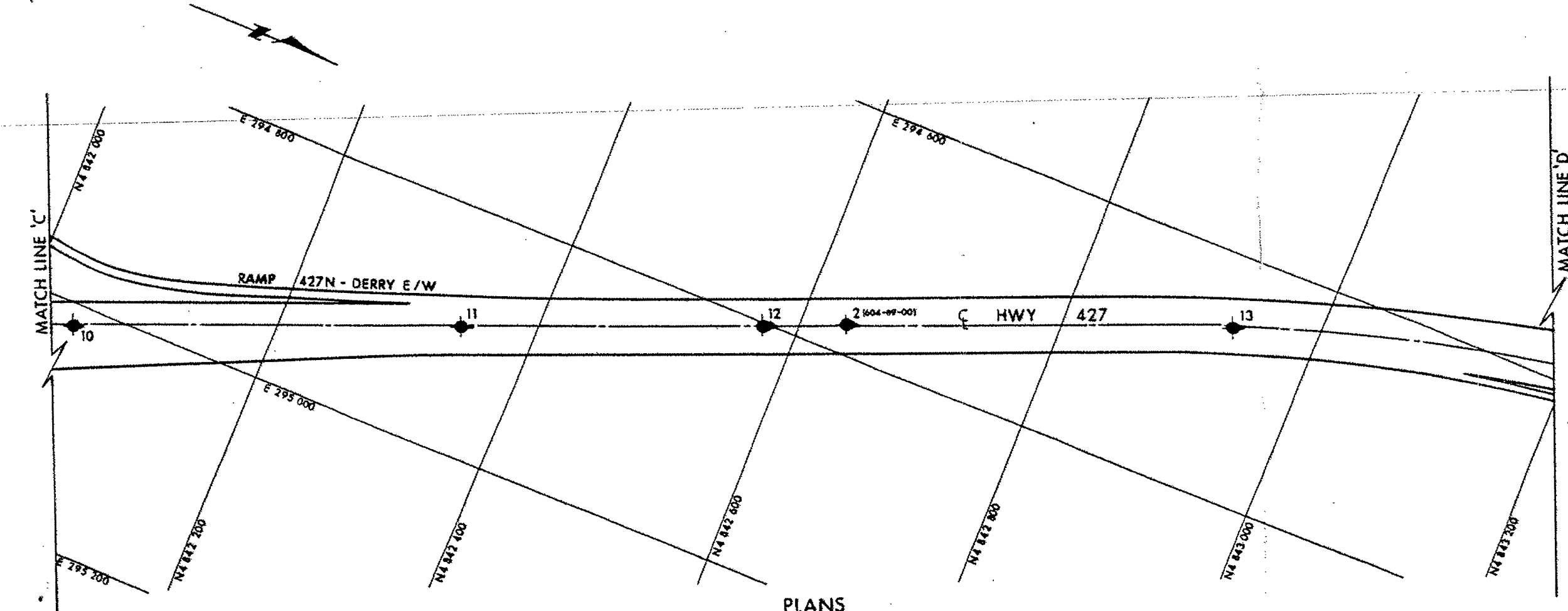
METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES UNLESS
OTHERWISE SHOWN. STATIONS
IN KILOMETRES + METRES.

| | | |
|---|--|--|
| CONT No WP No 615-89-00 | |  SHEET |
| HIGH MAST LIGHTING HWY 427 FROM CAMPUS RD/ FASKEN DR TO STEELES AVE | | |
| BORE HOLE LOCATIONS & SOIL STRATA | | |



| LEGEND | |
|--------|---|
| ◆ | Bore Hole |
| ⊕ | Dynamic Cone Penetration Test (Cone) |
| ◆ | Bore Hole & Cone |
| N | Blows/0.3m (Std Pen Test, 475 l/blow) |
| CONE | Blows/0.3m (60° Cone, 475 l/blow) |
| + | WE at time of investigation 1972 03, 1973 02, 1979 07 & 1994 08 |

| No | ELEVATION | CO-ORDINATES | |
|----|-----------|--------------|---------|
| | | NORTH | EAST |
| 6 | 168.7 | 4 840 964 | 295 467 |
| 7 | 166.3 | 4 841 267 | 295 339 |
| 8 | 165.5 | 4 841 472 | 295 251 |
| 9 | 164.6 | 4 841 669 | 295 169 |
| 10 | 163.1 | 4 842 042 | 295 018 |
| 11 | 162.1 | 4 842 341 | 294 896 |
| 12 | 161.4 | 4 842 571 | 294 803 |
| 13 | 162.5 | 4 842 931 | 294 659 |
| 1 | 168.4 | 4 841 828 | 295 134 |
| 5 | 168.2 | 4 841 866 | 295 119 |
| 7 | 168.0 | 4 841 846 | 295 053 |
| 8 | 168.1 | 4 841 840 | 295 165 |
| 2 | 162.9 | 4 842 634 | 294 775 |



PLANS
SCALE
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NOTE
For Soil details refer to
Record of Borehole Sheets

NOTE
The boundaries between soil strata have been established
only at Bore Hole locations. Between Bore Holes the
boundaries are assumed from geological evidence.

NOTE The complete foundation investigation and design report for
this project and other related documents may be examined at the
Engineering Materials Office Downtown. Information contained in
this report and related documents is specifically included in
accordance with the conditions of Section GC 2.01 of CP3 Gen Con

| DATE | BY | DESCRIPTION |
|-------------------|---------|-----------------|
| Geos No 30M12-224 | | |
| HWY No 427 | | DIST 6 |
| SUBMITTAL | CHECKED | DATE 1994 11 17 |
| DESIGNED | CHECKED | DATE 1994 11 17 |
| | | DRWG 6158900-8 |

METRIC

DIMENSIONS ARE IN METRES
AND / OR MILLIMETRES UNLESS
OTHERWISE SHOWN. STATIONS
IN KILOMETRES - METRES.

CONT No
WP No 615-89-00



HIGH MAST LIGHTING
HWY 427 FROM CAMPUS RD/
FASKEN DR TO STEELES AVE
BORE HOLE LOCATIONS & SOIL STRATA

SHEET

SEE DRAWING 6158900-A

KEY PLAN
SCALE

LEGEND

- ◆ Bore Hole
- ⊕ Dynamic Cone Penetration Test (Cone)
- ⊗ Bore Hole & Cone
- N Blows/0.3m (Std Pen Test, 475 J/blow)
- CONE Blows/0.3m (60° Cone, 475 J/blow)
- W.L. at time of investigation
1979 07, 1979 08, 1981 12,
1982 05 & 1994 08

| No | ELEVATION | CO-ORDINATES | |
|-----------|-----------|--------------|-----------|
| | | NORTH | EAST |
| 14 | 163.7 | 4 843 234 | 294 581 |
| 15 | 164.4 | 4 843 449 | 294 548 |
| 16 | 163.3 | 4 843 738 | 294 506 |
| 17 | 168.1 | 4 843 984 | 294 468 |
| 18 | 171.7 | 4 844 232 | 294 431 |
| 19 | 176.1 | 4 844 556 | 294 384 |
| 20 | 179.4 | 4 845 292 | 294 270 |
| 49-71-04 | 168.8 | 4 843 591 | 294 493 |
| 5 | 169.6 | 4 843 605 | 294 562 |
| 6 | 169.7 | 4 843 579 | 294 564 |
| 49-71-07 | 160.9 | 4 843 851 | 294 447 |
| 1 | 171.9 | 4 844 821 | 294 328 |
| 153-80-02 | 5 | 171.5 | 4 844 921 |
| 88-78-22 | 2 | 172.1 | 4 845 141 |
| | | | 294 265 |

NOTE

The boundaries between soil strata have been established only at Bore Hole locations. Between Bore Holes the boundaries are assumed from geological evidence.

NOTE: The complete foundation investigation and design report for this project and other related documents may be examined at the Engineering Materials Office, Downsview. Information contained in this report and related documents is specifically included in accordance with the conditions of Section GC 2.01 of OPS Gen Cond.

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NOTE
For Soil details refer to
Record of Borehole Sheets

PLANS
SCALE

40m
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Appendix B

Additional Borehole Logs from Previous Investigations

References for Borehole Logs

- MTO Foundation Investigation Report for Highway 427 Overpass at Fasken Dr/Campus Rd., W.P. 187-94-01/02 (previously 273-66), GEOCRE 30M12-227, 1995.
- MTO Foundation Investigation Report for Highway 427 NBL over Highway 409, W.P. 657-93-01, GEOCRE 30M12-53, 1972.
- Thurber Engineering Ltd. Foundation Investigation Report for Highway 427 Widening from Fasken Drive to Steeles Avenue, Disco Road / Goreway Drive Overpass, Toronto, Ontario, G.W.P. 202-95-00, GEOCRE 30M12-289, November 26, 2009.
- MTO Foundation Investigation Report for Highway 427 Overpass at Disco Road, W.P. 387-65, 1972.
- MTO Foundation Investigation Report for Highway 427 over Canadian National Railways, W.P. 659-93-01 (previously 213-65), GEOCRE 30M12-235, 1972.
- MTO Foundation Investigation Report for Highway 427 over Woodbine Racetrack Entrance, W.P. 660-93-01 (previously 48-71-02), GEOCRE 30M12-236, 1972.
- MTO Foundation Investigation Report for Highway 427 N-E/W Ramp over Humber River, W.P. 49-71-07, GEOCRE 30M12-143, 1979.
- MTO Foundation Investigation Report for Highway 427 over Humber River, W.P. 49-71-05/06, GEOCRE 30M12-144, 1979.
- Thurber Engineering Ltd. Foundation Investigation Report for Highway 427 Widening from Fasken Drive to Steeles Avenue, CN Halton Subdivision Overhead, Toronto, Ontario, G.W.P. 202-95-00, GEOCRE 30M12-288, November 26, 2009.
- MTO Foundation Investigation Report for Highway 427 over CNR Halton Subdivision, W.P. 153-80-02, GEOCRE 30M12-152, 1982.
- Peto MacCallum Ltd. Foundation Investigation Report for Albion Road Underpass Structure at Highway 427, W.P. 153-80-03, GEOCRE 30M12-164, 1982.
- Golder Associates Foundation Investigation Report for Highway 427 Overpass Bridge at Steeles Avenue, W.P. 153-80-04, GEOCRE 30M12-50, 1982.

30 M 12-227

25

WP 187-94-01/02

| DEPARTMENT OF HIGHWAYS - ONTARIO | | | | RECORD OF BOREHOLE No. 1 | | | | FOUNDATION SECTION | | | | |
|----------------------------------|---|------------|-------------|---|----|----|----|---|-----------------|---------------|--------------|-----------------|
| MATERIALS & TESTING OFFICE | | | | Co-ORDS: N 4838 602.1; E 296 518.6 | | | | LOCATION Co-ords: 15, 874, 679 N; 972, 830 E. | | | | |
| JOB 72-11006 | | | | BORING DATE Jan. 3 & 4, 1972 | | | | ORIGINATED BY TE | | | | |
| W.P. 273-66 | | | | BORING TYPE Penn Drill and Diamond Drill | | | | COMPILED BY 37 | | | | |
| DATUM Geodetic | | | | | | | | CHECKED BY [Signature] | | | | |
| ELEV. DEPTH | SOIL PROFILE | SAMPLING | ELEV. SCALE | DYNAMIC PENETRATION RESISTANCE | | | | | LIQUID LIMIT | | BULK DENSITY | REMARKS |
| | | | | PLUMS / FOOT | 20 | 40 | 60 | 80 | 100 | PLASTIC LIMIT | | |
| Sub. 1 | Ground Level | | | SHEAR STRENGTH P.S.F. | | | | | WATER CONTENT % | | | |
| | | | | <input type="checkbox"/> UNCONFINED <input type="checkbox"/> FIELD VANE <input type="checkbox"/> QUICK TRIAXIAL <input type="checkbox"/> LAB. VANE | | | | | 10 20 30 | | | |
| 0.0 | Met. mix. of clayey silt sand & gravel, ooc. clayey silt sand | 1 SS 21 | 210 | | | | | | | | | GR. SA. SI. CL. |
| | Very Stiff to Hard | 2 SS 14 | | | | | | | | | | Feb. 8/72 |
| | | 3 SS 17 | | | | | | | | | | 6 29 50 17 |
| | Brown Grey | 4 SS 16 | 530 | | | | | | | | | |
| | | 5 SS 14 | | | | | | | | | | |
| | Glacial Till | 6 SS 17 | | | | | | | | | | |
| | | 7 SS 14 | 520 | | | | | | | | | 2 18 58 22 |
| | | 8 SS 11 | | | | | | | | | | |
| | | 9 SS 11 | 510 | | | | | | | | | |
| | | 10 SS 14 | | | | | | | | | | |
| | | 11 SS 100% | 500 | | | | | | | | | |
| | | 12 SS 100% | | | | | | | | | | |
| | | 13 SS 189 | 490 | | | | | | | | | |
| | | 14 SS 21 | 480 | | | | | | | | | |
| 473.1 | | 15 SS 100% | 470 | | | | | | | | | |
| 71.0 | Shale Bedrock | | | | | | | | | | | |
| | Weathered Sound | | | | | | | | | | | |
| 461.1 | | 16 BX 100% | | | | | | | | | | |
| 83.0 | End of Borehole | | | | | | | | | | | |

20
15-3 % STRAIN AT FAILURE
10

WP 187-94-01/02

| DEPARTMENT OF HIGHWAYS - ONTARIO | | | RECORD OF BOREHOLE No. 2 | | | | FOUNDATION SECTION | | |
|----------------------------------|--|------------|--|--------------------------------|-----------|--|--------------------|-------------------------------------|------------|
| MATERIALS & TESTING OFFICE | | | Co-ORDS: N 4838 554.83 E 296 468.0 | | | | | | |
| JOB 72-11006 | | | LOCATION Co-ords. 15,874,655 N; 972,665 E. | | | | ORIGINATED BY VK | | |
| W.P. 273-66 | | | BORING DATE Jan. 6 & 7, 1972 | | | | CORRECTED BY TT | | |
| DATUM Geodetic | | | BOREHOLE TYPE Perm Drill and Diamond Drill | | | | CHECKED BY CLK | | |
| SOIL PROFILE | | SAMPLES | | DYNAMIC PENETRATION RESISTANCE | | LIQUID LIMIT — % PLASTIC LIMIT — % WATER CONTENT — % | | BULK DENSITY γ _{p.c.f.} | REMARKS |
| ELEV. DEPTH | DESCRIPTION | STRAT. NO. | NUMBER | TYPE | BLOWS/100 | ELEV. SCALE | WATER CONTENT % | | |
| 514.0 | Ground Level | | | | | | | | |
| 0.0 | Ret. mix. of clayey silt, sand & trace of gravel | | 1 | SS | 30 | 590 | | | 7.0 |
| | occ. clayey silt sand | | 2 | SS | 32 | | | | 5.39.5 |
| | Ulaolal Till | | 3 | SS | 62 | | | | h 31 49 18 |
| | Very Stiff to Hard | | 4 | SS | 40 | 530 | | | |
| | Brown | | 5 | SS | 29 | | | | |
| | Gray | | 6 | SS | 17 | | | | |
| | | | 7 | SS | 32 | 520 | | | |
| | | | 8 | SS | 10 | | | | |
| | | | 9 | SS | 50 | 510 | | | |
| | | | 10 | SS | 160 | 500 | | | 5.27 50 18 |
| | | | 11 | SS | 100 | | | | |
| | | | 12 | SS | 100 | 490 | | | |
| | | | 13 | SS | 133 | | | | |
| | | | 14 | SS | 100 | 480 | | | |
| | | | 15 | SS | 100 | 470 | | | |
| 458.5 | | | 16 | SS | 100 | 460 | | | 5.43 45 7 |
| 85.5 | Shale bedrock | | 16 | EX | 100 | | | | |
| 454.0 | Sound | | | | | | | | |
| 90.0 | End of Borehole | | | | | | | | |

20
15-5 % STRAIN AT FAILURE
10

WP 187-94-01/02

| DEPARTMENT OF HIGHWAYS - ONTARIO | | RECORD OF BOREHOLE No. 4 | | FOUNDATIONS SECTION | | | | | | | | | | | | | | |
|----------------------------------|---------------------|---|--------|--------------------------------|-----------|--------------|------------|---------------|----|---------------|----|---------|-----------------|----|----|----|--------|------------|
| MATERIALS & TESTING OFFICE | | CO-ORDS: N 4 838 605.2; E 276 492.4 | | ORIGINATED BY <u>TE</u> | | | | | | | | | | | | | | |
| JOB <u>72-11006</u> | | LOCATION <u>Co-ords. 25,874,689 N; 972,744 E.</u> | | COMPILED BY <u>TE</u> | | | | | | | | | | | | | | |
| W.P. <u>213-66</u> | | BORING DATE <u>Jan. 5, 1972</u> | | CHECKED BY <u>TE</u> | | | | | | | | | | | | | | |
| DATUM <u>Geodetic</u> | | BOREHOLE TYPE <u>Pen Drill & Cone</u> | | | | | | | | | | | | | | | | |
| SOIL PROFILE | | SAMPLES | | DYNAMIC PENETRATION RESISTANCE | | LIQUID LIMIT | | PLASTIC LIMIT | | WATER CONTENT | | REMARKS | | | | | | |
| ELEV DEPTH | DESCRIPTION | STRAT. NO. | NUMBER | TYPE | BLOWS/100 | ELEV. SCALE | BLOWS/FOOT | 20 | 40 | 60 | 80 | 100 | WATER CONTENT % | 10 | 20 | 30 | P.C.P. | REMARKS |
| 492.2 | Ground Level | | | | | | | | | | | | | | | | | |
| 0.0 | Fill | | 1 | SS | 17 | | | | | | | | | | | | | 23 27 30-1 |
| Sub. 7 | Stiff to Very Stiff | | 2 | SS | 17 | | | | | | | | | | | | | 23 27 30-1 |
| 7.5 | Glacial Till | | 3 | SS | 15 | 540 | | | | | | | | | | | | Feb. 1/72 |
| | | | 4 | SS | 18 | | | | | | | | | | | | | |
| | Brown | | 5 | SS | 17 | | | | | | | | | | | | | |
| | Grey | | 6 | SS | 12 | 530 | | | | | | | | | | | | |
| | Glacial Till | | 7 | SS | 120/9" | | | | | | | | | | | | | |
| | Het. mix. of clayey | | 8 | SS | 100/3" | | | | | | | | | | | | | |
| | silt, sand & gravel | | 9 | SS | 11 | 520 | | | | | | | | | | | | |
| | Hard | | 10 | SS | 77 | 510 | | | | | | | | | | | | |
| | | | 11 | SS | 95 | | | | | | | | | | | | | |
| | | | 12 | SS | 95 | | | | | | | | | | | | | |
| 498.8 | End of Borehole | | 13 | SS | 250/5" | 500 | | | | | | | | | | | | |
| 50.4 | | | | | | 490 | | | | | | | | | | | | |

20
15-3 % STRAIN AT FAILURE
10

WP 187-94-01/02

| DEPARTMENT OF HIGHWAYS - ALABAMA | | | RECORD OF BOREHOLE No. 5 | | | FOUNDATION SECTION | | | | | |
|----------------------------------|---|------------|--|--------------------------------|----|----------------------|-----|-----|--|---------------------|------------------------------------|
| MATERIALS & TESTING OFFICE | | | Co-ords: N 4838 582.35 E 296 473.5 | | | | | | | | |
| JOB 72-11006 | | | LOCATION Co-ords: 15, 47, 614 N; 972, 687 E. | | | ORIGINATED BY TE | | | | | |
| WP 87-1/6 | | | BORING DATE Jan. 5, 1972 | | | COMPILED BY TJ | | | | | |
| DATUM Original | | | BOREHOLE TYPE Post Drill & Cone | | | CHECKED BY <i>SK</i> | | | | | |
| DEPTH | SOIL PROFILE | SAMPLES | ELEV SCALE | DYNAMIC PENETRATION RESISTANCE | | | | | LIQUID LIMIT — % PLASTIC LIMIT — % WATER CONTENT — % | BLK Y DENSITY | REMARKS |
| | | | | 30 | 60 | 80 | 100 | 120 | | | |
| 0.0 | Ground Level | | | | | | | | | | |
| 0.0 | Res. mix. of clayey silt, sand & gravel. Very Stiff to Hard | 1 35 31 | 490 | | | | | | | | 4 27 51 18 + 539.5 Feb. 6/72 |
| | | 2 35 32 | | | | | | | | | |
| | | 3 35 32 | | | | | | | | | |
| | Brn. Grey | 4 35 31 | 530 | | | | | | | | |
| | | 5 35 32 | | | | | | | | | |
| | | 6 35 31 | | | | | | | | | |
| | Glacial Till | 7 35 31 | 520 | | | | | | | | |
| | | 8 35 31 | | | | | | | | | |
| | | 9 35 31 | | | | | | | | | |
| | | 10 35 30.2 | 510 | | | | | | | | |
| | | 11 35 27 | | | | | | | | | |
| | Occ. silt seams | 12 35 26.5 | 500 | | | | | | | | |
| 422.5 | | 13 35 26.5 | | | | | | | | | |
| 51.5 | End of Borehole | | 490 | | | | | | | | |

20
15-3 % STRAIN AT FAILURE
10

WP 187-94-01/02

DEPARTMENT OF HIGHWAYS - ONTARIO
 MATERIALS & TESTING OFFICE
 RECORD OF BOREHOLE No. 6
 FOUNDATION SECTION

CO-ORDS: N 4850 614.3; E 296 813.1
 JOB 72-11000 LOCATION Co-ords. 15,874,719.21 972,812.8
 W.P. 273-66 BORING DATE Jan. 4, 1972 ORIGINATED BY TE
 DATUM Goodelle BOREHOLE TYPE Pen Drill & Core COMPILED BY TT
 CHECKED BY

| SOIL PROFILE | | | SAMPLES | | | DYNAMIC PENETRATION RESISTANCE | | | | | LIQUID LIMIT — % | | | BULK DENSITY | REMARKS |
|--------------|---|-----------|---------|------|-----------|--------------------------------|----|----|----|----|------------------|-------------------|-------------------|--------------|------------|
| ELV. DEPTH | DESCRIPTION | SIRAT NOT | NUMBER | TYPE | ROWS/FOOT | FEET SCALE | 20 | 40 | 60 | 80 | 100 | PLASTIC LIMIT — % | WATER CONTENT — % | | |
| 549.1 | Ground Level | | | | | | | | | | | | | | |
| 0.0 | Fill | | | | | | | | | | | | | | |
| 548.6 | Bluff to Very Bluff | | 1 | SS | 12 | | | | | | | | | | 8-35 h3 1b |
| 7.5 | | | 2 | SS | 15 | | | | | | | | | | Y 92.1 |
| | | | 3 | SS | 16 | | | | | | | | | | Feb. 4/72 |
| | | | 4 | SS | 18 | | | | | | | | | | |
| | | | 5 | SS | 17 | | | | | | | | | | |
| | Brown Grey | | 6 | SS | 16 | | | | | | | | | | |
| | | | 7 | SS | 11 | | | | | | | | | | |
| | | | 8 | SS | 21 | | | | | | | | | | |
| | Glacial Till | | 9 | SS | 19 | | | | | | | | | | |
| | Not mix. of clayey silt, sand & gravel. | | 10 | SS | 51 | | | | | | | | | | |
| | Very Stiff to Hard | | 11 | SS | 60 | | | | | | | | | | |
| | | | 12 | SS | 57 | | | | | | | | | | |
| | | | 13 | SS | 103/6 | | | | | | | | | | |
| 492.6 | | | 14 | SS | 122 | | | | | | | | | | |
| 56.5 | End of Borehole | | | | | | | | | | | | | | |

20
 15-3 % STRAIN AT FAILURE
 10

15 ²⁰ % STRAIN AT FAILURE

| DESIGN SERVICES BRANCH | | | | RECORD OF BOREHOLE NO 20 | | | | FOUNDATIONS OFFICE | | | |
|------------------------------|--|-------------|---------|---|------------|--------------------------------|------------|---------------------------|-----------------------|---------------------|--------------|
| JOB <u>72-11017</u> | | | | LOCATION <u>15,877,535N. 971,684 E.</u> | | | | ORIGINATED BY <u>H.S.</u> | | | |
| W.P. <u>483-65 657-93-01</u> | | | | BORING DATE <u>February 10 & 14, 1972</u> | | | | COMPILED BY <u>T.S.T.</u> | | | |
| DATUM <u>Geodetic</u> | | | | BOREHOLE TYPE <u>Penn Drill</u> | | | | CHECKED BY <u>LO</u> | | | |
| SOIL PROFILE | | | SAMPLES | | | DYNAMIC PENETRATION RESISTANCE | | | LIQUID LIMIT — w_L | | |
| ELEV. DEPTH | DESCRIPTION | STRAT. PLOT | NUMBER | TYPE | BLOWS/FOOT | ELEV. SCALE | BLOWS/FOOT | 20 40 60 80 100 | PLASTIC LIMIT — w_p | WATER CONTENT — w | BULK DENSITY |
| 524.4 | Ground elevation. | | | | | | | | | | |
| | Net. mix. of clayey silt, sand & gravel. | | 1 | SS | 43 | 520 | | | | | |
| | | | 2 | SS | 50 | | | | | | |
| | Brown | | 3 | SS | 56 | | | | | | |
| | Grey | | 4 | SS | 72 | | | | | | |
| 509.4 | | | 5 | SS | 116 | 510 | | | | | |
| 15.0 | Silt to sandy silt. | | 6 | SS | 113 | | | | | | |
| 504.4 | | | 7 | SS | 75 | | | | | | |
| 19.0 | Glacial Till. | | 8 | SS | 43 | 500 | | | | | |
| | Hard. | | 9 | SS | 79 | | | | | | |
| 489.4 | | | 10 | SS | 115 | 490 | | | | | |
| 487.9 | Silt to sandy silt. | | 11 | SS | 100 | | | | | | |
| 36.5 | | | 12 | SS | 100 | 480 | | | | | |
| 484.4 | | | 13 | SS | 100 | | | | | | |
| 40.0 | With shale fragments | | 14 | SS | 100 | 470 | | | | | |
| | | | 15 | SS | 100 | 460 | | | | | |
| | | | 16 | RC Rec. BXL 95% | | 450 | | | | | |
| 444.3 | | | | | | | | | | | |
| 80.1 | Shale Bedrock. | | | | | 440 | | | | | |
| 439.3 | Sound - grey. | | | | | | | | | | |
| 85.1 | End of borehole. | | | | | 430 | | | | | |

| SOIL PROFILE | | SAMPLES | | ELEV SCALE | DYNAMIC TEST DATA (P.S.F.) | LIQUID LIMIT (W _L) | PLASTIC LIMIT (W _P) | WATER CONTENT (W _t) | WATER CONTENT (%) | SUC | REMARKS |
|--------------|--|---------|------|------------|----------------------------|--------------------------------|---------------------------------|---------------------------------|-------------------|-----|---------|
| ELEV DEPTH | DESCRIPTION | NUMBER | TYPE | | | | | | | | |
| 521.3 | Ground elevation | | | | | | | | | | |
| | Ret. mix. of clayey silt, sand & gravel. | 1 | SS | 58 | | | | | | | |
| | Brown | 2 | SS | 58 | | | | | | | |
| | Grey | 3 | SS | 44 | | | | | | | |
| | Glacial Till. | 4 | SS | 95 | | | | | | | |
| | Stiff to hard. | 5 | SS | 80 | | | | | | | |
| | | 6 | SS | 78 | | | | | | | |
| | | 7 | SS | 72 | | | | | | | |
| 496.3 | | 8 | SS | 80 | | | | | | | |
| 25.0 | Silt to sandy silt. | | | | | | | | | | |
| 490.3 | Very dense. | 9 | SS | 1007 | | | | | | | |
| 31.0 | Grey. | | | | | | | | | | |
| 486.8 | | 10 | SS | 1257 | | | | | | | |
| 34.5 | With shale fragments | 11 | SS | 1007 | | | | | | | |
| | | 12 | SS | 1007 | | | | | | | |
| | | 13 | SS | 1007 | | | | | | | |
| 463.3 | Probable bedrock. | | | | | | | | | | |
| 58.0 | End of borehole. | | | | | | | | | | |

DESIGN SERVICES BRANCH

RECORD OF BOREHOLE NO 26

FOUNDATIONS OFFICE

IMPERIALJOB 72-11017LOCATION 15,877,491 N. 971,533 E.ORIGINATED BY H.S.W.P. 657-93-01BORING DATE Feb. 7 & 8, 1972COMPILED BY T.S.T.DATUM GeodeticBOREHOLE TYPE Penn DrillCHECKED BY SL

| SOIL PROFILE | | | SAMPLES | | | ELEV. SCALE | DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT 20 40 60 80 100 SHEAR STRENGTH P.S.F. ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL X 1AB VANE | LIQUID LIMIT w_L PLASTIC LIMIT w_p WATER CONTENT w w_p — w — w_L WATER CONTENT % 10 20 30 | BULK DENSITY γ P.C.F. | REMARKS |
|--------------|--|------------|---------|------|------------|-------------|--|--|------------------------------------|---------|
| ELEV. DEPTH | DESCRIPTION | STRAT. PLT | NUMBER | TYPE | BLOWS/FOOT | | | | | |
| 525.1 | Ground elevation. | | | | | | | | | |
| | Int. mix. of clayey silt, sand & gravel. | | 1 | SS | 50 | | | | | |
| | | | 2 | SS | 65 | | | | | |
| | | | 3 | SS | 62 | | | | | |
| | Brown | | 4 | SS | 68 | | | | | |
| | Grey | | 5 | SS | 44 | | | | | |
| | Glacial Till | | 6 | SS | 72 | | | | | |
| | Hard. | | 7 | SS | 68 | | | | | |
| 500.1 | | | 8 | SS | 87 | | | | | |
| 25.0 | Sandy silt to silty sand. | | 9 | SS | 170.6" | | | | | |
| 493.6 | | | 10 | SS | 110.2" | | | | | |
| 31.5 | | | 11 | SS | 150.2" | | | | | |
| 490.1 | With shale fragments | | 12 | SS | 100.1" | | | | | |
| 35.0 | | | 13 | SS | 105.1" | | | | | |
| | | | 14 | SS | 100.1" | | | | | |
| 459.6 | Probable bedrock. | | | | | | | | | |
| 65.5 | End of borehole. | | | | | | | | | |

| DESIGN SERVICES UNIT | | | RECORD OF BOREHOLE NO 27 | | | | FOUNDATIONS OFFICE | | | | | | | |
|-----------------------|--|----------------|--|------|---------------|-----------------------------------|---------------------------|----|----|-----|---|--|---------|--|
| JOB <u>77-11317</u> | | | LOCATION <u>15,877,677 N. 571,540 E.</u> | | | | ORIGINATED BY <u>H.S.</u> | | | | | | | |
| WP <u>657-93-01</u> | | | BORING DATE <u>Feb. 10, 1972</u> | | | | COMPILED BY <u>T.S.T.</u> | | | | | | | |
| DATUM <u>Geodetic</u> | | | BOREHOLE TYPE <u>Penn Drill</u> | | | | CHECKED BY <u>22</u> | | | | | | | |
| FLV DEPTH | SOIL PROFILE DESCRIPTION | SOIL STATUS | SAMPLES | | BLOW COUNT | HYDRAULIC PERMEABILITY RESISTANCE | | | | | WATER CONTENT % w _p w ₁ w ₂ | BULK DENSITY γ _p γ _s | REMARKS | |
| | | | NUMBER | TYPE | | 20 | 30 | 40 | 50 | 100 | | | | |
| 536.5 | Ground elevation. | | | | | | | | | | | | | |
| | Fill material. | | 1 | SS | 22 | | | | | | | | | |
| | Clayey silt with sand and gravel. | | 2 | SS | 17 | | | | | | | | | |
| | Stiff to very stiff. | | 3 | SS | 11 | | | | | | | | | |
| 520.8 | Grey. | | 4 | SS | 23 | | | | | | | | | |
| 15.7 | Net. mix. of clayey silt, sand & gravel. | | 5 | SS | 20 | | | | | | | | | |
| | Very stiff to hard. | | 6 | SS | 30 | | | | | | | | | |
| | Brown | | 7 | SS | 54 | | | | | | | | | |
| | Grey | | 8 | SS | 24 | | | | | | | | | |
| | Glacial Till. | | 9 | SS | 32 | | | | | | | | | |
| 500.5 | | | 10 | SS | 397 | | | | | | | | | |
| 36.0 | Silt to sandy silt. | | | | | | | | | | | | | |
| 496.5 | Very dense - Grey. | | 11 | SS | 120 | | | | | | | | | |
| 40.0 | | | 12 | SS | 1087 | | | | | | | | | |
| | | | 13 | SS | 1002 | | | | | | | | | |
| | | | 14 | SS | 1007 | | | | | | | | | |
| 473.5 | Probable bedrock. | | | | | | | | | | | | | |
| 63.0 | End of borehole. | | | | | | | | | | | | | |

| DESIGN SERVICES BRANCH | | | RECORD OF BOREHOLE NO 28 | | FOUNDATIONS OFFICE | |
|------------------------|--|------------|------------------------------------|------|--------------------------------|-------------|
| JOB 72-11017 | | | LOCATION 15,877,600 N. 971,456 E. | | ORIGINATED BY H.S. | |
| WP. 402-5 657-93-01 | | | BORING DATE Feb. 3, 4, 7 & 8, 1972 | | COMPILED BY T.S.T. | |
| DATUM Geodetic | | | BOREHOLE TYPE Penn Drill | | CHECKED BY J.S. | |
| SOIL PROFILE | | | SAMPLES | | DYNAMIC PENETRATION RESISTANCE | |
| ELEV. DEPTH | DESCRIPTION | STRAT. PLT | NUMBER | TYPE | BLOWS/FOOT | ELEV. SCALE |
| 526.7 | Ground elevation. | | | | | |
| | Het. mix. of clayey silt, sand & gravel. | | 1 | SS | 30 | |
| | | | 2 | SS | 66 | |
| | Brown | | 3 | SS | 67 | |
| | Grey | | 4 | SS | 32 | |
| 508.7 | Very stiff to hard. | | 5 | SS | 25 | |
| 18.0 | Silt to sandy silt. | | 6 | SS | 70 | |
| 505.7 | Very dense - Grey. | | 7 | SS | 44 | |
| 21.0 | | | 8 | SS | 176 | |
| | Glacial Till. | | 9 | SS | 159 | |
| 491.7 | | | 10 | SS | 100, 5" | |
| 35.0 | With shale fragments | | 11 | SS | 100, 3" | |
| | | | 12 | SS | 100, 1 1/2" | |
| | | | 13 | SS | 100, 1" | |
| | | | 14 | SS | 100, 1" | |
| | | | 15 | SS | 100, 3/4" | |
| 434.0 | | | 16 | SS | 100, 0" | |
| 92.7 | Shale bedrock. | | 17 | RC | Rec. | |
| 430.7 | Sound - grey. | | | BXL | 100% | |
| 96.0 | | | | | | |

| LIQUID LIMIT — w_L | | PLASTIC LIMIT — w_p | | WATER CONTENT — w | | BULK DENSITY | REMARKS |
|----------------------|-----|-----------------------|-------|---------------------|--------|--------------|-----------|
| w_p | w | w | w_L | WATER CONTENT % | P.C.F. | | |
| | | | | 10 20 30 | | | |
| | | | | | | | El. 524.0 |
| | | | | | | | 27 47 22 |
| | | | | | | | 8 38 45 9 |
| | | | | | | | 8 49 35 8 |

1 OF 3

METRIC

G.W.P. 202-95-00

LOCATION

N 4 840 128.4 E 295 955.1 Disco Rd./Goreway Dr.

ORIGINATED BY GA

HWY 427

BOREHOLE TYPE

Solid Stem Auger

COMPILED BY AN

DATUM Geodetic

DATE _____

2008.11.12 - 2008.11.17

CHECKED BY SKP

Continued Next Page

(%) STRAIN AT FAILURE

RECORD OF BOREHOLE No GD-01

2 OF 3

METRIC

G.W.P. 202-95-00 LOCATION N 4 840 128.4 E 295 955.1 Disco Rd./Goreway Dr. ORIGINATED BY GA
 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY AN
 DATUM Geodetic DATE 2008.11.12 - 2008.11.17 CHECKED BY SKP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | | | UNIT WEIGHT γ kN/m ³ | REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL |
|---------------|--|------------|---------|------|---------------|----------------------------|-----------------|---|--|--|--|--|---|--|
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | "N" VALUES | | | SHEAR STRENGTH kPa | | | | | | |
| | | | | | | | | WATER CONTENT (%) | | | | | | |
| | Continued From Previous Page | | | | | | | | | | | | | |
| 157.2 | Clayey SILT and sand, trace gravel Hard Brown (FILL) | | 8 | SS | 47 | | | | | | | | | |
| 12.2 | Clayey SILT and sand, trace to some gravel Hard Brown (TILL) | | 9 | SS | 100/ 0.100 | | | | | | | | | |
| | Mottled brown to grey | | 10 | SS | 36 | | | | | | | | | 1 31 42 26 |
| | | | 11 | SS | 42 | | | | | | | | | |
| | Grey | | 12 | SS | 53 | | | | | | | | | |
| | | | 13 | SS | 41 | | | | | | | | | |
| | | | | | | | | | | | | | | |
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Continued Next Page

+ 3 . x 3 : Numbers refer to
Sensitivity

20
15 5
10 (%) STRAIN AT FAILURE

RECORD OF BOREHOLE No GD-01

3 OF 3

METRIC

G.W.P. 202-95-00 LOCATION N 4 840 128.4 E 295 955.1 Disco Rd./Goreway Dr. ORIGINATED BY GA
 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY AN
 DATUM Geodetic DATE 2008.11.12 - 2008.11.17 CHECKED BY SKP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | | | UNIT WEIGHT Y kN/m ³ | REMARKS & GRAIN SIZE DISTRIBUTION (%) |
|---------------|---|------------|---------|------|---------------|----------------------------|-----------------|---|--|--|--|--|--|---|
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | "N" VALUES | | | SHEAR STRENGTH kPa | | | | | | |
| | | | | | | | | 20 40 60 80 100 | | | | | | |
| | Continued From Previous Page | | | | | | | | | | | | | |
| 20.0 | Silty CLAY, trace sand Hard Brown | | 14 | SS | 33 | | 149 | | | | | | | GR SA SI CL 0 7 44 49 |
| 148.1 | | | | | | | | | | | | | | |
| 21.3 | Clayey SILT, with frequent shale and limestone slabs Hard Grey (TILL) | | 15 | SS | 100/ 0.225 | | 148 | | | | | | | |
| | | | | | | | | | | | | | | |
| 146.6 | | | | | | | 147 | | | | | | | |
| 22.9 | SHALE, highly to moderately weathered, with limestone interbeds, very thinly to thinly bedded, grey Zones of broken core | | 16 | SS | 50/ 0.0 | | 146 | | | | | | | |
| | Limestone (50mm) at 24m Clay seams (50mm) at 25m Limestone (120mm) at 25.5m | | 1 | RUN | | | | | | | | | | RUN 1# TCR=80%, SCR=0%, RQD=0% |
| | | | 2 | RUN | | | 145 | | | | | | | RUN 2# TCR=100%, SCR=27%, RQD=8% |
| 143.5 | | | | | | | 144 | | | | | | | |
| 25.9 | END OF BOREHOLE AT 25.9m. BOREHOLE BACKFILLED WITH BENTONITE TO SURFACE. | | | | | | | | | | | | | |

ONTMT4S 9270.GPJ 7/3/09

+³, ×³: Numbers refer to
Sensitivity

20
15
10
(%) STRAIN AT FAILURE

RECORD OF BOREHOLE No GD-02

1 OF 2

METRIC

G.W.P. 202-95-00

LOCATION N 4 840 157.8 E 295 941.7 Disco Rd./Goreway Dr.

ORIGINATED BY GA

HWY 427

BOREHOLE TYPE Solid Stem Auger

COMPILED BY AN

DATUM Geodetic

DATE 2008.11.18 - 2008.11.18

CHECKED BY SKP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | | UNIT WEIGHT γ kN/m ³ | REMARKS & GRAIN SIZE DISTRIBUTION (%) | | | | | |
|---------------|--|------------|---------|------|------------|----------------------------|-----------------|--|----|----|-----|--|---|-------------------|--|--|-------------|------------|
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | "N" VALUES | | | SHEAR STRENGTH kPa | | | | | | WATER CONTENT (%) | | | | |
| | | | | | | | | ● UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE | | | | | | | | | | |
| 160.9 | | | | | | | 20 | 40 | 60 | 80 | 100 | W _P | W | W _L | | | | |
| 0.0 | Clayey SILT and sand, trace to some gravel, occasional rootlets Very Stiff to Hard Brown (FILL) | | 1 | SS | 21 | | | | | | | | | | | | 11 33 37 19 | |
| | | | 2 | SS | 57 | | | | | | | | | | | | | |
| | Mottled Brown to Grey | | 3 | SS | 40 | | | | | | | | | | | | | |
| | | | 4 | SS | 24 | | | | | | | | | | | | | 3 32 37 28 |
| | | | 5 | SS | 85 | | | | | | | | | | | | | |
| 157.4 | | | | | | | | | | | | | | | | | | |
| 3.5 | Sandy SILT, trace clay, trace gravel Very Dense to Compact Reddish Brown Moist (FILL) | | | | | | | | | | | | | | | | | |
| | Occasional shale pieces | | 6 | SS | 21 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| 154.8 | | | | | | | | | | | | | | | | | | |
| 6.1 | Clayey SILT and sand, trace gravel Very Stiff to Hard Mottled Brown to Grey (FILL) | | 7 | SS | 19 | | | | | | | | | | | | 3 36 36 25 | |
| | | | | | | | | | | | | | | | | | | |
| 153.7 | | | | | | | | | | | | | | | | | | |
| 7.2 | Clayey SILT and sand, trace gravel Hard Grey (TILL) | | 8 | SS | 42 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
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| | | | 9 | SS | 39 | | | | | | | | | | | | | |
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+ 3, X 3: Numbers refer to
20
15 5 (%) STRAIN AT FAILURE

RECORD OF BOREHOLE No GD-02

2 OF 2

METRIC

G.W.P. 202-95-00 LOCATION N 4 840 157.8 E 295 941.7 Disco Rd./Goreway Dr. ORIGINATED BY GA
 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY AN
 DATUM Geodetic DATE 2008.11.18 - 2008.11.18 CHECKED BY SKP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | UNIT WEIGHT Y kN/m ³ | REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL | | | |
|---------------|--|------------|---------|------|---------------|----------------------------|-----------------|---|-----|---|--|--|-------------------|------------------|--------------------------------|
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | "N" VALUES | | | SHEAR STRENGTH kPa | | | | | WATER CONTENT (%) | | |
| | | | | | | | | 20 40 60 80 100 | W P | W | | | W L | PLASTIC LIMIT | NATURAL MOISTURE CONTENT |
| | | | | | | ○ UNCONFINED | + FIELD VANE | | | | | | | | |
| | | | | | | ● QUICK TRIAXIAL | x LAB VANE | | | | | | | | |
| | Continued From Previous Page | | | | | | | | | | | | | | |
| | Clayey SILT and sand, trace gravel Hard Grey (TILL) Highly weathered shale fragments | | 10 | SS | 65 | | | | | | | | | | |
| 148.7 | | | | | | | | | | | | | | | |
| 12.2 | Frequent shale and limestone slabs, trace sand | | 11 | SS | 100/ 0.050 | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | 12 | SS | 100/ 0.200 | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | 13 | SS | 100/ 0.100 | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| 144.1 | | | | | | | | | | | | | | | |
| 16.8 | END OF BOREHOLE AT 16.8m. BOREHOLE BACKFILLED WITH BENTONITE TO SURFACE. | | 14 | SS | 100/ 0.050 | | | | | | | | | | |

ONTMT4S 9270.GPJ 7/7/09

+³, X³: Numbers refer to
Sensitivity

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15 5
20
(%) STRAIN AT FAILURE

RECORD OF BOREHOLE No GD-03

1 OF 2

METRIC

G.W.P. 202-95-00 LOCATION N 4 840 184.5 E 295 932.2 Disco Rd./Goreway Dr. ORIGINATED BY GA
 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY AN
 DATUM Geodetic DATE 2008.10.28 - 2008.10.28 CHECKED BY SKP

| 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 (%) |
|---------------|---|------------|---------|------|--------------|----------------------------|-----------------|---|-------------------|------------------------------------|-------------------------------------|-----------------------------------|--|---|
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | "N" VALUES | | | 20 40 60 80 100 | 40 80 120 160 200 | | | | | |
| 161.2 | | | | | | | | | | | | | | |
| 0.0 | Clayey SILT and sand, trace gravel, rootlets Stiff to Very Stiff Brown (FILL) | | 1 | SS | 19 | | 161 | | | | | | | 7 38 34 21 |
| | | | 2 | SS | 62/ 0.200 | | 160 | | | | | | | |
| | | | 3 | SS | 22 | | 159 | | | | | | | |
| | | | 4 | SS | 16 | | 158 | | | | | | | 4 27 38 31 |
| 158.2 | Silty CLAY and sand, trace gravel Very Stiff to Stiff (FILL) | | 5 | SS | 17 | | 158 | | | | | | | |
| 3.0 | | | 6 | SS | 10 | | 157 | | | | | | | |
| | | | 7 | SS | 10 | | 156 | | | | | | | |
| 156.7 | Occasional shale slabs | | 8 | SS | 8 | | 155 | | | | | | | |
| 4.5 | | | 9 | SS | 25 | | 154 | | | | | | | |
| | | | 10 | SS | 23 | | 153 | | | | | | | |
| | | | | | | | 152 | | | | | | | 0 8 42 50 |
| 152.5 | Silty CLAY, trace sand, trace gravel Very Stiff Grey | | | | | | | | | | | | | |
| 8.7 | | | | | | | | | | | | | | |

ONTMT4S 9270.GPJ 7/29/09

Continued Next Page

+³ . X³: Numbers refer to
Sensitivity
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15
10
(%) STRAIN AT FAILURE

RECORD OF BOREHOLE No GD-03

2 OF 2

METRIC

G.W.P. 202-95-00 LOCATION N 4 840 184.5 E 295 932.2 Disco Rd./Goreway Dr. ORIGINATED BY GA
 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY AN
 DATUM Geodetic DATE 2008.10.28 - 2008.10.28 CHECKED BY SKP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | | UNIT WEIGHT γ kN/m ³ | REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL |
|---------------|---|------------|---------|------|---------------|----------------------------|-----------------|---|--|--|--|---|--|
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | "N" VALUES | | | SHEAR STRENGTH kPa | | | | | |
| | | | | | | | | WATER CONTENT (%) | | | | | |
| | Continued From Previous Page | | | | | | | | | | | | |
| 150.2 | Silty CLAY, trace sand, trace gravel Very Stiff Grey | | 11 | SS | 25 | | | | | | | | |
| 11.0 | Clayey SILT, with frequent shale and limestone slabs, trace sand Hard Grey (TILL) | | 12 | SS | 80/ 0.235 | | | | | | | | |
| | | | 13 | SS | 100 | | | | | | | | |
| | | | 14 | SS | 100/ 0.235 | | | | | | | | |
| 145.8 | | | 15 | SS | 100 | | | | | | | | |
| 15.4 | SHALE, highly weathered, thinly bedded, grey, limestone interbeds | | | | | | | | | | | | |
| 145.5 | | | | | | | | | | | | | |
| 15.7 | END OF BOREHOLE AT 15.7m. BOREHOLE BACKFILLED WITH BENTONITE HOLEPLUG TO SURFACE. | | | | | | | | | | | | |

+³ . X³ : Numbers refer to Sensitivity 20 15 10 (% STRAIN AT FAILURE

METRIC

CHECKED BY SKP

Continued Next Page

+ 3, X 3: Numbers refer to Sensitivity

RECORD OF BOREHOLE No GD-04

2 OF 3

METRIC

G.W.P. 202-95-00

LOCATION N 4 840 212.4 E 295 915.5 Disco Rd./Goreway Dr.

ORIGINATED BY GA

HWY 427



BOREHOLE TYPE Solid Stem Auger

COMPILED BY AN

DATUM Geodetic

DATE 2008.11.06 - 2008.11.07

CHECKED BY SKP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | PLASTIC NATURAL LIQUID LIMIT MOISTURE CONTENT LIMIT | | | UNIT WEIGHT γ kN/m ³ | REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL | |
|---------------|---|---|---------|------|------------|----------------------------|-----------------|--|-----|--|--|--|--|--|--|--|
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | "N" VALUES | | | SHEAR STRENGTH kPa | | | WATER CONTENT (%) | | | | | |
| | | | | | | | | ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL X LAB VANE | | | | | | | | |
| | | | | | | | | 20 40 60 80 100 40 80 120 160 200 | | | | | | | | |
| | Continued From Previous Page | | | | | | 161 | | | | | | | | | |
| | Clayey SILT and sand, trace gravel Hard Mottled Brown to Grey (FILL) |  | 8 | SS | 49 | | 160 | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
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| | | | | | 9 | SS | 46 | | 159 | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | 158 | | | | | | | | | |
| | | | 10 | SS | 49 | | 157 | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| 155.8 | | | | | | | 156 | | | | | | | | | |
| 15.2 | Clayey SILT and sand, trace gravel Hard Mottled Brown to Grey (TILL) |  | 11 | SS | 36 | | 155 | | | | | | | | | |
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| | Brown | | 12 | SS | 84 | | 154 | | | | | | | | | |
| | | | | | | | 153 | | | | | | | | | |
| | | | 13 | SS | 68 | | 152 | | | | | | | | | |
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+ 3, X 3: Numbers refer to Sensitivity
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15 5
(%) STRAIN AT FAILURE

ONTMT4S 9270.GPJ 6/26/09

RECORD OF BOREHOLE No GD-04

3 OF 3

METRIC

G.W.P. 202-95-00 LOCATION N 4 840 212.4 E 295 915.5 Disco Rd./Goreway Dr. ORIGINATED BY GA
 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY AN
 DATUM Geodetic DATE 2008.11.06 - 2008.11.07 CHECKED BY SKP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | WATER CONTENT (%) | | | 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 | PLASTIC LIMIT W _p | NATURAL MOISTURE CONTENT W | LIQUID LIMIT W _L | | | |
| | Continued From Previous Page | | | | | | | | | | | | | |
| | Clayey SILT and sand, trace gravel Hard Grey (TILL) | | 14 | SS | 32 | | | | | | | | | |
| | | | 15 | SS | 74 | | | | | | | | | |
| | | | | | | | | | | | | | | |
| 148.1 | | | | | | | | | | | | | | |
| 23.0 | Frequent shale and limestone slabs | | 16 | SS | 92/ 0.250 | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | 17 | SS | 114/ 0.225 | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | 18 | SS | 100/ 0.075 | | | | | | | | | |
| | | | | | | | | | | | | | | |
| 143.5 | | | | | | | | | | | | | | |
| 27.5 | END OF BOREHOLE AT 27.5m. Piezometer installation consists of 19mm diameter Schedule 40 PVC pipe with a 1.52m slotted screen. | | 19 | SS | 100/ 0.075 | | | | | | | | | |
| | WATER LEVEL READINGS: DATE DEPTH (m) ELEV. (m) 2009.05.05 14.4 156.6 2009.06.08 14.3 156.7 | | | | | | | | | | | | | |

ONTMT4S 9270.GPJ 7/3/09

+ 3, x 3: Numbers refer to
Sensitivity
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15 10 5
(%) STRAIN AT FAILURE

RECORD OF BOREHOLE No GD-05

1 OF 3

METRIC

G.W.P. 202-95-00

LOCATION N 4 840 127.4 E 295 961.7 Disco Rd./Goreway Dr.

ORIGINATED BY GA

HWY 427

BOREHOLE TYPE Solid Stem Auger

COMPILED BY AN

DATUM Geodetic

DATE 2008.11.11 - 2008.11.12

CHECKED BY SKP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | PLASTIC NATURAL LIQUID LIMIT MOISTURE CONTENT | | | 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 | 40 80 120 160 200 | W _p W W _L | WATER CONTENT (%) | | | |
| 170.0 | | | | | | | | | | | | | | |
| 0.0 | Sandy SILT, some clay, occasional rootlets and organics Dense Black to Brown Grey Moist (FILL) | | 1 | SS | 33 | | | | | | | | | |
| 168.5 | | | | | | | | | | | | | | |
| 1.5 | Clayey SILT and sand, trace gravel Stiff Brown (FILL) | | 2 | SS | 13 | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | Hard | | 3 | SS | 34 | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | 4 | SS | 30 | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | Mottled brown to grey | | 5 | SS | 32 | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | 6 | SS | 34 | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | 7 | SS | 38 | | | | | | | | | |
| | | | | | | | | | | | | | | |

ONTMT4S 9270.GPJ 6/26/09

Continued Next Page

+ 3, X 3: Numbers refer to Sensitivity 20 15 10 5 (%) STRAIN AT FAILURE

RECORD OF BOREHOLE No GD-05

2 OF 3

METRIC

G.W.P. 202-95-00 LOCATION N 4 840 127.4 E 295 961.7 Disco Rd /Goreway Dr. ORIGINATED BY GA
HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY AN
DATUM Geodetic DATE 2008.11.11 - 2008.11.12 CHECKED BY SKP

| 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 | 40 60 80 100 120 140 160 180 200 | | | | | |
| | Continued From Previous Page | | | | | | | | | | | | | |
| | Clayey SILT and sand, trace gravel Very Stiff to Hard Brown to Grey (FILL) | | 8 | SS | 37 | | 160 | | | | | | | |
| | Wood pieces | | 9 | SS | 29 | | 159 | | | | | | | |
| | Occasional organics | | 10 | SS | 39 | | 158 | | | | | | | |
| 155.2 | | | | | | | 157 | | | | | | | |
| 14.8 | Clayey SILT and sand, trace gravel Very Stiff to Hard Mottled Brown (TILL) | | 11 | SS | 27 | | 156 | | | | | | | 0 28 45 27 |
| | | | 12 | SS | 39 | | 155 | | | | | | | |
| | | | 13 | SS | 48 | | 154 | | | | | | | |
| | Grey | | | | | | 153 | | | | | | | |
| | | | | | | | 152 | | | | | | | |
| | | | | | | | 151 | | | | | | | |

Continued Next Page

+ 3 . X 3 : Numbers refer to Sensitivity 20 15 10 (%) STRAIN AT FAILURE

RECORD OF BOREHOLE No GD-05

3 OF 3

METRIC

G.W.P. 202-95-00 LOCATION N 4 840 127.4 E 295 961.7 Disco Rd./Goreway Dr. ORIGINATED BY GA
 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY AN
 DATUM Geodetic DATE 2008.11.11 - 2008.11.12 CHECKED BY SKP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | PLASTIC NATURAL LIQUID LIMIT MOISTURE LIMIT CONTENT | | | 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 | 40 80 120 160 200 | W P W W L | 20 40 60 | | | |
| | Continued From Previous Page | | | | | | | | | | | | | |
| 148.7 | Clayey SILT and sand, trace gravel Very Stiff to Hard Grey (TILL) | | 14 | SS | 25 | | 150 | | | | | | | |
| 21.3 | Frequent shale and limestone slabs, some sand | | 15 | SS | 100 | | 149 | | | | | | | |
| | | | 16 | SS | 149/ 0.225 | | 148 | | | | | | | |
| | | | 17 | SS | 149 | | 147 | | | | | | | 1 12 67 20 |
| 144.0 | | | 18 | SS | 100/ 0.075 | | 146 | | | | | | | |
| 26.0 | END OF BOREHOLE AT 26.0m. Piezometer installation consists of 19mm diameter Schedule 40 PVC pipe with a 1.52m slotted screen. WATER LEVEL READINGS: DATE DEPTH (m) ELEV. (m) 2009.05.05 13.7 156.3 2009.06.08 13.6 156.4 | | | | | | 145 | | | | | | | |

ONTMT4S 9270.GPJ 7/7/09

RECORD OF BOREHOLE No GD-06

1 OF 2

METRIC

G.W.P. 202-95-00 LOCATION N 4 840 157.1 E 295 946.8 Disco Rd./Goreway Dr. ORIGINATED BY GA
HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY AN
DATUM Geodetic DATE 2008.10.30 - 2008.10.30 CHECKED BY SKP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | | UNIT WEIGHT γ kN/m ³ | REMARKS & GRAIN SIZE DISTRIBUTION (%) | | | | |
|---------------|--|------------|---------|------|------------|----------------------------|-----------------|---|----|-----|------------------------------------|---|---|--|--|--|--|
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | "N" VALUES | | | SHEAR STRENGTH kPa | | | | | | | | | |
| | | | | | | | | UNCONFINED + FIELD VANE | | | | | | | | | |
| | | | | | | | | QUICK TRIAXIAL X LAB VANE | | | | | | | | | |
| 160.9 | | | | | | 20 | 40 | 60 | 80 | 100 | PLASTIC LIMIT W _P | NATURAL MOISTURE CONTENT W | LIQUID LIMIT W _L | | | | |
| 0.0 | Clayey SILT and sand, occasional rootlets Stiff to Very Stiff Brown (FILL) | | 1 | SS | 13 | | | | | | | | | | | | |
| | | | 2 | SS | 10 | | | | | | | | | | | | |
| | | | 3 | SS | 9 | | | | | | | | | | | | |
| | Mottled brown to grey | | 4 | SS | 15 | | | | | | | | | | | | |
| | | | 5 | SS | 13 | | | | | | | | | | | | |
| 157.1 | | | | | | | | | | | | | | | | | |
| 3.7 | Silty CLAY and sand, trace gravel Very Stiff (FILL) | | 6 | SS | 21 | | | | | | | | | | | | |
| | | | 7 | SS | 16 | | | | | | | | | | | | |
| 155.5 | | | | | | | | | | | | | | | | | |
| 5.4 | | | | | | | | | | | | | | | | | |
| | Layer of sandy silt at 6.4m (200mm) | | 8 | SS | 13 | | | | | | | | | | | | |
| 153.2 | | | | | | | | | | | | | | | | | |
| 7.6 | Silty CLAY and sand, trace gravel Very Stiff to Hard Grey (TILL) | | 9 | SS | 32 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | 10 | SS | 21 | | | | | | | | | | | | |
| 150.9 | | | | | | | | | | | | | | | | | |

Continued Next Page

ONTMT4S 9270.GPJ 7/29/09

Continued Next Page


+ ³, x ³: Numbers refer to Sensitivity 20 15 10 5 (%) STRAIN AT FAILURE

RECORD OF BOREHOLE No GD-06

2 OF 2

METRIC

G.W.P. 202-95-00 LOCATION N 4 840 157.1 E 295 946.8 Disco Rd./Goreway Dr. ORIGINATED BY GA
HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY AN
DATUM Geodetic DATE 2008.10.30 - 2008.10.30 CHECKED BY SKP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | | | UNIT WEIGHT Y kN/m ³ | REMARKS & GRAIN SIZE DISTRIBUTION (%) |
|---------------|--|--|---------|------|---------------|----------------------------|-----------------|---|---|--|--|--|--|---|
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | "N" VALUES | | | SHEAR STRENGTH kPa | | | | | | |
| | Continued From Previous Page | | | | | | | 20 40 60 80 100 | PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT | | | | | |
| | | | | | | | | ○ UNCONFINED + FIELD VANE | W P W W L | | | | | |
| | | | | | | | | ● QUICK TRIAXIAL × LAB VANE | WATER CONTENT (%) | | | | | |
| | | | | | | | | 40 80 120 160 200 | 20 40 60 | | | | | |
| 150.2 | Clayey SILT and sand, trace gravel Very Stiff to Hard Grey (TILL) |  | | | | | | | | | | | | |
| 10.7 | Frequent shale and limestone slabs, sandy | | 11 | SS | 31 | | 150 | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | 12 | SS | 86 | | 149 | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | 13 | SS | 118/ 0.225 | | 148 | | | | | | | |
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| | | | | | | | | | | | | | | |
| 145.4 | | | 14 | SS | 64/ 0.225 | | 147 | | | | | | | |
| 15.5 | END OF BOREHOLE AT 15.5m. BOREHOLE BACKFILLED WITH BENTONITE TO SURFACE. | | | | | | 146 | | | | | | | |
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ONTMT4S 9270.GPJ 7/7/09

RECORD OF BOREHOLE No GD-07

1 OF 2

METRIC

G.W.P. 202-95-00 LOCATION N 4 840 184.9 E 295 934.3 Disco Rd./Goreway Dr. ORIGINATED BY GA
 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY AN
 DATUM Geodetic DATE 2008.10.29 - 2008.10.30 CHECKED BY SKP

| 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 Y 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 | 40 80 120 160 200 | | | | | | 20 40 60 |
| 161.2 | Clayey SILT and sand, trace gravel, occasional rootlets Very Stiff to Stiff Brown (FILL) | | 1 | SS | 18 | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | 2 | SS | 14 | | | | | | | | | | |
| | | | 3 | SS | 26 | | | | | | | | | | |
| | | | 4 | SS | 20 | | | | | | | | | | |
| | | | 5 | SS | 21 | | | | | | | | | | |
| | | | 6 | SS | 12 | | | | | | | | | | |
| | | | 7 | SS | 10 | | | | | | | | | | |
| 154.0 | Silty CLAY and sand, trace gravel Hard Brown (FILL) | | | | | | | | | | | | | | |
| 7.2 | | | 9 | SS | 32 | | | | | | | | | | |
| 152.0 | Silty CLAY and sand, trace gravel Very Stiff Grey (TILL) | | | | | | | | | | | | | | |
| 9.1 | | | 10 | SS | 20 | | | | | | | | | | |

ONTMT4S 9270.GPJ 7/29/09

Continued Next Page


+³, X³: Numbers refer to
Sensitivity 20
15 10 5
(%) STRAIN AT FAILURE

RECORD OF BOREHOLE No GD-07

2 OF 2

METRIC

G.W.P. 202-95-00 LOCATION N 4 840 184.9 E 295 934.3 Disco Rd./Goreway Dr. ORIGINATED BY GA
HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY AN
DATUM Geodetic DATE 2008.10.29 - 2008.10.30 CHECKED BY SKP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | | UNIT WEIGHT γ kN/m ³ | REMARKS & GRAIN SIZE DISTRIBUTION (%) | |
|---------------|---|--|---------|------|------------|----------------------------|-----------------|--|--|--|--|--|---|---|
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | "N" VALUES | | | SHEAR STRENGTH kPa ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL x LAB VANE | | | | | | PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT |
| | Continued From Previous Page | | | | | | | 20 40 60 80 100 | | | | | | |
| | Silty CLAY and sand, trace gravel Hard Grey (TILL) |  | | | | | 151 | | | | | | | 3 29 31 37 |
| | Layer of grey sand (200mm) | | 11 | SS | 33 | | 150 | | | | | | | |
| 149.6 | | | | | | | | | | | | | | |
| 11.6 | Clayey SILT and sand, trace gravel, Frequent shale and limestone slabs Hard Grey (TILL) | | | | | | 149 | | | | | | | |
| | | | 12 | SS | 87 | | | | | | | | | |
| | | | | | | | 148 | | | | | | | |
| | Coring started at 13.7m Limestone (90mm) at 14.0m Shale (80mm) at 14.6m | | 1 | RUN | | | | | | | | | | |
| | | | 2 | RUN | | | 147 | | | | | | | RUN 1# TCR=100%, SCR=0%, RQD=0% |
| | | | | | | | | | | | | | | RUN 2# TCR=75%, SCR=8.33%, RQD=0% |
| | Limestone pieces | | 3 | RUN | | | 146 | | | | | | | RUN 3# TCR=85%, SCR=0%, RQD=0% |
| | Limestone pieces (50mm) at 16.3m | | | | | | 145 | | | | | | | RUN 4# TCR=66%, SCR=0%, RQD=0% |
| | | | 4 | RUN | | | | | | | | | | |
| | | | | | | | 144 | | | | | | | RUN 5# TCR=20%, SCR=0%, RQD=0% |
| | | | 5 | RUN | | | | | | | | | | |
| 143.2 | | | | | | | | | | | | | | |
| 18.0 | END OF BOREHOLE AT 17.9m. BOREHOLE BACKFILLED WITH BENTONITE TO SURFACE. | | | | | | | | | | | | | |

ONTMT4S 9270.GPJ 8/13/09

+ 3, x 3: Numbers refer to
Sensitivity

20
15 5
10 (%) STRAIN AT FAILURE

RECORD OF BOREHOLE No GD-07A

1 OF 2

METRIC


G.W.P. 202-95-00 LOCATION N 4 840 184.9 E 295 934.3 Disco Rd./Goreway Dr. ORIGINATED BY GA
 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY AN
 DATUM Geodetic DATE 2008.11.19 - 2008.11.19 CHECKED BY SKP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT | | | UNIT WEIGHT Y 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 | 40 80 120 160 200 | W _P W W _L | WATER CONTENT (%) | | | |
| 161.2 0.0 | Augered to 10.7m. | | | | | | | | | | | | | |
| 161 | | | | | | | | | | | | | | |
| 160 | | | | | | | | | | | | | | |
| 159 | | | | | | | | | | | | | | |
| 158 | | | | | | | | | | | | | | |
| 157 | | | | | | | | | | | | | | |
| 156 | | | | | | | | | | | | | | |
| 155 | | | | | | | | | | | | | | |
| 154 | | | | | | | | | | | | | | |
| 153 | | | | | | | | | | | | | | |
| 152 | | | | | | | | | | | | | | |

ONTMT4S 9270.GPJ 6/26/09

Continued Next Page

+ 3, X 3 : Numbers refer to Sensitivity 20 15 10 5 (%) STRAIN AT FAILURE

| RECORD OF BOREHOLE No GD-07A | | | | | | | | | | 2 OF 2 | | METRIC | | | | | | |
|------------------------------|---|--|--|------|---------------|----------------------------|------------------|---|----|--------|---------------------------------|----------------------------------|--------------------------------|---------------------------------------|--|----|-----|----|
| G.W.P. 202-95-00 | | | LOCATION N 4 840 184.9 E 295 934.3 Disco Rd./Goreway Dr. | | | | ORIGINATED BY GA | | | | | | | | | | | |
| HWY 427 | | | BOREHOLE TYPE Solid Stem Auger | | | | COMPILED BY AN | | | | | | | | | | | |
| DATUM Geodetic | | | DATE 2008.11.19 - 2008.11.19 | | | | CHECKED BY SKP | | | | | | | | | | | |
| 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 Y 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 | 40 |
| Continued From Previous Page | | | | | | | | | | | | | | | | | | |
| 150.5 | Clayey SILT, with frequent shale slabs and limestone fragments Hard Grey (TILL) |  | 1 | SS | 120/ 0.200 | | | | | | | | | | | | | |
| 10.7 | | | | | | | | | | | | | | | | | | |
| | | | 2 | SS | 100 | | | | | | | | | | | | | |
| | | | 3 | SS | 100 | | | | | | | | | | | | | |
| 145.9 | | | 4 | SS | 100/ 0.075 | | | | | | | | | | | | | |
| 15.3 | END OF BOREHOLE AT 15.3m. BOREHOLE BACKFILLED WITH BENTONITE TO SURFACE. | | | | | | | | | | | | | | | | | |

ONTMT4S 9270.GPJ 7/29/09

RECORD OF BOREHOLE No GD-08

1 OF 3

METRIC

G.W.P. 202-95-00 LOCATION N 4 840 211.8 E 295 922.3 Disco Rd./Goreway Dr. ORIGINATED BY GA
 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY AN
 DATUM Geodetic DATE 2008.11.07 - 2008.11.10 CHECKED BY SKP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | UNIT WEIGHT Y kN/m ³ | REMARKS & GRAIN SIZE DISTRIBUTION (%) |
|---------------|---|------------|---------|------|------------|---|-----------------|--|--|--|--|---|
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | "N" VALUES | | | SHEAR STRENGTH kPa | | | | |
| | | | | | | | | 20 40 60 80 100 | | | | |
| | | | | | | | | O UNCONFINED + FIELD VANE ● QUICK TRIAXIAL X LAB VANE | | | | |
| | | | | | | WATER CONTENT (%) | | | | | | |
| | | | | | | PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT | | | | | | |
| | | | | | | W P W W L | | | | | | |
| 171.0 | | | | | | | | | | | | |
| 0.0 | Clayey SILT and sand, trace gravel, occasional rootlets Stiff to Hard Mottled Brown to Grey (FILL) | | 1 | SS | 10 | | | | | | | |
| | | | | | | | | | | | | |
| | | | 2 | SS | 18 | | | | | | | |
| | | | | | | | | | | | | |
| | | | 3 | SS | 13 | | | | | | | |
| | | | | | | | | | | | | |
| | | | 4 | SS | 34 | | | | | | | |
| | | | | | | | | | | | | |
| | | | 5 | SS | 26 | | | | | | | |
| | | | | | | | | | | | | |
| | | | 6 | SS | 40 | | | | | | | |
| | | | | | | | | | | | | |
| | | | 7 | SS | 58 | | | | | | | |
| | | | | | | | | | | | | |
| 162.2 | Clayey SILT and sand, trace gravel Hard Grey (TILL) | | | | | | | | | | | |
| 8.8 | | | | | | | | | | | | |
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Continued Next Page

+ 3, X 3: Numbers refer to

20
15 5

1/2" STRAIN RATE


ONTMT-4S 9270.GPJ 7/7/09

RECORD OF BOREHOLE No GD-08

3 OF 3

METRIC

G.W.P. 202-95-00 LOCATION N 4 840 211.8 E 295 922.3 Disco Rd./Goreway Dr. ORIGINATED BY GA
 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY AN
 DATUM Geodetic DATE 2008.11.07 - 2008.11.10 CHECKED BY SKP

| 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 | SHEAR STRENGTH kPa | | | | | | WATER CONTENT (%) | | |
| | | | | | | | ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL x LAB VANE | | | | | | | | | |
| | Continued From Previous Page | | | | | | 20 40 60 80 100 40 80 120 160 200 | | | | | | | | | |
| 20.0 | Clayey SILT, with frequent shale and limestone slabs Hard Mottled Brown to Grey (TILL) |  | 14 | SS | 31 | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | 15 | SS | 128/ 0.275 | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | 16 | SS | 100/ 0.175 | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | 17 | SS | 100/ 0.075 | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| 145.0 | | | 18 | SS | 100/ .0.0 | | | | | | | | | | | |
| 26.1 | END OF BOREHOLE AT 26.1m. BOREHOLE BACKFILLED WITH BENTONITE TO SURFACE. | | | | | | | | | | | | | | | |

ONTMT4S 9270.GPJ 7/3/09

+ 3, X 3: Numbers refer to Sensitivity 20 15 10 5 (%) STRAIN AT FAILURE

RECORD OF BOREHOLE No GD-09

1 OF 2

METRIC

G.W.P. 202-95-00

LOCATION N 4 840 121.9 E 295 960.2 Disco Rd/Goreway Dr.

ORIGINATED BY GA

HWY 427

BOREHOLE TYPE Solid Stem Auger

COMPILED BY AN

DATUM Geodetic

DATE 2008.11.08 - 2008.11.08

CHECKED BY SKP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | | UNIT WEIGHT Y kN/m ³ | REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL | |
|---------------|--|------------|---------|------|------------|----------------------------|---|--|--|--|--|--|--|------------|
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | "N" VALUES | | | SHEAR STRENGTH kPa | | | | | | |
| | | | | | | | | 20 40 60 80 100 | | | | | | |
| | | | | | | | | O UNCONFINED + FIELD VANE ● QUICK TRIAXIAL X LAB VANE | | | | | | |
| | | | | | | | WATER CONTENT (%) | | | | | | | |
| | | | | | | | PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT | | | | | | | |
| | | | | | | | W P W W L | | | | | | | |
| 170.0 | | | | | | | | | | | | | | |
| 0.0 | Silty SAND, some gravel, trace clay, occasional organics | | 1 | SS | 31 | | | | | | | | | 22 61 17 |
| 169.3 | Dense Brown to Black Moist (FILL) | | 2 | SS | 27 | | | | | | | | | (SI+CL) |
| 0.8 | Clayey SILT and sand, trace gravel Very Stiff to Hard Brown (FILL) | | 3 | SS | 35 | | | | | | | | | |
| | Mottled Brown to Grey | | 4 | SS | 22 | | | | | | | | | |
| | | | 5 | SS | 27 | | | | | | | | | |
| | | | 6 | SS | 27 | | | | | | | | | 2 30 40 28 |
| | | | 7 | SS | 39 | | | | | | | | | |
| | | | 8 | SS | 22 | | | | | | | | | |
| | | | 9 | SS | 23 | | | | | | | | | |
| | | | 10 | SS | 18 | | | | | | | | | 5 31 39 25 |

Continued Next Page

+ 3 . X 3 : Numbers refer to Sensitivity

20 15 10 5 (%) STRAIN AT FAILURE

RECORD OF BOREHOLE No GD-09

2 OF 2

METRIC

G.W.P. 202-95-00

LOCATION

N 4 840 121.9 E 295 960.2 Disco Rd./Goreway Dr.

ORIGINATED BY GA

HWY 427

BOREHOLE TYPE Solid Stem Auger


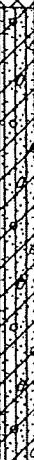
COMPILED BY AN

DATUM Geodetic

DATE

2008.11.08 - 2008.11.08

CHECKED BY SKP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | | | UNIT WEIGHT γ kN/m ³ | REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL | | | |
|---------------|---|--|---------|------|------------|----------------------------|-----------------|--|--|--|--|------------------------------------|--|--|-------------------|------------|--|
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | "N" VALUES | | | SHEAR STRENGTH kPa | | | | | | | WATER CONTENT (%) | | |
| | | | | | | | | ● UNCONFINED + FIELD VANE ● QUICK TRIAXIAL X LAB VANE | | | | | | | | | |
| | Continued From Previous Page | | | | | | 20 40 60 80 100 | | | | | PLASTIC LIMIT W _P | NATURAL MOISTURE CONTENT W | LIQUID LIMIT W _L | | | |
| | Clayey SILT and sand, trace gravel Very Stiff Mottled Brown to Grey (FILL) |  | 11 | SS | 20 | | | | | | | | | | | | |
| | Wood fragments | | | | | | | | | | | | | | | | |
| 157.4 | | | | 12 | SS | 35 | | | | | | | | | | | |
| 12.6 | Clayey SILT and sand, trace gravel, occasional organics Very stiff Grey to Brown (TILL) |  | | | | | | | | | | | | | | | |
| | | | | 13 | SS | 22 | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| 154.2 | | | 14 | SS | 22 | | | | | | | | | | | 3 29 41 27 | |
| 15.8 | END OF BOREHOLE AT 15.8m. BOREHOLE BACKFILLED WITH BENTONITE TO SURFACE. | | | | | | | | | | | | | | | | |

+ 3, x 3: Numbers refer to
Sensitivity 20
15 5
10 (%) STRAIN AT FAILURE

RECORD OF BOREHOLE No GD-10

1 OF 2

METRIC

G.W.P. 202-95-00 LOCATION N 4 840 225.3 E 295 912.6 Disco Rd./Goreway Dr. ORIGINATED BY GA
 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY AN
 DATUM Geodetic DATE 2008.11.06 - 2008.11.06 CHECKED BY SKP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | | | UNIT WEIGHT Y kN/m ³ | REMARKS & GRAIN SIZE DISTRIBUTION (%) |
|---------------|--|------------|---------|------|------------|----------------------------|-----------------|---|---------------------|------------------------------------|-------------------------------------|-----------------------------------|--|---|
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | *N* VALUES | | | 20 40 60 80 100 | 120 140 160 180 200 | PLASTIC LIMIT W _P | NATURAL MOISTURE CONTENT W | LIQUID LIMIT W _L | | |
| 170.2 | | | | | | | | | | | | | | |
| 0.0 | Silty CLAY, trace to some sand, trace gravel, occasional rootlets Firm to Very Stiff Brown to Grey (FILL) | | 1 | SS | 7 | | 170 | | | | | | | |
| | | | 2 | SS | 16 | | 169 | | | | | | | |
| 168.1 | | | 3 | SS | 22 | | | | | | | | | |
| 2.1 | Silty SAND, some clay, trace gravel Compact Brown Moist to Wet (FILL) | | 4 | SS | 15 | | 168 | | | | | | | |
| 167.3 | | | 5 | SS | 31 | | 167 | | | | | | | |
| 2.9 | Clayey SILT and sand, trace gravel Very Stiff to Hard Mottled Brown to Grey (FILL) | | 6 | SS | 33 | | 166 | | | | | | | |
| | | | 7 | SS | 25 | | 165 | | | | | | | |
| | | | 8 | SS | 23 | | 164 | | | | | | | |
| | | | 9 | SS | 54 | | 163 | | | | | | | |
| 162.6 | | | 10 | SS | 64 | | 162 | | | | | | | |
| 7.6 | Clayey SILT and sand, trace gravel Hard Grey (TILL) | | | | | | 161 | | | | | | | |

ONTMT4S 9270.GPJ 6/26/09

Continued Next Page

+ 3, x 3: Numbers refer to Sensitivity
 20 15 10 5 (% STRAIN AT FAILURE)

RECORD OF BOREHOLE No GD-10

2 OF 2

METRIC

G.W.P. 202-95-00

LOCATION

N 4 840 225.3 E 295 912.6 Disco Rd./Goreway Dr.

ORIGINATED BY GA

HWY 427

BOREHOLE TYPE

Solid Stem Auger

COMPILED BY AN

DATUM Geodetic

DATE _____

2008.11.06 - 2008.11.06

CHECKED BY SKP

[illegible]

+³, X³: Numbers refer to Sensitivity

ONTMT4S 9270.GPJ 7/29/09

OFFICE REPORT ON SOIL EXPLORATION

FORM OD-MT-126 (REV. 1969)

WP 658-93-01

| | | | |
|--------------------------------|---------------|--|-----|
| DEPARTMENT OF HIGHWAYS-ONTARIO | | RECORD OF BOREHOLE No. 1 IMPERIAL FOUNDATION SECTION | |
| MATERIALS & TESTING OFFICE | | Co-ords: N 4 839 920.1, E 295 980.0 | |
| JOB 72-11002 | LOCATION | Co-ords: 15, 879, 003 N; 971, 063 E. | |
| W.P. 387-05 | BORING DATE | Feb. 3, 1972 | |
| DATUM Geodetic | BOREHOLE TYPE | AUGER | |
| | | ORIGINATED BY | VK |
| | | COMPILED BY | TST |
| | | CHECKED BY | |

| SOIL PROFILE | | | SAMPLES | | ELEV. SCALE | DYNAMIC PENETRATION RESISTANCE BLOWS/FOOT | SHEAR STRENGTH P.S.F. ○ UNCONFINED ● QUICK TRIAXIAL | LIQUID LIMIT PLASTIC LIMIT WATER CONTENT | WATER CONTENT % | BULK DENSITY | REMARKS |
|--------------|--|--------------|---------|------|-------------|--|---|--|-----------------|--------------|---------|
| ELEV. DEPTH | DESCRIPTION | STRAT. PROF. | NUMBER | TYPE | | | | | | | |
| 509.6 | Ground Level | | | | | | | | | | |
| 0.0 | H. t. mix. of clayey silty sand & occ. gravel. | | 1 | SS | 13 | | | | | | |
| | Very Stiff - Hard | | 2 | SS | 88 | | | | | | |
| | Glacial Till | | 3 | SS | 120 | | | | | | |
| | Silty sand with gravel | | 4 | SS | 120 | | | | | | |
| | | | 5 | SS | 120 | | | | | | |
| | | | 6 | SS | 120/6" | | | | | | |
| | Glacial Till | | 7 | SS | 120/6" | | | | | | |
| | | | 8 | SS | 125 | | | | | | |
| | | | 9 | SS | 58 | | | | | | |
| 473.6 | | | 10 | SS | 100/3" | | | | | | |
| 36.0 | End of Borehole. Probable Redrock | | | | | | | | | | |

WP 658-93-01

DEPARTMENT OF HIGHWAYS - ONTARIO
 MATERIALS & TESTING OFFICE
 JOB 72-11002 LOCATION Co-ords: N 4 839 918.0, E 225 915.4
 W.P. 387-65 BORING DATE Jan. 27, 1972 Co-ords: 15,878,926 N; 970,052 E.
 DATUM Geodetic BOREHOLE TYPE Auger ORIGINATED BY VK
 COMPILED BY TST
 CHECKED BY

RECORD OF BOREHOLE No.3 IMPERIAL FOUNDATION SECTION

| ELEV. DEPTH 156.4 | SOIL PROFILE DESCRIPTION | STRAT. NO. | SAMPLES | | ELEV. SCALE | DYNAMIC PENETRATION RESISTANCE BLOWS/FOOT | | SHEAR STRENGTH P.S.F. ○ UNCONFINED ● QUICK TRIAXIAL x LAB. VANE | LIQUID LIMIT PLASTIC LIMIT WATER CONTENT % | | BULK DENSITY γ | REMARKS |
|-------------------------|---|------------|---------|------|-------------|--|-----|---|--|----|----------------------|---------|
| | | | NUMBER | TYPE | | 20 | 100 | | 10 | 20 | | |
| 513.0 | Ground Level | 0 | | | 510 | | | | | | | |
| 508.0 | 0.0 Sand and gravel with clayey silt. Compact | 1 | SS | 10 | 510 | | | | | | | |
| 5.0 | Hot mix. of clayey silt, sand & gravel | 2 | SS | 39 | 500 | | | | | | | |
| | Glacial Till | 3 | SS | 25 | 500 | | | | | | | |
| | Very Stiff to Hard | 4 | SS | 30 | 490 | | | | | | | |
| | | 5 | SS | 20 | 480 | | | | | | | |
| | | 6 | SS | 21 | 480 | | | | | | | |
| | | 7 | SS | 27 | 480 | | | | | | | |
| | | 8 | SS | 17 | 480 | | | | | | | |
| | | 9 | SS | 50 | 480 | | | | | | | |
| 474.9 | | 10 | SS | 60 | 470 | | | | | | | |
| 38.1 | End of Borehole Probably Bedrock | 11 | SS | 17 | 470 | | | | | | | |

36 29 27 8
 505.

WP 658-93-01

DEPARTMENT OF HIGHWAYS - ONTARIO
 MATERIALS & TESTING OFFICE
 JOB 72-11002 LOCATION Co-ords: N 4839 934.7, E 295 970.6
 W.P. 387-65 BORING DATE Feb. 3, 1972
 DATUM Geodetic BOREHOLE TYPE Aveat

RECORD OF BOREHOLE No. 6 IMPERIAL FOUNDATION SECTION
 Co-ords: N 4839 934.7, E 295 970.6
 Co-ords: 15,879,051 N; 971,032 E.
 ORIGINATED BY VK
 COMPILED BY TST
 CHECKED BY C.

| ELEV. DEPTH | SOIL PROFILE DESCRIPTION | SAMPLES | | ELEV. SCALE | DYNAMIC PENETRATION RESISTANCE | | LIQUID LIMIT PLASTIC LIMIT WATER CONTENT % | BULK DENSITY γ | REMARKS |
|----------------|--|---------|------|-------------|--------------------------------|---|--|-----------------------------|---------|
| | | NUMBER | TYPE | | BLOWS / FOOT | SHEAR STRENGTH P.S.F. O UNCONFINED • QUICK TRIAXIAL | | | |
| 510.3 | Ground Level | | | | | | | | |
| 0.0 | Het. mix. of clayey silt, sand & gravel | 1 | SS | 510 | 20 | 10 | 60 | 80 | 100 |
| | Glacial Till | 2 | SS | 500 | | | | | |
| | Very Stiff - Hard | 3 | SS | 490 | | | | | |
| | | 4 | SS | 480 | | | | | |
| | | 5 | SS | 470 | | | | | |
| | | 6 | SS | 460 | | | | | |
| | | 7 | SS | 450 | | | | | |
| | | 8 | SS | 440 | | | | | |
| | | 9 | SS | 430 | | | | | |
| | | 10 | SS | 420 | | | | | |
| | | 11 | SS | 410 | | | | | |
| 169.8 | End of Borehole | | | | | | | | |

WP 658-93-01

DEPARTMENT OF HIGHWAYS - ONTARIO
 MATERIALS & TESTING OFFICE
 JOB 72-11002 LOCATION Co-ords: N4 839 935.7, E 295 905.0
 W.P. 387-05 BORING DATE Jan. 28, 1972 Co-ords. 15,879,054 N; 970,817 E.
 DATUM Geodetic BOREHOLE TYPE Auger, EXL. Core
 RECORD OF BOREHOLE No. 8 IMPERIAL FOUNDATION SECTION
 ORIGINATED BY VI COMPILED BY TST
 CHECKED BY S.A.

| ELEV. DEPTH | SOIL PROFILE DESCRIPTION | SAMPLES | | ELEV. SCALE | DYNAMIC PENETRATION RESISTANCE BLOWS/FOOT | | SHEAR STRENGTH P.S.F. | | WATER CONTENT % | | REMARKS |
|----------------|---|---------|------|-------------|--|----|-----------------------|----|-----------------|-----|---------|
| | | NUMBER | TYPE | | 20 | 40 | 60 | 80 | 100 | 120 | |
| 512.8 | Ground Level | | | | | | | | | | |
| 0.0 | Net mix. of clayey silt and sand, trace of gravel | 1 | SS | 510 | | | | | | | |
| | | 2 | SS | 500 | | | | | | | |
| | Glacial Till | 3 | SS | 490 | | | | | | | |
| | Stiff to Hard | 4 | SS | 480 | | | | | | | |
| | | 5 | SS | 470 | | | | | | | |
| | | 6 | SS | 460 | | | | | | | |
| | | 7 | SS | 450 | | | | | | | |
| | | 8 | SS | 440 | | | | | | | |
| | | 9 | SS | 430 | | | | | | | |
| | | 10 | SS | 420 | | | | | | | |
| 472.8 | with shale frags. | | | 410 | | | | | | | |
| 460.0 | weathered | | | 400 | | | | | | | |
| 445.8 | Shale bedrock | | | 390 | | | | | | | |
| | Ground | | | 380 | | | | | | | |

LIQUID LIMIT w_L
 PLASTIC LIMIT w_P
 WATER CONTENT w
 WATER CONTENT %
 10 20 30

UNCONFINED
 QUICK TRIAXIAL
 FIELD VANE
 LAB. VANE

REMARKS:
 P.C.F. GR. SA. SL. CL.
 506.5
 335 lb 14
 0 5 lb 18

WP 658-93-01

DEPARTMENT OF HIGHWAYS - ONTARIO
 MATERIALS & TESTING OFFICE
 JOB 72-11002
 W.P. 387-65
 DATUM Geodetic

RECORD OF BOREHOLE No. 11 IMPERIAL FOUNDATION SECTION
 Co-ords: N 4839 963.4, E 295 958.7
 Co-ords. 15, 079, 145 N; 970, 993 E.
 LOCATION
 BORING DATE Feb. 14, 1972
 BOREHOLE TYPE Washboring, NX Casing

ORIGINATED BY VK
 COMPILED BY TST
 CHECKED BY S.A.

| ELEV. DEPTH | SOIL PROFILE DESCRIPTION | STRAT. PLT | SAMPLES | | ELEV. SCALE | DYNAMIC PENETRATION RESISTANCE BLOWS/FOOT | | LIQUID LIMIT PLASTIC LIMIT WATER CONTENT % | BACK DENSITY γ | REMARKS |
|----------------|---|------------|---------|------|-------------|--|-----|--|-----------------------------|---------|
| | | | NUMBER | TYPE | | 20 | 100 | | | |
| 522.5 | Ground Level | | | | | | | | | |
| 517.5 | Gravel, some sand, trace of clay & silt. Compact Fill | | 1 | SS | 11 | | | | | |
| 5.0 | | | 2 | SS | 5 | | | | | |
| | | | 3 | SS | 11 | | | | | |
| | | | 4 | SS | 13 | | | | | |
| 506.5 | Garbage Fill | | 5 | SS | 17 | | | | | |
| 16.0 | Glacial Till | | 6 | SS | 71 | | | | | |
| | | | 7 | SS | 60 | | | | | |
| | | | 8 | SS | 63 | | | | | |
| | | | 9 | SS | 103/5" | | | | | |
| 1486.0 | Stiff to Hard | | | | | | | | | |
| 36.5 | End of Borehole | | 10 | SS | 01 | | | | | |

505.

11 28 43 18

WP 658-93-01

DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS & TESTING OFFICE

RECORD OF BOREHOLE No. 13 IMPERIAL FOUNDATION SECTION

Co-ords: N 4 839 960.3, E 275 894.4

ORIGINATED BY VK

COMPILED BY TST

Co-ords: 15, 872, 135 N; 970, 792 E.

CHECKED BY

DATE Feb. 31, 1972

BORING DATE

BORING TYPE Auger

DATUM

Borehole Type

| SOIL PROFILE | | SAMPLES | | ELEV. SCALE | DYNAMIC PENETRATION RESISTANCE | | LIQUID LIMIT PLASTIC LIMIT WATER CONTENT | | REMARKS |
|--------------|--|---------|------|-------------|--------------------------------|------------|--|----------------|-------------|
| ELEV. DEPTH | DESCRIPTION | NUMBER | TYPE | | BLOWS/FOOT | RESISTANCE | W _L | W _P | |
| 513.0 | Ground Level | | | | | | | | |
| 510.0 | Hot mix. of clayey silt, sand & gravel | 1 | SS | 4 | | | | | 0 44 42 16 |
| | | 2 | SS | 2 | | | | | 505.0 |
| | | 3 | SS | 12 | | | | | |
| | Glacial Till | 4 | SS | 12 | | | | | |
| | Firm to Hard | 5 | SS | 10 | | | | | |
| | | 6 | SS | 20 | | | | | |
| | | 7 | SS | 10 | | | | | |
| | Sand & Gravel | 8 | SS | 10 | | | | | 22 39 28 11 |
| | shale frags. | 9 | SS | 10 | | | | | |
| | | 10 | SS | 10 | | | | | |
| 472.0 | End of Borehole | | | | | | | | |
| 470.2 | Probably bedrock | | | | | | | | |

WP 658-93-01

DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS & TESTING OFFICE

RECORD OF BOREHOLE No. 16 IMPERIAL FOUNDATION SECTION

72-21002 LOCATION CO-ORDS: N 4 839 977.1, E 295 948.6
 W.P. 387-65 BOBING DATE Feb. 2 & 27 Jan. 1972 ORIGINATED BY HS & YK
 DATUM Geodetic BOREHOLE TYPE Auger, NI Casinr, Washborier COMPIRED BY TST
 CHECKED BY S.S.

| ELEV. DEPTH (ft.) | SOIL PROFILE DESCRIPTION | STRAT. NO. | SAMPLES | | | ELEV. SCALE | DYNAMIC PENETRATION RESISTANCE BLOWS/FOOT | | | | LIQUID LIMIT PLASTIC LIMIT WATER CONTENT | BULK DENSITY P.C.F. | REMARKS |
|-------------------------|--|------------|---------|------|------------|-------------|--|----|----|-----|--|---------------------------|-------------|
| | | | NUMBER | TYPE | BLOWS/FOOT | | 25 | 50 | 75 | 100 | | | |
| 528.9 | Ground level | | | | | | | | | | | | |
| 0.0 | Fill material, clayey silt with sand and gravel. | | 1 | SS | 10 | | | | | | | | 7 29 43 17 |
| 50.6 | | | 2 | SS | 10 | | | | | | | | |
| 7.5 | | | 3 | SS | 27 | 520 | | | | | | | |
| | | | 4 | SS | 16 | | | | | | | | |
| | Garbage Fill | | 5 | SS | 1 | | | | | | | | |
| 507.1 | | | 6 | SS | 5 | 510 | | | | | | | |
| 71.9 | Glacial Till | | 7 | SS | 23 | | | | | | | | 505.5 |
| | Hot mix. of clayey silt sand & gravel | | 8 | SS | 23 | | | | | | | | 7 23 43 27 |
| | | | 9 | SS | 13 | 500 | | | | | | | |
| | Stiff to Hard | | 10 | SS | 117 | | | | | | | | |
| | Sand and gravel | | 11 | SS | 101 | 490 | | | | | | | 16 40 26 18 |
| | | | 12 | SS | 101 | 480 | | | | | | | |
| | with shale frags. | | 13 | SS | 101 | | | | | | | | |
| | | | 14 | SS | 101 | 470 | | | | | | | |
| 663.9 | | | 15 | SS | 101 | | | | | | | | |
| 65.0 | weathered | | 16 | SS | 101 | 50 | | | | | | | |
| 659.9 | Shale Bedrock | | 17 | SH | 101 | 460 | | | | | | | |
| 70.0 | End of Borehole | | | | | | | | | | | | |

20
10-3 % STRAIN AT FAILURE
15

WP 658-93-01

DEPARTMENT OF HIGHWAYS- ONTARIO
 MATERIALS & TESTING OFFICE
 JOB 72-11002 LOCATION Co-ords: N 4 829 974.7, E 295 918.1
 W.P. 387-65 BORING DATE Feb. 3, 1972
 DATUM Geodetic BOREHOLE TYPE Auger

RECORD OF BOREHOLE No. 17 IMPERIAL FOUNDATION SECTION
 ORIGINATED BY VK
 COMPILED BY TST
 CHECKED BY A.C.

| ELEV. DEPTH (56.2) | SOIL PROFILE DESCRIPTION | SAMPLES | | ELEV. SCALE | DYNAMIC PENETRATION BLOWS/FOOT | SHEAR STRENGTH P.S.F. ○ UNCONFINED ● QUICK TRIAXIAL | FIELD VANE LAB. VANE | LIQUID LIMIT PLASTIC LIMIT WATER CONTENT % | BULK DENSITY γ | REMARKS |
|--------------------------|--|---------|------|-------------|-----------------------------------|---|-------------------------|--|-----------------------------|---------|
| | | NUMBER | TYPE | | | | | | | |
| 512.6 | Ground Level | | | | | | | | | |
| 508.1 | Fill Material | 1 | SS | 21 | | | | | | |
| 4.5 | Glacial Till Het. mix. of clayey silt, sand & gravel | 2 | SS | 77 | | | | | | |
| | | 3 | SS | 75 | | | | | | |
| | | 4 | SS | 110 | | | | | | |
| | | 5 | SS | 111 | | | | | | |
| | | 6 | SS | 27 | | | | | | |
| | | 7 | SS | 31 | | | | | | |
| | | 8 | SS | 65 | | | | | | |
| 476.6 | with shale frags. | 9 | SS | 100 | | | | | | |
| 36.0 | weathered shale End of Borehole Probable Bedrock | 10 | SS | 100 | | | | | | |

WP 658-93-01

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS & TESTING OFFICE

RECORD OF BOREHOLE No. 18 IMPERIAL FOUNDATION SECTION

Co-ords: N 4839 998.7, E 295 883.1

Co-ords: 15,879.205 N; 970,715 E.

ORIGINATED BY VK

COMPILED BY TST

CHECKED BY J.R.

JOB 72-11002

W.P. 387-65

DATUM Geodetic

LOCATION

BORING DATE Feb. 1, 1972

BOREHOLE TYPE Auger, BXL Core

| SOIL PROFILE | | | SAMPLES | | ELEV. SCALE | DYNAMIC PENETRATION RESISTANCE BLOWS/FOOT | LIQUID LIMIT PLASTIC LIMIT WATER CONTENT | BULK DENSITY | REMARKS |
|----------------|---|------------|---------|------|-------------|--|--|-----------------|---------|
| ELEV. DEPTH | DESCRIPTION | STRAT. POT | NUMBER | TYPE | | | | | |
| 509.3 | Ground Level | | | | | | | | |
| 0.0 | Hot mix. of clayey silt, sand & gravel | | 1 | SS | 5 | | | | |
| | | | 2 | SS | 69 | | | | |
| | | | 3 | SS | 85 | | | | |
| | Glacial Till | | 4 | SS | 80 | | | | |
| | | | 5 | SS | 59 | | | | |
| | | | 6 | SS | 63 | | | | |
| | | | 7 | SS | 80 | | | | |
| | | | 8 | SS | 80 | | | | |
| | | | 9 | SS | 80 | | | | |
| | | | 10 | SS | 80 | | | | |
| | | | 11 | SS | 80 | | | | |
| | | | 12 | SS | 80 | | | | |
| | | | 13 | SS | 80 | | | | |
| | | | 14 | SS | 80 | | | | |
| | | | 15 | SS | 80 | | | | |
| | | | 16 | SS | 80 | | | | |
| | | | 17 | SS | 80 | | | | |
| | | | 18 | SS | 80 | | | | |
| | | | 19 | SS | 80 | | | | |
| | | | 20 | SS | 80 | | | | |
| | | | 21 | SS | 80 | | | | |
| | | | 22 | SS | 80 | | | | |
| | | | 23 | SS | 80 | | | | |
| | | | 24 | SS | 80 | | | | |
| | | | 25 | SS | 80 | | | | |
| | | | 26 | SS | 80 | | | | |
| | | | 27 | SS | 80 | | | | |
| | | | 28 | SS | 80 | | | | |
| | | | 29 | SS | 80 | | | | |
| | | | 30 | SS | 80 | | | | |
| | | | 31 | SS | 80 | | | | |
| | | | 32 | SS | 80 | | | | |
| | | | 33 | SS | 80 | | | | |
| | | | 34 | SS | 80 | | | | |
| | | | 35 | SS | 80 | | | | |
| | | | 36 | SS | 80 | | | | |
| | | | 37 | SS | 80 | | | | |
| | | | 38 | SS | 80 | | | | |
| | | | 39 | SS | 80 | | | | |
| | | | 40 | SS | 80 | | | | |
| | | | 41 | SS | 80 | | | | |
| | | | 42 | SS | 80 | | | | |
| | | | 43 | SS | 80 | | | | |
| | | | 44 | SS | 80 | | | | |
| | | | 45 | SS | 80 | | | | |
| | | | 46 | SS | 80 | | | | |
| | | | 47 | SS | 80 | | | | |
| | | | 48 | SS | 80 | | | | |
| | | | 49 | SS | 80 | | | | |
| | | | 50 | SS | 80 | | | | |
| | | | 51 | SS | 80 | | | | |
| | | | 52 | SS | 80 | | | | |
| | | | 53 | SS | 80 | | | | |
| | | | 54 | SS | 80 | | | | |
| | | | 55 | SS | 80 | | | | |
| | | | 56 | SS | 80 | | | | |
| | | | 57 | SS | 80 | | | | |
| | | | 58 | SS | 80 | | | | |
| | | | 59 | SS | 80 | | | | |
| | | | 60 | SS | 80 | | | | |
| | | | 61 | SS | 80 | | | | |
| | | | 62 | SS | 80 | | | | |
| | | | 63 | SS | 80 | | | | |
| | | | 64 | SS | 80 | | | | |
| | | | 65 | SS | 80 | | | | |
| | | | 66 | SS | 80 | | | | |
| | | | 67 | SS | 80 | | | | |
| | | | 68 | SS | 80 | | | | |
| | | | 69 | SS | 80 | | | | |
| | | | 70 | SS | 80 | | | | |
| | | | 71 | SS | 80 | | | | |
| | | | 72 | SS | 80 | | | | |
| | | | 73 | SS | 80 | | | | |
| | | | 74 | SS | 80 | | | | |
| | | | 75 | SS | 80 | | | | |
| | | | 76 | SS | 80 | | | | |
| | | | 77 | SS | 80 | | | | |
| | | | 78 | SS | 80 | | | | |
| | | | 79 | SS | 80 | | | | |
| | | | 80 | SS | 80 | | | | |
| | | | 81 | SS | 80 | | | | |
| | | | 82 | SS | 80 | | | | |
| | | | 83 | SS | 80 | | | | |
| | | | 84 | SS | 80 | | | | |
| | | | 85 | SS | 80 | | | | |
| | | | 86 | SS | 80 | | | | |
| | | | 87 | SS | 80 | | | | |
| | | | 88 | SS | 80 | | | | |
| | | | 89 | SS | 80 | | | | |
| | | | 90 | SS | 80 | | | | |
| | | | 91 | SS | 80 | | | | |
| | | | 92 | SS | 80 | | | | |
| | | | 93 | SS | 80 | | | | |
| | | | 94 | SS | 80 | | | | |
| | | | 95 | SS | 80 | | | | |
| | | | 96 | SS | 80 | | | | |
| | | | 97 | SS | 80 | | | | |
| | | | 98 | SS | 80 | | | | |
| | | | 99 | SS | 80 | | | | |
| | | | 100 | SS | 80 | | | | |
| | | | 101 | SS | 80 | | | | |
| | | | 102 | SS | 80 | | | | |
| | | | 103 | SS | 80 | | | | |
| | | | 104 | SS | 80 | | | | |
| | | | 105 | SS | 80 | | | | |
| | | | 106 | SS | 80 | | | | |
| | | | 107 | SS | 80 | | | | |
| | | | 108 | SS | 80 | | | | |
| | | | 109 | SS | 80 | | | | |
| | | | 110 | SS | 80 | | | | |
| | | | 111 | SS | 80 | | | | |
| | | | 112 | SS | 80 | | | | |
| | | | 113 | SS | 80 | | | | |
| | | | 114 | SS | 80 | | | | |
| | | | 115 | SS | 80 | | | | |
| | | | 116 | SS | 80 | | | | |
| | | | 117 | SS | 80 | | | | |
| | | | 118 | SS | 80 | | | | |
| | | | 119 | SS | 80 | | | | |
| | | | 120 | SS | 80 | | | | |
| | | | 121 | SS | 80 | | | | |
| | | | 122 | SS | 80 | | | | |
| | | | 123 | SS | 80 | | | | |
| | | | 124 | SS | 80 | | | | |
| | | | 125 | SS | 80 | | | | |
| | | | 126 | SS | 80 | | | | |
| | | | 127 | SS | 80 | | | | |
| | | | 128 | SS | 80 | | | | |
| | | | 129 | SS | 80 | | | | |
| | | | 130 | SS | 80 | | | | |
| | | | 131 | SS | 80 | | | | |
| | | | 132 | SS | 80 | | | | |
| | | | 133 | SS | 80 | | | | |
| | | | 134 | SS | 80 | | | | |
| | | | 135 | SS | 80 | | | | |
| | | | 136 | SS | 80 | | | | |
| | | | 137 | SS | 80 | | | | |
| | | | 138 | SS | 80 | | | | |
| | | | 139 | SS | 80 | | | | |
| | | | 140 | SS | 80 | | | | |
| | | | 141 | SS | 80 | | | | |
| | | | 142 | SS | 80 | | | | |
| | | | 143 | SS | 80 | | | | |
| | | | 144 | SS | 80 | | | | |
| | | | 145 | SS | 80 | | | | |
| | | | 146 | SS | 80 | | | | |
| | | | 147 | SS | 80 | | | | |
| | | | 148 | SS | 80 | | | | |
| | | | 149 | SS | 80 | | | | |
| | | | 150 | SS | 80 | | | | |
| | | | 151 | SS | 80 | | | | |
| | | | 152 | SS | 80 | | | | |
| | | | 153 | SS | 80 | | | | |
| | | | 154 | SS | 80 | | | | |
| | | | 155 | SS | 80 | | | | |
| | | | 156 | SS | 80 | | | | |
| | | | 157 | SS | 80 | | | | |
| | | | 158 | SS | 80 | | | | |
| | | | 159 | SS | 80 | | | | |
| | | | 160 | SS | 80 | | | | |
| | | | 161 | SS | 80 | | | | |
| | | | 162 | SS | 80 | | | | |
| | | | 163 | SS | 80 | | | | |
| | | | 164 | SS | 80 | | | | |
| | | | 165 | SS | 80 | | | | |
| | | | 166 | SS | 80 | | | | |
| | | | 167 | SS | 80 | | | | |
| | | | 168 | SS | 80 | | | | |
| | | | 169 | SS | 80 | | | | |
| | | | 170 | SS | 80 | | | | |
| | | | 171 | SS | 80 | | | | |
| | | | 172 | SS | 80 | | | | |
| | | | 173 | SS | 80 | | | | |
| | | | 174 | SS | 80 | | | | |
| | | | 175 | SS | 80 | | | | |
| | | | 176 | SS | 80 | | | | |
| | | | 177 | SS | 80 | | | | |
| | | | 178 | SS | 80 | | | | |
| | | | 179 | SS | 80 | | | | |
| | | | 180 | SS | 80 | | | | |
| | | | 181 | SS | 80 | | | | |
| | | | 182 | SS | 80 | | | | |
| | | | 183 | SS | 80 | | | | |
| | | | 184 | SS | 80 | | | | |
| | | | 185 | SS | 80 | | | | |
| | | | 186 | SS | 80 | | | | |
| | | | 187 | SS | 80 | | | | |
| | | | 188 | SS | 80 | | | | |
| | | | 189 | SS | 80 | | | | |
| | | | 190 | SS | 80 | | | | |
| | | | 191 | SS | 80 | | | | |
| | | | 192 | SS | 80 | | | | |
| | | | 193 | SS | 80 | | | | |
| | | | 194 | SS | 80 | | | | |
| | | | 195 | SS | 80 | | | | |
| | | | 196 | SS | 80 | | | | |
| | | | 197 | SS | 80 | | | | |
| | | | 198 | SS | 80 | | | | |
| | | | 199 | SS | 80 | | | | |
| | | | 200 | SS | 80 | | | | |
| | | | 201 | SS | 80 | | | | |
| | | | 202 | SS | 80 | | | | |
| | | | 203 | SS | 80 | | | | |
| | | | 204 | SS | 80 | | | | |
| | | | 205 | SS | 80 | | | | |
| | | | 206 | SS | 80 | | | | |
| | | | 207 | SS | 80 | | | | |
| | | | 208 | SS | 80 | | | | |
| | | | 209 | SS | 80 | | | | |
| | | | 210 | SS | 80 | | | | |
| | | | 211 | SS | 80 | | | | |
| | | | 212 | | | | | | |

| DESIGN SERVICES BRANCH | | | | RECORD OF BOREHOLE NO. 1 | | | | FOUNDATIONS OFFICE | | | | | | | |
|------------------------|---|-------------|--------|--|------------|--------------------|----|----------------------|----|-------------------|-----|-----------------------|----|---------|------------------------|
| WP 659-93-01 | | | | Co-ords: N 4840353.2, E 295735.9 | | | | IMPERIAL | | | | | | | |
| JOB 72-11022 | | | | LOCATION Co-ord's 880,424 N. 970,262 E. | | | | ORIGINATED BY V.K. | | | | | | | |
| WP. 21-65 | | | | BORING DATE March 13, 1972 | | | | COMPILED BY V.K. | | | | | | | |
| DATUM Geodetic | | | | BOREHOLE TYPE Auger and Sample with C.M.Z. | | | | CHECKED BY <i>So</i> | | | | | | | |
| SOIL PROFILE | | SAMPLES | | DYNAMIC PENETRATION RESISTANCE | | LIQUID LIMIT w_L | | PLASTIC LIMIT w_p | | WATER CONTENT w | | BULK DENSITY γ | | REMARKS | |
| ELEV. DEPTH | DESCRIPTION | STRAT. PLOT | NUMBER | TYPE | BLOWS/FOOT | ELEV. SCALE | 20 | 40 | 60 | 80 | 100 | 10 | 20 | 30 | P.C.F. GR. SA. SI. CL. |
| 545.7 | Ground level. | | | | | | | | | | | | | | |
| 0.0 | Het. mixture of clayey silt, sand & gravel. Glacial Till. | | 1 | SS | 20 | | | | | | | | | | 4.6 75 15 |
| | | | 2 | SS | 74 | | | | | | | | | | |
| | | | 3 | SS | 33 | | | | | | | | | | |
| 532.7 | Brown | | 4 | SS | 27 | | | | | | | | | | |
| 13.0 | Grey | | 5 | SS | 20 | | | | | | | | | | |
| | Very stiff to hard. | | 6 | SS | 20 | | | | | | | | | | |
| | | | 7 | SS | 19 | | | | | | | | | | |
| | | | 8 | SS | 20 | | | | | | | | | | |
| | | | 9 | SS | 24 | | | | | | | | | | |
| | | | 10 | SS | 23 | | | | | | | | | | |
| | | | 11 | SS | 55 | | | | | | | | | | |
| | | | 12 | SS | 116 | | | | | | | | | | 5 17 64 14 |
| | | | 13 | SS | 53 | | | | | | | | | | |
| 474.7 | | | 14 | SS | 100 | | | | | | | | | | |
| 71.0 | End of borehole. | | | | | | | | | | | | | | |

20
15 γ % STRAIN AT FAILURE
10

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS-ONTARIO

DESIGN SERVICES BRANCH

RECORD OF BOREHOLE No 2

FOUNDATIONS OFFICE
IMPERIAL

WP 659-93-01

Co-ORDS: N 4 840 364.5, E 295 760.2

JOB 72-11022

LOCATION Co-ord's 880,461 N. 970,342 E.

ORIGINATED BY Y.K.

W.P. 213-65

BORING DATE March 6, 1972

COMPILED BY Y.K.

DATUM Geodetic

BOREHOLE TYPE Auger and Sample with C.H.E. Machine.

CHECKED BY

| SOIL PROFILE | | SAMPLES | | ELEV. SCALE | DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT 20 40 60 80 100 | LIQUID LIMIT — W _L PLASTIC LIMIT — W _P WATER CONTENT — W _P | WATER CONTENT % 10 20 30 | BULK DENSITY P.C.F. | REMARKS |
|--------------|--|------------|------------------------------|-------------|---|---|-----------------------------|------------------------|---------|
| ELEV. DEPTH | DESCRIPTION | STRAT. PLT | NUMBER TYPE BLOWS/FOOT | | | | | | |
| 546.9 | Ground level. | | | | | | | | |
| 0.0 | 1. mixture of clayey silt, sand & gravel. Glacial Till. | | 1 SS 17 | 540 | | | | | |
| | | | 2 SS 36 | | | | | | |
| 532.9 | Brown | | 3 SS 57 | | | | | | |
| 14.0 | Grey. | | 4 SS 37 | 530 | | | | | |
| | Stiff to hard. | | 5 SS 13 | | | | | | |
| | | | 6 SS 19 | 520 | | | | | |
| | | | 7 SS 22 | | | | | | |
| | | | 8 SS 15 | 510 | | | | | |
| | | | 9 SS 26 | | | | | | |
| | | | 10 SS 44 | 500 | | | | | |
| | | | 11 SS 100/5" | 490 | | | | | |
| | | | 12 SS 120/5" | 480 | | | | | |
| 469.9 | Fragments of shale | | 13 BXL Rec. 40% | 470 | | | | | |
| 77.0 | Shale Bedrock. | | 14 BXL Rec. 70% | | | | | | |
| 465.9 | Grey. Sound | | | | | | | | |
| 81.0 | End of borehole. | | | 460 | | | | | |

20
15 5 % STRAIN AT FAILURE
10

OFFICE REPORT ON SOIL EXPLORATION

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS-ONTARIO

| DESIGN SERVICES BRANCH | | | RECORD OF BOREHOLE No 3 | | | FOUNDATIONS OFFICE | | | |
|------------------------|---|-------------|--|--------------------------------|------------|-------------------------------|--------------------------------|--------------|---------|
| WP 659-93-01 | | | Co-ordinates 840 375.2, E 295 755.4 | | | IMPERIAL | | | |
| JOB 72-11022 | | | LOCATION Co-ord's 880,496 N. 970,326 E. | | | ORIGINATED BY V.K. | | | |
| W.P. 213-65 | | | BORING DATE March 13, 1972 | | | COMPILED BY V.K. | | | |
| DATUM Geodetic | | | BOREHOLE TYPE Auger and Sample with C.M.E. Machine | | | CHECKED BY | | | |
| SOIL PROFILE | | SAMPLES | | DYNAMIC PENETRATION RESISTANCE | | LIQUID LIMIT — W _L | | BULK DENSITY | REMARKS |
| ELEV. DEPTH | DESCRIPTION | STRAT. PLOT | NUMBER | TYPE | BLOWS/FOOT | 20 40 60 80 100 | PLASTIC LIMIT — W _P | | |
| 547.9 | Ground level. | | | | | | | | |
| 0.0 | Het. mixture of clayey silt, sand & gravel. | | 1 | SS | 29 | | | | |
| | Glacial Till. | | 2 | SS | 27 | | | | |
| | | | 3 | SS | 76 | | | | |
| 535.4 | Brown. | | 4 | SS | 26 | | | | |
| 12.5 | Grey. | | 5 | SS | 19 | | | | |
| | Very stiff to hard. | | 6 | SS | 18 | | | | |
| | | | 7 | SS | 23 | | | | |
| | | | 8 | SS | 19 | | | | |
| | | | 9 | SS | 23 | | | | |
| 512.9 | 156.3 | | 10 | SS | 31 | | | | |
| 35.0 | Silty sand, traces of clay & gravel. | | 11 | SS | 40 | | | | |
| | Dense. | | | | | | | | |
| 423.9 | | | 12 | SS | 97 | | | | |
| 44.0 | Het. mix. of clayey silt, sand & gravel. | | | | | | | | |
| | Glacial Till. | | | | | | | | |
| | Hard. | | 13 | SS | 55 | | | | |
| 477.4 | | | 14 | SS | 1007 | | | | |
| 70.5 | End of borehole. | | | | | | | | |

20
15 5 % STRAIN AT FAILURE
10

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS-ONTARIO

| DESIGN SERVICES BRANCH | | | | RECORD OF BOREHOLE NO. 4 | | | | FOUNDATIONS OFFICE | | | |
|------------------------|--|------------|------------------------------|---|---|--|---|----------------------|--|--|--|
| WP 659-93-01 | | | | Co-ords: N 4840 395.6, E 295 745.3 | | | | IMPERIAL | | | |
| JOB 72-11022 | | | | LOCATION Co-ord's 880,563 N. 970,297 E. | | | | CHECKED BY V.K. | | | |
| W.P. 213-65 | | | | BORING DATE March 7, 1972 | | | | CORRECTED BY V.K. | | | |
| DATUM Geodetic | | | | BOREHOLE TYPE Auger and Sample with C.M.E. Machine. | | | | CHECKED BY <u> </u> | | | |
| SOIL PROFILE | | SAMPLES | | ELEV. SCALE | DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT 20 40 60 80 100 | LIQUID LIMIT — W _L PLASTIC LIMIT — W _P WATER CONTENT — W _c W _p — W _c — W _L WATER CONTENT % 10 20 30 | BULK DENSITY Y P.C.F. GR. SA. SI. CL. | REMARKS | | | |
| ELEV. DEPTH | DESCRIPTION | STRAT. PLT | NUMBER TYPE BLOWS/FOOT | | | | | | | | |
| 548.4 | Ground level. | | | | | | | | | | |
| 0.0 | Het. mix. of clayey silt, sand & gravel. Glacial Till. | | 1 SS 26 | | | | | | | | |
| | | | 2 SS 35 | | | | | | | | |
| 536.9 | Brown Grey | | 3 SS 63 | | | | | | | | |
| 11.3 | Very stiff to hard. | | 4 SS 59 | | | | | | | | |
| | | | 5 SS 23 | | | | | | | | |
| | | | 6 SS 27 | | | | | | | | |
| | | | 7 SS 39 | | | | | | | | |
| | | | 8 SS 31 | | | | | | | | |
| | | | 9 SS 37 | | | | | | | | |
| 512.4 | 156.2 | | 10 SS 90 | | | | | | | | |
| 36.0 | Silty sand, traces of clay and gravel. Dense. | | 11 SS 44 | | | | | | | | |
| 502.4 | | | | | | | | | | | |
| 46.0 | Het. mix. of clayey silt, sand & gravel. Glacial Till. Hard. | | 12 SS 50 | | | | | | | | |
| | | | | | | | | | | | |
| | | | 13 SS 72 | | | | | | | | |
| | | | | | | | | | | | |
| | Fragments of shale | | 14 SS 100 73 | | | | | | | | |
| 471.9 | | | 15 BXL Rec. 5% | | | | | | | | |
| 76.5 | Shale bedrock. | | | | | | | | | | |
| 467.4 | Grey. Sound | | 16 BXL Rec. 90% | | | | | | | | |
| 81.0 | End of borehole. | | | | | | | | | | |

20
15 5 % STRAIN AT FAILURE
10

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS-ONTARIO

| DESIGN SERVICES BRANCH | | | | RECORD OF BOREHOLE NO 5 | | | | FOUNDATIONS OFFICE | | | | | |
|------------------------|--|------------|--------|--|------------|--------------------------------|---------------------------------|--------------------|---------------|----------------|----------------|---------|--------|
| WP 659-93-01 | | | | Co-ords: N 4840415.7, E 255735.6 | | | | IMPERIAL | | | | | |
| JOB 72-11022 | | | | LOCATION Co-ord's 880,629 N. 970,261 W. | | | | ORIGINATED BY V.K. | | | | | |
| W.P. 213-65 | | | | BORING DATE March 6, 1972 | | | | COMPILED BY V.K. | | | | | |
| DATUM Geodetic | | | | BOREHOLE TYPE Auger and Sample with C.M.E. Machine | | | | CHECKED BY | | | | | |
| SOIL PROFILE | | SAMPLES | | ELEV. SCALE | | DYNAMIC PENETRATION RESISTANCE | | LIQUID LIMIT | | BULK DENSITY | | REMARKS | |
| ELEV. DEPTH | DESCRIPTION | STRAT. PLT | NUMBER | TYPE | BLOWS/FOOT | ELEV. SCALE | BLOWS / FOOT 20 40 60 80 100 | PLASTIC LIMIT | WATER CONTENT | W _p | W _L | Y | P.C.F. |
| 546.5 | Ground level. | | | | | | | | | | | | |
| 0.0 | Het. mix. of clayey silt, sand & gravel. Glacial Till. | | 1 | SS | 37 | 540 | | | | | | | |
| | | | 2 | SS | 26 | | | | | | | | |
| 535.5 | Brown | | 3 | SS | 55 | | | | | | | | |
| 11.0 | Grey. | | 4 | SS | 23 | | | | | | | | |
| | Stiff to hard. | | 5 | SS | 13 | 530 | | | | | | | |
| | | | 6 | SS | 17 | | | | | | | | |
| | | | 7 | SS | 29 | | | | | | | | |
| | | | 8 | SS | 36 | 520 | | | | | | | |
| | | | 9 | SS | 28 | | | | | | | | |
| 508.5 | 155 | | 10 | SS | 74 | 510 | | | | | | | |
| 38.0 | Silty sand, traces of clay & few gravel. Dense. | | 11 | SS | 30 | | | | | | | | |
| 500.5 | | | | | | 500 | | | | | | | |
| 46.0 | Het. mix. of clayey silt, sand & gravel. Glacial Till. Hard. | | 12 | SS | 36 | 490 | | | | | | | |
| | | | 13 | SS | 71 | 480 | | | | | | | |
| 476.4 | Fragments of shale | | 14 | SS | 100 | 470 | | | | | | | |
| 70.1 | End of borehole. | | | | | | | | | | | | |

OFFICE REPORT ON SOIL EXPLORATION

20
15 5 % STRAIN AT FAILURE
10

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS-ONTARIO

| DESIGN SERVICES BRANCH | | | | RECORD OF BOREHOLE N ^o 6 | | | | FOUNDATIONS OFFICE | | | | | | | |
|------------------------|--|------------|--------|---|------------|--------------|------------------|--------------------|----------------|----------------|----------------|----------------|----------------|---------|--------|
| WP 659-93-01 | | | | Co-ords: N 48 40 31.2, E 295 697.8 | | | | IMPERIAL | | | | | | | |
| JOB 72-11022 | | | | LOCATION Co-ords 880,455 N. 970,137 E. | | | | ORIGINATED BY V.K. | | | | | | | |
| W.P. 213-65 | | | | BORING DATE March 10, 1972 | | | | COMPILED BY V.K. | | | | | | | |
| DATUM Geodetic | | | | BOREHOLE TYPE Auger and Sample with C.M.E. Machine. | | | | CHECKED BY | | | | | | | |
| SOIL PROFILE | | SAMPLES | | DYNAMIC PENETRATION RESISTANCE | | LIQUID LIMIT | | PLASTIC LIMIT | | WATER CONTENT | | BULK DENSITY | | REMARKS | |
| ELEV. DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | BLOWS/FOOT | ELEV. SCALE | 20' 40 60 80 100 | W _p | W _L | W _p | W _L | W _p | W _L | Y | P.C.F. |
| 546.6 | Ground level. | | | | | | | | | | | | | | |
| U.0 | Het. mix. of clayey silt, sand & gravel. Glacial Till. | | 1 | SS | 20 | | | | | | | | | | |
| | | | 2 | SS | 32 | | | | | | | | | | |
| | | | 3 | SS | 50 | | | | | | | | | | |
| 533.1 | Brown | | 4 | SS | 52 | | | | | | | | | | |
| 13.5 | Grey | | 5 | SS | 18 | | | | | | | | | | |
| | Very stiff to hard. | | 6 | SS | 30 | | | | | | | | | | |
| | | | 7 | SS | 41 | | | | | | | | | | |
| | | | 8 | SS | 46 | | | | | | | | | | |
| | | | 9 | SS | 31 | | | | | | | | | | |
| | | | 10 | SS | 70 | | | | | | | | | | |
| | | | 11 | SS | 124 | | | | | | | | | | |
| 498.6 | 152.0 | | 12 | SS | 191 | | | | | | | | | | |
| 48.0 | Silty sand, traces of clay and some gravel. Dense to very dense. | | 13 | SS | 48 | | | | | | | | | | |
| | | | 14 | SS | 152 | | | | | | | | | | |
| 476.5 | | | 15 | SS | 100.2 | | | | | | | | | | |
| 70.1 | End of borehole. | | | | | | | | | | | | | | |

20
15
10
% STRAIN AT FAILURE

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS-ONTARIO

| DESIGN SERVICES BRANCH | | | RECORD OF BOREHOLE NO 7 | | | FOUNDATIONS OFFICE | | | |
|------------------------|--|------------|---|--------------------------------|------------|--------------------|----------------|--------------|---------|
| WP 659-93-01 | | | Co-ords N 4840373.4, E 255493.2 | | | IMPERIAL | | | |
| JOB 72-11022 | | | LOCATION Co-ord's 880,490 N. 970,122 E. | | | ORIGINATED BY V.K. | | | |
| W.P. 213-65 | | | BORING DATE March 7, 1972 | | | COMPILED BY V.K. | | | |
| DATUM Geodetic | | | BOREHOLE TYPE Auger and Sample with C.M.E. Machine. | | | CHECKED BY | | | |
| SOIL PROFILE | | SAMPLES | | DYNAMIC PENETRATION RESISTANCE | | LIQUID LIMIT | | BULK DENSITY | REMARKS |
| ELEV. DEPTH | DESCRIPTION | STRAT. PLT | NUMBER | TYPE | BLOWS/FOOT | W _L | W _P | | |
| 548.8 | Ground level. | | | | | | | | |
| 0.0 | Het. mix. of clayey silt, sand & gravel. Glacial Till. | | 1 | SS | 14 | | | | |
| | | | 2 | SS | 29 | | | | |
| 534.8 | Brown. | | 3 | SS | 29 | | | | |
| 14.0 | Grey. | | 4 | SS | 14 | | | | |
| | Stiff to hard. | | 5 | SS | 13 | | | | |
| | | | 6 | SS | 28 | | | | |
| | | | 7 | SS | 20 | | | | |
| | | | 8 | SS | 21 | | | | |
| | | | 9 | SS | 20 | | | | |
| 502.8 | 153.3 | | | | | | | | |
| 46.0 | Sandy silt to silty sand with traces of clay and gravel. Very dense. | | 10 | SS | 100 | | | | |
| | | | 11 | SS | 57 | | | | |
| | | | 12 | SS | 74 | | | | |
| 468.3 | | | 13 | SL | 100 | | | | |
| 80.5 | Shale Bedrock. | | 14 | BXL | Rec. | | | | |
| 463.3 | Grey Sand | | | | 90% | | | | |
| 85.5 | End of borehole. | | | | | | | | |

20
15 5 % STRAIN AT FAILURE
10

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS-ONTARIO

| DESIGN SERVICES BRANCH | | | | RECORD OF BOREHOLE NO 8 | | | | FOUNDATIONS OFFICE | | | | | |
|------------------------|--|-------------|--------|---|------------|--------------|----|-------------------------------|----|---------------|-----|--------------|---------|
| WP 659-93-01 | | | | Co-ords: N 4840 392.6, E 295 684.7 | | | | ORIGINATED BY V.K. | | | | | |
| JOB 72-11022 | | | | LOCATION Co-ord's 880,553 N. 970,094 E. | | | | COMPILED BY V.K. | | | | | |
| W.P. 213-65 | | | | BORING DATE March 8, 1972 | | | | CHECKED BY <i>[Signature]</i> | | | | | |
| DATUM Geodetic | | | | BOREHOLE TYPE Auger and Sample with C.H.E. Machine. | | | | | | | | | |
| SOIL PROFILE | | SAMPLES | | DYNAMIC PENETRATION RESISTANCE | | LIQUID LIMIT | | PLASTIC LIMIT | | WATER CONTENT | | BULK DENSITY | REMARKS |
| ELEV. DEPTH | DESCRIPTION | STRAT. PLAT | NUMBER | TYPE | BLOWS/FOOT | ELEV. SCALE | 20 | 40 | 60 | 80 | 100 | | |
| 545.6 | Ground level. | | | | | | | | | | | | |
| 0.0 | Het. mix. of clayey silt, sand & gravel. Glacial Till. | | 1 | SS | 34 | 540 | | | | | | | |
| | | | 2 | SS | 40 | | | | | | | | |
| 334.6 | Brown. | | 3 | SS | 55 | | | | | | | | |
| 11.0 | Grey. | | 4 | SS | 21 | | | | | | | | |
| | | | 5 | SS | 22 | 530 | | | | | | | |
| | Very stiff to hard. | | 6 | SS | 38 | | | | | | | | |
| | | | 7 | SS | 43 | | | | | | | | |
| | | | 8 | SS | 50 | 520 | | | | | | | |
| | | | 9 | SS | 89 | | | | | | | | |
| | | | 10 | SS | 96 | 510 | | | | | | | |
| 504.6 | 153.8 | | 11 | SS | 109 | | | | | | | | |
| 41.0 | Silty sand with traces of clay and gravel. | | | | | 500 | | | | | | | |
| | Very dense. | | | | | | | | | | | | |
| 494.6 | | | 12 | SS | 108 | | | | | | | | |
| 51.0 | Het. mix. of clayey silt, sand & gravel. Glacial Till. | | | | | 490 | | | | | | | |
| | Hard. | | 13 | SS | 97 | | | | | | | | |
| | | | | | | 480 | | | | | | | |
| 475.5 | | | 14 | SS | 100/11 | | | | | | | | |
| 70.1 | End of borehole. | | | | | 470 | | | | | | | |

20
15
10
5
% STRAIN AT FAILURE

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS - ONTARIO

| DESIGN SERVICES BRANCH | | | | RECORD OF BOREHOLE NO 9 | | | | FOUNDATIONS OFFICE | | | | | | | |
|------------------------|---|------------|--------|--|------------|--------------|-----------------|--------------------|----------------|---------------|----------------|----------------|---|---------|------------|
| WP 659-93-01 | | | | CO-ORDS: N 4840414.2, E 295475.5 | | | | IMPERIAL | | | | | | | |
| JOB 72-11022 | | | | LOCATION Co-ord's: 480,624 N, 970,064 E, | | | | ORIGINATED BY V.K. | | | | | | | |
| W.P. 213-65 | | | | BORING DATE March 6, 1972 | | | | COMPILED BY V.K. | | | | | | | |
| DATUM Geodetic | | | | BOREHOLE TYPE Auger and Sample with C.M.E. Machine | | | | CHECKED BY | | | | | | | |
| SOIL PROFILE | | SAMPLES | | DYNAMIC PENETRATION RESISTANCE | | LIQUID LIMIT | | PLASTIC LIMIT | | WATER CONTENT | | BULK DENSITY | | REMARKS | |
| ELEV. DEPTH | DESCRIPTION | STRAT. PLT | NUMBER | TYPE | BLOWS/FOOT | ELEV. SCALE | 20 40 60 80 100 | W _p | W _L | W | W _p | W _L | W | Y | P.C.F. |
| 542.1 | Ground level. | | | | | | | | | | | | | | |
| 0.0 | Net. Mix. of clayey silt, sand and gra. Glacial Till. | | 1 | SS | 27 | 540 | | | | | | | | | |
| | | | 2 | SS | 41 | | | | | | | | | | 2 24 53 21 |
| 531.1 | Brown | | 3 | SS | 57 | 530 | | | | | | | | | |
| 11.0 | Grey | | 4 | SS | 39 | | | | | | | | | | |
| | Very stiff to hard. | | 5 | SS | 39 | | | | | | | | | | |
| | | | 6 | SS | 51 | | | | | | | | | | |
| | | | 7 | SS | 61 | | | | | | | | | | |
| | | | 8 | SS | 41 | | | | | | | | | | |
| | | | 9 | SS | 22 | | | | | | | | | | |
| | | | 10 | SS | 133 | | | | | | | | | | 3 19 68 10 |
| | | | 11 | SS | 150 | | | | | | | | | | |
| 494.1 | EL 150.0 | | 12 | SS | 73 | | | | | | | | | | |
| 48.0 | Silty sand, gravel with traces of clay. | | 13 | SS | 162 | | | | | | | | | | 47 41 10 2 |
| 488.1 | Very dense. | | | | | | | | | | | | | | |
| 54.0 | Net. mix. of clayey silt, sand & gravel. Glacial Till Hard. | | 14 | SS | 116 | | | | | | | | | | |
| | Fragments of shale | | 15 | SS | 1007 | | | | | | | | | | |
| 458.1 | | | 16 | BXL | 1007 | | | | | | | | | | |
| 84.0 | Shale bedrock. | | 17 | BXL | Rec. 1007 | | | | | | | | | | |
| 453.1 | Grav. Sound | | | | | | | | | | | | | | |
| 89.0 | End of borehole. | | | | | | | | | | | | | | |

20
15-5 % STRAIN AT FAILURE
10

| DESIGN SERVICES BRANCH | | | RECORD OF BOREHOLE NO 1 | | | FOUNDATIONS OFFICE | | | |
|------------------------|---|------------|--|--------------------------------|------------|--------------------|-----------------|--------------|------------|
| WP 660-93-01 | | | Co-ords. N 4840614.8, E 295 645.3 | | | IMPERIAL | | | |
| JOB 72-11023 | | | LOCATION | | | ORIGINATED BY VK | | | |
| W.P. 48-71-02 | | | BORING DATE Feb. 21, 1972 | | | COMPILED BY VK | | | |
| DATUM Gravitic | | | BOREHOLE TYPE Auger & sample with C.M.E. machine | | | CHECKED BY | | | |
| SOIL PROFILE | | SAMPLES | | DYNAMIC PENETRATION RESISTANCE | | LIQUID LIMIT | | BULK DENSITY | REMARKS |
| ELEV. DEPTH | DESCRIPTION | STRAT. LOT | NUMBER | TYPE | BLOWS/FOOT | WATER CONTENT % | WATER CONTENT % | | |
| 513.5 | Ground Level | | | | | | | | |
| 0.0 | Het. mix. of clayey silt, sand & gravel. (Glacial Till) | P. | 1 | SS | 12 | | | | Sl. Cl. |
| | | | 2 | SS | 16 | | | | 2 27 57 lb |
| 533.5 | Brown | | 3 | SS | 15 | | | | |
| 10.0 | Grey | | 4 | SS | 27 | | | | |
| | Stiff to Hard | | 5 | SS | 25 | | | | |
| | | | 6 | SS | 27 | | | | |
| | | | 7 | SS | 27 | | | | |
| | | | 8 | SS | 31 | | | | |
| | | | 9 | SS | 17 | | | | |
| | | | 10 | SS | 21 | | | | |
| | | | 11 | SS | 20 | | | | |
| | | | 12 | SS | 30 | | | | |
| | | | 13 | SS | 16 | | | | |
| | | | 14 | SS | 41 | | | | |
| | | | 15 | SS | 22 | | | | |
| 480.5 | | | | | | | | | |
| 63.0 | Weathered Shale | | 16 | SS | 100 | | | | |
| | | | 17 | SSL | 100 | | | | |
| | | | 18 | SSL | 50 | | | | |
| 470.0 | | | | | | | | | |
| 73.5 | Sound Shale Redrock | | 19 | SSL | 100 | | | | |
| 465.5 | Grey | | | | | | | | |
| 78.0 | End of Borehole | | | | | | | | |

 70
 15 5 % STRAIN AT FAILURE
 10

| | | | | | | | | | | | |
|---|--|--|--|---|--|--|--|---------------------------------------|--|--|--|
| DESIGN SERVICES BRANCH WP 660-93-01 | | | | RECORD OF BOREHOLE NO 2 | | | | FOUNDATIONS OFFICE IMPERIAL | | | |
| JOB 72-11023 | | | | LOCATION Co-ords. N 4840 592.2; E 295 596.3 | | | | ORIGINATED BY <u>VK</u> | | | |
| W.P. 18-71-02 | | | | BORING DATE February 27, 1972 | | | | COMPILED BY <u>VK</u> | | | |
| DATUM Geodetic | | | | BOREHOLE TYPE Auger & sample with C.M.E. | | | | CHECKED BY <u>[Signature]</u> | | | |

| SOIL PROFILE | | SAMPLES | | ELEV SCALE | DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT 20 40 60 80 100 | LIQUID LIMIT — W _L PLASTIC LIMIT — W _P WATER CONTENT — W ₁ W ₂ — W ₃ WATER CONTENT % 10 20 30 | BULK DENSITY Y P.C.F. | REMARKS |
|--------------|---|------------|------------------------------|------------|---|---|-----------------------------|------------|
| ELEV. DEPTH | DESCRIPTION | STRAT. PLT | NUMBER TYPE BLOWS/FOOT | | | | | |
| 543.0 | Ground Level | | | | | | | |
| 0.0 | Het. mix. of clayey silt, sand & gravel. (Glacial Till) | | 1 SS 11 | 540 | | | | 541. |
| | | | 2 SS 13 | | | | | 6 15 54 25 |
| 532.0 | Brown | | 3 SS 20 | | | | | |
| 11.0 | Orey | | 4 SS 22 | 530 | | | | |
| | | | 5 SS 17 | | | | | |
| | Stiff to Hard | | 6 SS 23 | | | | | |
| | | | 7 SS 22 | 520 | | | | |
| | | | 8 SS 24 | | | | | |
| | | | 9 SS 30 | 510 | | | | 0 48 47 5 |
| | | | 10 SS 26 | | | | | |
| 505.0 | Silty sand with traces of clay. | | 11 SS 87 | 500 | | | | |
| 38.0 | | | | | | | | |
| 495.0 | Very Dense | | | | | | | |
| 48.0 | | | 12 SS 22 | 490 | | | | |
| | | | | | | | | |
| 482.7 | Weathered | | 13 SS 100 5" | 480 | | | | |
| 60.3 | Shale Bedrock | | | | | | | |
| 472.8 | | | | | | | | |
| 70.2 | End of Borehole | | | 470 | | | | |

OFFICE REPORT ON SOIL EXPLORATION

DESIGN SERVICES BRANCH

WP 660-93-01

RECORD OF BOREHOLE NO 3

Co-ords. N 4840 612.3 ; E 295 616.4

Co-ords. 15,881,271 N; 969,870 E.

FOUNDATIONS OFFICE

IMPERIAL

JOB 72-11021

LOCATION

ORIGINATED BY VK

W.P. 18-71-02

BORING DATE March 2, 1972

COMPILED BY VK

DATUM Gaudetie

BOREHOLE TYPE Auger and sample with C.M.E. machine

CHECKED BY

| SOIL PROFILE | | | SAMPLES | | | ELEV SCALE | DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT | | | | | LIQUID LIMIT — W _L PLASTIC LIMIT — W _P WATER CONTENT — W ₁ | | | BULK DENSITY Y P C S | REMARKS |
|---------------|---|-------------|---------|------|------------|------------|--|----|----|----|-----|---|----------------|----------------|----------------------------|--------------|
| ELEV DEPTH | DESCRIPTION | STRAT. PLOT | NUMBER | TYPE | BLOWS/FOOT | | 20 | 40 | 60 | 80 | 100 | W ₁ | W ₂ | W ₃ | | |
| 511.0 | Ground Level | | | | | | | | | | | | | | | GR SA. SI CL |
| 0.0 | Silty clay with some sand & gravel, traces of organics. Stiff | | 1 | SS | 15 | 540 | | | | | | | | | | 542. |
| 532.0 | | | 2 | SS | 25 | | | | | | | | | | | 3 38 48 11 |
| 5.0 | Mixture of clayey | | 3 | SS | 20 | | | | | | | | | | | |
| 533.0 | Brown | | 4 | SS | 19 | | | | | | | | | | | |
| 11.0 | Grey | | 5 | SS | 14 | | | | | | | | | | | |
| | Silt, sand & gravel | | 6 | SS | 18 | | | | | | | | | | | |
| | (Glacial Till) | | 7 | SS | 10 | | | | | | | | | | | |
| | with occ. layers of silty clay. | | 8 | SS | 10 | | | | | | | | | | | |
| | Stiff to Hard | | 9 | SS | 13 | | | | | | | | | | | |
| 508.5 | | | 10 | SS | 12 | 510 | | | | | | | | | | 0 30 69 1 |
| 35.5 | Silty sand with traces of clay. | | 11 | SS | 69 | | | | | | | | | | | |
| 501.0 | Very Dense | | | | | 500 | | | | | | | | | | |
| 43.0 | | | 12 | SS | 18 | | | | | | | | | | | |
| | | | | | | 490 | | | | | | | | | | |
| | | | 13 | SS | 112 | | | | | | | | | | | |
| 180.0 | | | | | | 480 | | | | | | | | | | |
| 41.0 | Weathered Shale | | | | | 470 | | | | | | | | | | |
| 173.8 | | | | | | | | | | | | | | | | |
| 70.2 | End of Borehole | | | | | 170 | | | | | | | | | | |

20
15
10

5 % STRAIN AT FAILURE

| DESIGN SERVICES BRANCH | | | RECORD OF BOREHOLE NO 4 | | | FOUNDATIONS OFFICE | | | |
|------------------------|---|---------|--|--------------------------------|--------------|--------------------------------|--------------------------------|--------------|------------|
| WP 660-93-01 | | | Co-ords. N 4840 632.4 ; E 295 637.7 | | | IMPERIAL | | | |
| JOB 72-11-23 | | | LOCATION | | | ORIGINATED BY VK | | | |
| W.P. 68-71-02 | | | BORING DATE Feb. 24, 1972 | | | COMPILED BY VE | | | |
| DATUM Geodetic | | | BOREHOLE TYPE Auger and sample with C.M.E. Machine | | | CHECKED BY CLK | | | |
| SOIL PROFILE | | SAMPLES | | DYNAMIC PENETRATION RESISTANCE | | LIQUID LIMIT — W _L | | BULK DENSITY | REMARKS |
| ELEV. DEPTH | DESCRIPTION | NUMBER | TYPE | BLOWS/FOOT | 20 40 60 100 | PLASTIC LIMIT — W _P | WATER CONTENT — W ₁ | | |
| 543.8 | Ground Level | | | | | | | | |
| 0.0 | Silty clay with some sand & gravel, traces of organics. Stiff | 1 | SS | 6 | | | | | 543.3 |
| 538.8 | 5.0 Het. mix of clayey | 2 | SS | 12 | | | | | 1 24 57 18 |
| 532.8 | Brown | 3 | SS | 18 | | | | | |
| 11.0 | Grey | 4 | SS | 14 | | | | | |
| | silt, sand & gravel | 5 | SS | 23 | | | | | |
| | (Glacial Till) | 6 | SS | 23 | | | | | |
| | Stiff to Hard | 7 | SS | 25 | | | | | |
| | | 8 | SS | 24 | | | | | |
| | | 9 | SS | 14 | | | | | |
| 507.8 | | 10 | SS | 29 | | | | | |
| 36.0 | Silty sand & thin layers of clay. Compact | | | | | | | | |
| 39.0 | | 11 | SS | 90 | | | | | |
| | | 12 | SS | 14 | | | | | |
| | | 13 | SS | 59 | | | | | |
| 479.8 | | | | | | | | | |
| 64.0 | Weathered Shale | | | | | | | | |
| 473.3 | | 14 | SS | 100 | | | | | |
| 70.5 | End of Borehole | | | | | | | | |

 20
15 5 % STRAIN AT FAILURE
10

OFFICE REPORT SOIL EXPLORATION

| DESIGN SERVICES BRANCH | | | | RECORD OF BOREHOLE NO 5 | | | | FOUNDATIONS OFFICE | | | | | | | | |
|------------------------|-------|--|-------------|--|------|--------------|-------------|--------------------|----|---------------|----|--------------|----------------|----------------|---------------------------------|------------|
| WP 660-93-01 | | | | Co-ords. N 4840 609.9, E 295 587.4 | | | | IMPERIAL | | | | | | | | |
| JOB 72-11023 | | | | LOCATION Co-ords. 15,881,266 N; 969,775 E. | | | | ORIGINATED BY VK | | | | | | | | |
| W.P. 48-71-02 | | | | BORING DATE Feb. 29, 1972 | | | | COMPILED BY VK | | | | | | | | |
| DATUM Geodetic | | | | BOREHOLE TYPE Auger and sample with G.M.E. machine | | | | CHECKED BY | | | | | | | | |
| SOIL PROFILE | | SAMPLES | | DYNAMIC PENETRATION RESISTANCE | | LIQUID LIMIT | | PLASTIC LIMIT | | WATER CONTENT | | BULK DENSITY | | REMARKS | | |
| ELEV. | DEPTH | DESCRIPTION | STRAT. PIOT | NUMBER | TYPE | BLOWS/FOOT | ELEV. SCALE | 20 | 40 | 60 | 80 | 100 | W _p | W _L | W _p - W _L | |
| 543.2 | | Ground Level | | | | | | | | | | | | | | |
| 0.0 | | Het. mix. of clayey silty sand and gravel (Glacial Till) | | 1 | SS | 10 | 540 | | | | | | | | | 8 34 11 17 |
| 531.7 | 11.5 | Brown Grey | | 2 | SS | 15 | | | | | | | | | | |
| | | Stiff to Hard | | 3 | SS | 21 | | | | | | | | | | |
| | | | | 4 | SS | 28 | 530 | | | | | | | | | |
| | | | | 5 | SS | 20 | | | | | | | | | | |
| | | | | 6 | SS | 24 | | | | | | | | | | |
| | | | | 7 | SS | 30 | 520 | | | | | | | | | |
| | | | | 8 | SS | 29 | | | | | | | | | | |
| | | | | 9 | SS | 23 | | | | | | | | | | |
| 509.2 | 34.0 | Silty sand & traces of clay & grav. - Compact | | 10 | SS | 17 | 510 | | | | | | | | | 1 82 (17) |
| 506.2 | 37.0 | | | 11 | SS | 100 | | | | | | | | | | |
| 498.2 | | | | | | | 500 | | | | | | | | | |
| 495.0 | | Silty sand & traces of clay and gravel. | | 12 | SS | 10 | | | | | | | | | | 1 86 (13) |
| 485.2 | 54.0 | Compact | | | | | 490 | | | | | | | | | |
| | | | | 13 | SS | 100 | 480 | | | | | | | | | |
| 479.2 | | Weathered Shale Bedrock | | | | | 470 | | | | | | | | | |
| 470.7 | | | | 15 | SH | 27 | | | | | | | | | | |
| 467.7 | | Sound Shale Bedrock | | 16 | SH | 100 | | | | | | | | | | |
| 467.7 | | End of Borehole | | | | | 460 | | | | | | | | | |

 70
 15 5 % STRAIN AT FAILURE
 10

| DESIGN SERVICES BRANCH | | | | RECORD OF BOREHOLE NO 6 | | | | FOUNDATIONS OFFICE | | | | |
|------------------------|---|------------|--------|--|------------|---------------------------------|---|--|-----------------|--------------|--------|---------|
| WP 660-93-01 | | | | Co-ords. N 4840 634.9, E 295 612.7 | | | | IMPERIAL | | | | |
| JOB 72-11023 | | | | LOCATION | | | | ORIGINATED BY YK | | | | |
| W.P. 10-62-02 47-71-02 | | | | BORING DATE Nov. 13, 1972 | | | | COMPILED BY YK | | | | |
| DATUM Geodetic | | | | BOREHOLE TYPE Auger & sample with OZ Machine | | | | CHECKED BY <i>SK</i> | | | | |
| SOIL PROFILE | | SAMPLES | | ELEV. SCALE | | DYNAMIC PENETRATION RESISTANCE | | LIQUID LIMIT | | BULK DENSITY | | REMARKS |
| ELEV. DEPTH | DESCRIPTION | STRAT. PLT | NUMBER | TYPE | BLOWS/FOOT | BLOWS / FOOT 20 40 60 80 100 | SHEAR STRENGTH P.S.F. O UNCONFINED + FIELD VANE X QUICK TRIAXIAL X LAB VANE | WATER CONTENT % W _p — W _L | WATER CONTENT % | Y | P.C.F. | |
| 513.8 | Ground Level | | | | | | | | | | | |
| 0.0 | Brown Grey | | 1 | SS | 31 | | | | | | | |
| | | | 2 | SS | 15 | | | | | | | |
| | | | 3 | SS | 24 | | | | | | | |
| | Heterogeneous mixture of clayey silt, sand and gravel | | 4 | SS | 24 | | | | | | | |
| | | | 5 | SS | 20 | | | | | | | |
| | | | 6 | SS | 24 | | | | | | | |
| | (Glacial Till) | | 7 | SS | 19 | | | | | | | |
| | | | 8 | SS | 21 | | | | | | | |
| | Stiff to Hard | | 9 | SS | 13 | | | | | | | |
| | | | 10 | TV | PH | | | | | | | |
| | | | 11 | SS | 160 | | | | | | | |
| 494.8 | | | | | | | | | | | | |
| 49.0 | Silty sand and few gravel. | | 12 | SS | 45 | | | | | | | |
| 486.8 | Dense | | | | | | | | | | | |
| 57.0 | | | | | | | | | | | | |
| 460.8 | | | 13 | SS | 57 | | | | | | | |
| 43.0 | Bedrock | | | | | | | | | | | |
| 477.8 | Weathered Slate | | | | | | | | | | | |
| 66.0 | End of Borehole | | | | | | | | | | | |

 20
15 5 % STRAIN AT FAILURE
10

OFFICE REPORT ON SOIL EXPLORATION

RECORD OF BOREHOLE No 2

W P 49-71-07 LOCATION Co-ords: N15,891,975; E966,042 ORIGINATED BY BRL
DIST 6 HWY 427 BOREHOLE TYPE 3 1/2" Diam. HSA and Cone Test COMPILED BY BL
DATUM Geodetic DATE August 13, 1979 CHECKED BY RS

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | | | NATURAL MOISTURE CONTENT | LIQUID LIMIT | UNIT WEIGHT γ | REMARKS & GRAIN SIZE DISTRIBUTION (%) |
|---------------|---|------------|---------|------|------------|----------------------------|-----------------|---|----|----|----|-----|--------------------------------|-----------------|---------------------|---|
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | 'N' VALUES | | | 20 | 40 | 60 | 80 | 100 | Wp | W | WL | |
| 526.3 | Ground Surface | | | | | | | | | | | | | | | |
| 0.0 | Silty sand, brown to dark brown, laminated and slightly cemented. Compact | | 1 | SS | 19 | | 520 | | | | | | | | | 5 61 (34) |
| 519.3 | Glacial Till | | 2 | SS | 11 | | | | | | | | | | | |
| 7.0 | Silty sand some gravel, very dense | | 3 | SS | 58 | | | | | | | | | | | 50 38 (12) |
| | | | 4 | SS | 138 | | | | | | | | | | | |
| | | | 5 | SS | 146 | | | | | | | | | | | |
| 509.3 | | | 6 | SS | 167 | | 510 | | | | | | | | | |
| 17.0 | Silty clay, Sand with gravel, very dense | | 7 | SS | 100 | | | | | | | | | | | 30 65 (5) |
| | Some sand, reddish, hard | | 8 | SS | 59 | | | | | | | | | | | |
| | | | 9 | SS | 76 | | | | | | | | | | | |
| 497.3 | | | 10 | SS | 50 | | 500 | | | | | | | | | |
| | | | 11 | SS | 98 | | | | | | | | | | | |
| 29.0 | Shale bedrock, fine textured fissile with occasional limestone bands | | 12 | SS | 140 | 11" | | | | | | | | | | |
| | | | 13 | SS | 100 | 5" | 490 | | | | | | | | | |
| | | | 14 | BX | - | | | | | | | | | | | |
| 481.3 | | | 15 | BX | - | | | | | | | | | | | |
| 45.0 | End of Borehole | | | | | | | | | | | | | | | |

RECORD OF BOREHOLE No 3

W.P. 49-71-07 LOCATION Co-ords: N15,892,066; E966,032 ORIGINATED BY BRL
 DIST 6 HWY 427 BOREHOLE TYPE 3 1/2" Diam. BSA and Cone Test COMPILED BY BL
 DATUM Geodetic DATE August 16, 1979 CHECKED BY RS

| 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 Y | 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 | | 10 20 30 | | | | | |
| 527.4 | Ground Surface | | | | | | | | | | | | | |
| 0.0 | Silty fine sand, slightly cemented, compact to dense | | 1 | SS | 31 | | 520 | | | | | | 23 48 (29) | |
| 520.4 | | | 2 | SS | 20 | | | | | | | | | |
| 7.0 | Glacial Till | | 3 | SS | 112 | | | | | | | | | |
| | Silty sand, some gravel, very dense | | 4 | SS | 87 | | | | | | | | | |
| | | | 5 | SS | 37 | | | | | | | | | |
| 510.4 | | | 6 | SS | 148 | | 11" | | | | | | | |
| 17.0 | Glacial Till, clayey silt, dark grey, hard | 7 | SS | 128 | 510 | | | | | | | | 22 53 (25) | |
| 507.2 | Glacial Till, gravelly sand, very dense | 8 | SS | 160 | 11" | | | | | | | | | |
| 19.5 | | 9 | SS | 56 | | | | | | | | | | |
| 505.4 | Sand and gravel | 10 | SS | 74 | | | | | | | | | | |
| 22.0 | Silty clay, some sand seams, reddish, hard | | | | | | | | | | | | | |
| 498.4 | Sand with angular to sub-round gravel, very dense | 11 | SS | 182 | 9" | | | | | | | | | |
| 29.0 | | | | | | | | | | | | | | |
| 493.9 | Shale bedrock, weathered | 12 | SS | 100 | 4" | | | | | | | | | |
| 33.5 | | | | | | | | | | | | | | |
| 490.9 | | | | | | | | | | | | | | |
| 36.5 | End of Borehole | | | | | | | | | | | | | |

+3, x³: Numbers refer to
Sensitivity

20
15 5 (%) STRAIN AT FAILURE
10

RECORD OF BOREHOLE No 4

W.P. 49-71-07 LOCATION Co-ords: N15,892,142; E966,033 ORIGINATED BY BRL
 DIST 6 HWY 427 BOREHOLE TYPE 3 1/2" Diam. RSA and Cone Test COMPILED BY BL
 DATUM Geodetic DATE August 15, 1979 CHECKED BY PS

| 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 | | | | |
| 530.2 | Ground Surface | | | | | | | | | | | | | | | |
| 0.0 | Glacial Till Clayey silt, with fine gravel, very stiff — Brown Grey | | 1 | SS | 33 | | 530 | | | | | | | | | |
| | | | 2 | SS | 33 | | | | | | | | | | | |
| | | | 3 | SS | 15 | | | | | | | | | | | |
| 518.2 | | | 4 | SS | 22 | | 520 | | | | | | | | | |
| 12.0 | Glacial Till Silty sand, some gravel, very dense | | 5 | SS | 151 | | | | | | | | | | | |
| | | | 6 | SS | 100/5" | | | | | | | | | | | |
| | | | 7 | SS | 115/6" | | | | | | | | | | | |
| 508.2 | | | 8 | SS | 100/5" | | 510 | | | | | | | | | |
| 22.0 | Glacial Till, clayey silt, dark grey, hard | | 9 | SS | 100/4" | | | | | | | | | | | |
| 505.2 | | | 10 | SS | 100/5" | | | | | | | | | | | |
| 25.0 | Glacial Till, silty sand, gravelly, very dense | | | | | | | | | | | | | | | |
| 501.2 | | | 11 | SS | 100/4" | | 500 | | | | | | | | | |
| 29.0 | Silty clay, some sand, reddish, hard | | 12 | SS | 156/2" | | | | | | | | | | | |
| 494.2 | | | | | | | | | | | | | | | | |
| 36.0 | Shale bedrock, weathered | | | | | | | | | | | | | | | |
| 488.7 | | | 13 | SS | 100/3" | | 490 | | | | | | | | | |
| 41.5 | End of Borehole | | | | | | | | | | | | | | | |

3, x5 : Numbers refer to
Sensitivity

20
15 5 (%) STRAIN AT FAILURE
10

RECORD OF BOREHOLE No 5

W P 49-71-05/06 LOCATION Co-ords. N 15,891,951; E 966,084 ORIGINATED BY BRL
 DIST 6 HWY 427 BOREHOLE TYPE 3 1/2" Diameter RSA COMPILED BY BL
 DATUM Geodetic DATE August 22, 1979 CHECKED BY RS

| 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 Y | REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL | | | | | | |
|---------------|---|------------|---------|------|------------|----------------------------|--------------------|---|--|--|--|--|------------------------------------|-------------------------------------|-----------------------------------|---------------------|--|--|--|--|-------------------|--|--|
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | 'N' VALUES | | | 20 40 60 80 100 | | | | | | | | | | SHEAR STRENGTH | | | WATER CONTENT (%) | | |
| | | | | | | | | | | | | | | | | | | ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE | | | 10 20 30 | | |
| 525.0 | Ground Level | | | | | | | | | | | | | | | | | | | | | | |
| 0.0 | Sandy silt, brown, dense | | 1 | SS | 41 | | | | | | | | | | | | | | | | | | |
| 520.5 | | | 2 | SS | 47 | | 520 | | | | | | | | | | | | | | | | |
| 4.5 | Glacial Till, Silty sand, some gravel, grey, very dense | | 3 | SS | 80 | | | | | | | | | | | | 28 41 (31) | | | | | | |
| | | | 4 | SS | 100/ | 6" | | | | | | | | | | | | | | | | | |
| | | | 5 | SS | 100/ | 4" | | | | | | | | | | | | | | | | | |
| | silty clay | | 6 | SS | 128/ | 10" | 510 | | | | | | | | | | | | | | | | |
| | | | 7 | SS | 69 | | | | | | | | | | | | 26 53 (21) | | | | | | |
| 501.0 | | | 8 | SS | 100/ | 5 " | 500 | | | | | | | | | | | | | | | | |
| 24.0 | Silty clay, some sand, reddish, hard | | 9 | SS | 131/ | 10" | | | | | | | | | | | | | | | | | |
| 494.0 | | | 10 | SS | 100/ | 3" | 490 | | | | | | | | | | | | | | | | |
| 31.0 | Shale bedrock, weathered | | | | | | | | | | | | | | | | | | | | | | |
| 489.5 | | | | | | | | | | | | | | | | | | | | | | | |
| 35.5 | End of Borehole | | | | | | | | | | | | | | | | | | | | | | |

*3, *5: Numbers refer to
Sensitivity

20
15 * 5 (%) STRAIN AT FAILURE
10

RECORD OF BOREHOLE No 6

W P 49-71-05/06 LOCATION Co-ords. N 15,892,042; E 966,097 ORIGINATED BY BRL
DIST 6 HWY 427 BOREHOLE TYPE 3 1/2" Diameter HSA and Cone Test COMPILED BY BL
DATUM Geodetic DATE August 17, 1979 CHECKED BY RS

| SOIL PROFILE | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT | | | UNIT WEIGHT Y | REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL |
|---------------|---|------------|--------|------|----------------------------|-----------------|---|-----------------|---|---|----|------------------|--|
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | | | 'N' VALUES | 20 40 60 80 100 | Wp | W | WL | | |
| 520.3 | Ground Level | | | | | | | | | | | | |
| 0.0 | Glacial Till Silty sand, some gravel, grey, very dense | | 1 | SS | 43 | 6" | | | | | | | 19 49 (32) |
| | | | 2 | SS | 115 | | | | | | | | |
| | | | 3 | SS | 151 | | | | | | | | |
| | | | 4 | SS | 100 | 3" | | | | | | | |
| | | | 5 | SS | 185 | 8" | | | | | | | |
| 504.8 | | | 6 | SS | 173 | | | | | | | | |
| 15.5 | Silty clay, some sand reddish brown, hard | | 7 | SS | 150 | | | | | | | | |
| 499.8 | | | 8 | SS | 119 | | | | | | | | |
| 20.5 496.8 | Gravelly sand, very dense | | 9 | SS | 119 | | | | | | | | 39 46 (15) |
| 23.5 | Shale bedrock, fine textured and fissile, weathered | | 10 | SS | 164 | | | | | | | | |
| | | | 11 | SS | 100 | 5" | | | | | | | |
| 487.8 | | | 12 | SS | 120 | 5" | | | | | | | |
| 32.5 | End of Borehole | | | | | | | | | | | | |

+3, x5: Numbers refer to
Sensitivity

20
15 5 (%) STRAIN AT FAILURE
10

RECORD OF BOREHOLE No 7

W P 49-71-05/06

LOCATION Co-ords. N 15,892,121; E 966,093

ORIGINATED BY BRL

DIST 6 HWY 427

BOREHOLE TYPE 3 1/4" Diameter HSA and Cone Test

COMPILED BY BL

DATUM Geodetic

DATE August 16, 1979

CHECKED BY PS

| 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 | | | | | |
| 530.0 | Ground Level | | | | | | | | | | | | | |
| 0.0 | Glacial Till Clayey silt, trace of gravel, brown, very stiff | | 1 | SS | 36 | | | | | | | | | |
| | | | 2 | SS | 17 | | | | | | | | | |
| 520.5 | firm, grey | | 3 | SS | 2 | | | | | | | | | |
| 9.5 | Glacial Till Silty sand, some gravel, grey, very dense | | 4 | SS | 100 | 3" | | | | | | | | 12 64 (24) |
| | | | 5 | SS | 114 | | | | | | | | | |
| | | | 6 | SS | 100 | 5" | | | | | | | | |
| | | | 7 | SS | 100 | 5" | | | | | | | | |
| | | | 8 | SS | 100 | 4" | | | | | | | | |
| 505.5 | | | 9 | SS | 100 | 5" | | | | | | | | 33 52 (15) |
| 24.5 | Silty clay, reddish | | 10 | SS | 122 | | | | | | | | | |
| 27.0 | End of Borehole | | | | | | | | | | | | | |

+3, x5: Numbers refer to Sensitivity

20
15 5 (%) STRAIN AT FAILURE
10

OFFICE RECORDS USE SOIL EXAMINATIONS

RECORD OF BOREHOLE No 8

W P 49-71-05/06 LOCATION Co-ords. N 15,891,803; E 966,240 ORIGINATED BY BRL
 DIST 6 HWY 427 BOREHOLE TYPE 3 1/2" Diameter and Cone Test COMPILED BY BL
 DATUM Geodetic DATE August 23, 1979 CHECKED BY RS

| 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 | | | | | |
| 522.0 | Ground Level | | | | | | | | | | | | | |
| 0.0 | Sand, trace of clay and gravel, compact | | 1 | SS | 19 | | | | | | | | | |
| 517.5 | | | 2 | SS | 28 | | | | | | | | | |
| 4.5 | Glacial Till | | 3 | SS | 153 | 9" | | | | | | | | 28 33 (39) |
| | Silty sand, trace to some gravel, compact to very dense | | 4 | SS | 114 | | | | | | | | | |
| | silty clay | | 5 | SS | 185 | 10" | | | | | | | | |
| 505.0 | | | 6 | SS | 90 | | | | | | | | | 2 51 (47) |
| 17.0 | Silty clay, reddish, hard | | 7 | SS | 125 | | | | | | | | | |
| | some gravel | | 8 | SS | 112 | | | | | | | | | |
| 498.0 | | | 9 | SS | 145 | 11" | | | | | | | | |
| 24.0 | Gravelly sand, very dense | | 10 | SS | 110 | 5" | | | | | | | | 32 48 (20) |
| 494.0 | | | 11 | SS | 110 | 3" | | | | | | | | |
| 28.0 | Shale bedrock, fine textured and fissile, weathered | | | | | | | | | | | | | |
| 486.5 | | | | | | | | | | | | | | |
| 35.5 | End of Borehole | | | | | | | | | | | | | |

+³, x⁵: Numbers refer to
Sensitivity

20
15
10
5 (% STRAIN AT FAILURE)

RECORD OF BOREHOLE No 9

W P 49-71-05/06

LOCATION Co-ords. N 15,891,895; E 966,208

ORIGINATED BY BRL

DIST 6 HWY 427

BOREHOLE TYPE 3 1/2" Diameter HSA

COMPILED BY BL

DATUM Geodetic

DATE August 23, 1979

CHECKED BY RS

| 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 | | | | | |
| 522.1 | Ground Level | | | | | | | | | | | | | | | | |
| 0.0 | Sand to sand trace of and gravel organics | | 1 | SS | 12 | | 520 | | | | | | | | | | GR SA SI CL |
| 512.6 | | | 2 | SS | 15 | | | | | | | | | | | | 46 40 (14) |
| 9.5 | Glacial Till Silty sand, some gravel, grey, very dense | | 3 | SS | 27 | | | | | | | | | | | | 9 35 (56) |
| | | | 4 | SS | 160 | | 510 | | | | | | | | | | |
| | | | 5 | SS | 123/10" | | | | | | | | | | | | |
| | | | 6 | SS | 72 | | | | | | | | | | | | |
| | | | 7 | SS | 76 | | | | | | | | | | | | |
| 498.1 | | | 8 | SS | 159 | | 500 | | | | | | | | | | 26 57 (17) |
| 490.1 | Silty clay, some sand, reddish, hard | | 9 | SS | 113/9" | | | | | | | | | | | | |
| 490.1 | gravelly | | 10 | SS | 144/9" | | 490 | | | | | | | | | | |
| 32.0 | Shale bedrock, weathered | | 11 | SS | 100/3" | | | | | | | | | | | | |
| 486.6 | | | | | | | | | | | | | | | | | |
| 35.5 | End of Borehole | | | | | | | | | | | | | | | | |

+3, x5: Numbers refer to
Sensitivity20
15 5 (%) STRAIN AT FAILURE
10

RECORD OF BOREHOLE No 10

W P 49-71-05/06 LOCATION Co-ords. N 15,891,989; E 966,213 ORIGINATED BY BRL
 DIST 6 HWY 427 BOREHOLE TYPE 3 1/2" Diameter RSA and Cone Test COMPILED BY BL
 DATUM Geodetic DATE August 24, 1979 CHECKED BY RS

| 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 | | | | | | | WATER CONTENT (%) | | | | |
| | | | | | | | | SHEAR STRENGTH ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL x LAB VANE | | | | | | | 10 20 30 | | | | |
| 522.6 | Ground Level | | | | | | | | | | | | | | | | | | |
| 0.0 | Glacial Till Silty sand, grey trace to some gravel, very dense | | 1 | SS | 58 | | 520 | | | | | | | | | | | | |
| | | | 2 | SS | 54 | | | | | | | | | | | | | | |
| | | | 3 | SS | 100 | 4" | | | | | | | | 45 18 (37) | | | | | |
| | | | 4 | SS | 104 | | | | | | | | | | | | | | |
| | | | 5 | SS | 94 | 6" | | 510 | | | | | | 4 43 (53) | | | | | |
| | | | 6 | SS | 100 | 5" | | | | | | | | | | | | | |
| | | | 7 | SS | 118 | | | | | | | | | | | | | | |
| 503.6 | | | | | | | | | | | | | | | | | | | |
| 19.0 | Silty clay, trace of sand, reddish, hard | | 8 | SS | 133 | 10" | 500 | | | | | | | | | | | | |
| | Silty sand | | 9 | SS | 135 | 8" | | | | | | | | | | | | | |
| 493.6 | | | | | | | | | | | | | | | | | | | |
| 29.0 | Shale bedrock, fissile and weathered | | 10 | SS | 125 | 5" | 490 | | | | | | | | | | | | |
| 486.1 | | | 11 | SS | 125 | 2" | | | | | | | | | | | | | |
| 36.5 | End of Borehole | | | | | | | | | | | | | | | | | | |

+3, x⁵: Numbers refer to
Sensitivity

20
15 5 (%) STRAIN AT FAILURE
10

RECORD OF BOREHOLE No 11

W P 49-71-05/06 LOCATION Co-ords. N 15,892,042; E 966,254 ORIGINATED BY BRL
 DIST 6 HWY 427 BOREHOLE TYPE 3 1/2" Diameter RSA COMPILED BY BL
 DATUM Geodetic DATE August 13, 1979 CHECKED BY RS

| SOIL PROFILE | | STRAT PLOT | 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 Y | REMARKS & GRAIN SIZE DISTRIBUTION (%) |
|--------------|--|------------|---------|------|-------------------------|-----------------|--|----|----|----|---------------------------------|-------------------------------|--------------------------------|------------------|---------------------------------------|
| ELEV DEPTH | DESCRIPTION | | NUMBER | TYPE | | | 20 | 40 | 60 | 80 | 100 | | | | |
| 530.6 | Ground Level | | | | | | | | | | | | | | GR SA SI CL |
| 0.0 | Glacial Till Silty sand, some gravel, dense | | 1 | SS | 35 | | | | | | | | | | |
| | | | 2 | SS | 39 | | | | | | | | | | 50 40 (10) |
| | | | 3 | SS | 49 | | | | | | | | | | |
| | | | 4 | SS | 35 | | | | | | | | | | |
| | | | 5 | SS | 110 | | | | | | | | | | |
| | | | 6 | SS | 123 | | | | | | | | | | 1 24 (75) |
| | | | 7 | SS | 183 | 11" | | | | | | | | | |
| | | | 8 | SS | 147 | 11" | | | | | | | | | |
| 508.6 | | | 9 | SS | 143 | 6" | | | | | | | | | |
| 22.0 | Silty clay, some sand, reddish, hard | | 10 | SS | 109 | | | | | | | | | | |
| | | | 11 | SS | 70 | | | | | | | | | | |
| | | | 12 | SS | 140 | 9" | | | | | | | | | |
| | | | 13 | SS | 100 | 4" | | | | | | | | | |
| | | | 14 | SS | 143 | 10" | | | | | | | | | 51 21 (28) |
| 492.6 | | | | | | | | | | | | | | | |
| 38.0 | Shale bedrock, | | | | | | | | | | | | | | |
| 489.1 | weathered | | 15 | SS | 105 | 6" | | | | | | | | | |
| 41.5 | End of Borehole | | | | | | | | | | | | | | |

+3, x5: Numbers refer to
Sensitivity

20
15
10
5 (%) STRAIN AT FAILURE

RECORD OF BOREHOLE No CNH-01

1 OF 4

METRIC

G.W.P. 202-95-00 LOCATION N 4 845 049.2 E 294 356.2 ORIGINATED BY GA
 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY AN
 DATUM Geodetic DATE 2008.12.01 - 2008.12.03 CHECKED BY SKP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | PLASTIC NATURAL LIQUID LIMIT MOISTURE CONTENT | | | 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 | W P W L | W P W L | W P W L | | | |
| 180.3 | TOPSOIL (50mm) | | 1 | SS | 16 | | | | | | | | | |
| 179.9 | Silty CLAY, with sand, trace gravel Stiff to Very Stiff Brown (FILL) | | 2 | SS | 17 | | | | | | | | | 8 24 34 34 |
| 178.8 | | | 3 | SS | 27 | | | | | | | | | |
| 177.8 | | | 4 | SS | 30 | | | | | | | | | |
| 176.8 | | | 5 | SS | 15 | | | | | | | | | 7 31 37 25 |
| 175.8 | | | 6 | SS | 24 | | | | | | | | | |
| 174.8 | | | 7 | SS | 50 | | | | | | | | | |
| 171.1 | Silty CLAY, trace to some sand, trace gravel, occasional iron oxide Hard Brown (TILL) | | | | | | | | | | | | | |

ONTMT4S 9270.GPJ 6/29/09

Continued Next Page

+ 3. X 3. Numbers refer to
Sensitivity 20 15 10 5 (%) STRAIN AT FAILURE

RECORD OF BOREHOLE No CNH-01

2 OF 4

METRIC

G.W.P. 202-95-00 LOCATION N 4 845 049.2 E 294 356.2 ORIGINATED BY GA
 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY AN
 DATUM Geodetic DATE 2008.12.01 - 2008.12.03 CHECKED BY SKP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT | | | UNIT WEIGHT Y kN/m ³ | REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL |
|--|-------------|------------|---------|------|------------|-----------------------------|-------------------|---|--|--|---|-------------------|--|--|--|
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | "N" VALUES | | | SHEAR STRENGTH kPa | | | W P W W L | | | | |
| | | | | | | | | ○ UNCONFINED + FIELD VANE | | | | WATER CONTENT (%) | | | |
| | | | | | | ● QUICK TRIAXIAL X LAB VANE | 40 80 120 160 200 | | | | 20 40 60 | | | | |
| Continued From Previous Page | | | | | | | 170 | | | | | | | | |
| Silty CLAY, trace to some sand, trace gravel, occasional iron oxide Hard Brown (TILL) | | | | | | | | | | | | | | | |
| Occasional layers of clayey silt | | | | | | 8 | SS | 70 | | | | | | | 0 4 79 17 |
| | | | | | | | | | | | | | | | |
| | | | | | | 9 | SS | 63 | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | 10 | SS | 81 | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | 11 | SS | 41 | | | | | | | 6 35 43 16 |
| with sand | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | 12 | SS | 51 | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | 13 | SS | 50 | | | | | | | |
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ONTMT4S 9270.GPJ 6/29/09

Continued Next Page

+³ × 1³: Numbers refer to Sensitivity 20
15 5
10 (%) STRAIN AT FAILURE

METRIC

CHECKED BY SKP

Continued Next Page

(%) STRAIN AT FAILURE

RECORD OF BOREHOLE No CNH-01

4 OF 4

METRIC

G.W.P. 202-95-00 LOCATION N 4 845 049.2 E 294 356.2 ORIGINATED BY GA
 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY AN
 DATUM Geodetic DATE 2008.12.01 - 2008.12.03 CHECKED BY SKP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | | | PLASTIC NATURAL LIQUID LIMIT MOISTURE LIMIT CONTENT | | | UNIT WEIGHT Y 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 | W P | W | W L | WATER CONTENT (%) | | | | | |
| | Continued From Previous Page | | | | | | | | | | | | | | | | |
| 149.4 | SHALE, moderately weathered, thinly bedded, frequent limestone and siltstone interbeds Grey | | 3 | RUN | | | 150 | | | | | | | | | RUN 3# TCR=100%, SCR=23%, RQD=7% | |
| 30.9 | END OF BOREHOLE AT 30.9m. BOREHOLE BACKFILLED WITH BENTONITE GROUT TO SURFACE. | | | | | | | | | | | | | | | | |

ONTMT4S 9270.GPJ 6/29/09

RECORD OF BOREHOLE No CNH-02

1 OF 2

METRIC

G.W.P. 202-95-00 LOCATION N 4 845 073.9 E 294 349 3 ORIGINATED BY GA
 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY MFA
 DATUM Geodetic DATE 2008.12.08 - 2008.12.09 CHECKED BY SKP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | UNIT WEIGHT Y kN/m ³ | REMARKS & GRAIN SIZE DISTRIBUTION (%) |
|---------------|---|------------|---------|------|------------|----------------------------|-----------------|---|--|--|--|---|
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | "N" VALUES | | | SHEAR STRENGTH kPa | | | | |
| 171.1 | | | | | | | | 20 40 60 80 100 | | | | |
| | | | | | | | | ○ UNCONFINED + FIELD VANE | | | | |
| | | | | | | | | ● QUICK TRIAXIAL X LAB VANE | | | | |
| | | | | | | | | WATER CONTENT (%) | | | | |
| | | | | | | | | PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT | | | | |
| | | | | | | | | w _p w w _L | | | | |
| 0.0 | Silty CLAY, with sand, trace gravel Stiff to Very Stiff Brown (TILL) | | 1 | SS | 13 | | 171 | | | | | |
| | | | | | | | 170 | | | | | |
| | | | 2 | SS | 28 | | 169 | | | | | 4 28 49 19 |
| | Occasional layers of grey clayey silt | | | | | | 168 | | | | | 0 1 83 16 |
| | | | 3 | SS | 22 | | 167 | | | | | |
| | Grey | | | | | | 166 | | | | | |
| | | | 4 | SS | 25 | | 165 | | | | | |
| 165.3 | | | | | | | 164 | | | | | |
| 5.8 | Hard | | 5 | SS | 46 | | 163 | | | | | 3 26 37 34 |
| | | | | | | | 162 | | | | | |
| | | | 6 | SS | 56 | | | | | | | |
| | | | | | | | | | | | | |
| | | | 7 | SS | 79 | | | | | | | |
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ONTMT4S 9270.GPJ 6/29/09

Continued Next Page

+ 3 . X 3: Numbers refer to Sensitivity 20 15 10 5 (%) STRAIN AT FAILURE

RECORD OF BOREHOLE No CNH-02

2 OF 2

METRIC

G.W.P. 202-95-00 LOCATION N 4 845 073.9 E 294 349.3 ORIGINATED BY GA
 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY MFA
 DATUM Geodetic DATE 2008.12.08 - 2008.12.09 CHECKED BY SKP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | | | UNIT WEIGHT Y kN/m ³ | REMARKS & GRAIN SIZE DISTRIBUTION (%) |
|---------------|--|------------|---------|------|-------------|----------------------------|-----------------|--|----|-----|-----|-----|--|---|
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | "N" VALUES | | | 20 | 40 | 60 | 80 | 100 | | |
| | Continued From Previous Page | | | | | | | SHEAR STRENGTH kPa | | | | | | |
| | | | | | | | | ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL x LAB VANE | | | | | | |
| | | | | | | | | WATER CONTENT (%) | | | | | | |
| | | | | | | | | 40 | 80 | 120 | 160 | 200 | | |
| | | | | | | | | 20 | 40 | 60 | | | | |
| 160.5 | Silty CLAY, with sand, trace gravel Hard Grey (TILL) | | | | | | 161 | | | | | | | |
| 10.7 | Silty SAND, trace clay, trace gravel Very Dense Grey Wet | | 8 | SS | 105 | | 160 | | | | | | | |
| | | | | | | | 159 | | | | | | | |
| | | | 9 | SS | 107 | | 158 | | | | | | | |
| | | | | | | | 157 | | | | | | | |
| | | | | | | | 156 | | | | | | | |
| | | | 10 | SS | 112 | | 155 | | | | | | | |
| | | | | | | | 154 | | | | | | | |
| | | | | | | | 153 | | | | | | | |
| | | | 11 | SS | 111 | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | 12 | SS | 112 | | | | | | | | | |
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| | | | | | | | | | | | | | | |
| | | | 13 | SS | 104/ 150 | | | | | | | | | |
| 152.4 | occasional cobbles | | | | | | | | | | | | | |
| 18.7 | Layer of sand and gravel | | | | | | | | | | | | | |
| | END OF BOREHOLE AT 18.7m. BOREHOLE OPEN TO 18.7m AND WATER LEVEL AT 8.2m UPON COMPLETION OF DRILLING. BOREHOLE BACKFILLED WITH BENTONITE GROUT TO 2.1m, THEN SEALED WITH BENTONITE HOLEPLUG TO SURFACE. | | | | | | | | | | | | | |

ONTMT4S 9270.GPJ 6/29/09

+ 3 x 3 : Numbers refer to
Sensitivity 20 15 10 5 0
(%) STRAIN AT FAILURE

RECORD OF BOREHOLE No CNH-03

1 OF 2

METRIC

G.W.P. 202-95-00 LOCATION N 4 B45 094.6 E 294 347.1 ORIGINATED BY GA
 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY MFA
 DATUM Geodetic DATE 2008.12.11 - 2008.12.11 CHECKED BY SKP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | UNIT WEIGHT γ kN/m ³ | REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL |
|---------------|---|------------|---------|------|------------|----------------------------|-----------------------------|---|--|--|--|
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | "N" VALUES | | | SHEAR STRENGTH kPa | | | |
| 171.6 | | | | | | | 20 40 60 80 100 | PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT | | | |
| 0.0 | SUB-BALLAST (FILL) | | | | | | ○ UNCONFINED + FIELD VANE | W P W W L | | | |
| 0.2 | Silty CLAY, with sand, trace gravel Stiff Brown (TILL) | | 1 | SS | 13 | | ● QUICK TRIAXIAL x LAB VANE | | | | |
| | | | | | | | | | | | |
| | | | 2 | SS | 8 | | | | | | |
| | | | | | | | | | | | |
| 168.9 | | | | | | | | | | | |
| 2.7 | Very Stiff to Hard | | 3 | SS | 18 | | | | | | |
| | | | | | | | | | | | |
| | Occasional layers of grey clayey silt | | 4 | SS | 30 | | | | | | |
| | | | | | | | | | | | |
| | Grey | | 5 | SS | 37 | | | | | | |
| | | | | | | | | | | | |
| 164.0 | | | | | | | | | | | |
| 7.6 | Sandy SILT, trace clay Compact Grey Wet | | 6 | SS | 15 | | | | | | |
| | | | | | | | | | | | |
| 162.5 | | | | | | | | | | | |
| 9.1 | Silty CLAY, trace to some sand, trace gravel Hard Grey (TILL) | | 7 | SS | 55 | | | | | | |
| | | | | | | | | | | | |

ONTMT4S 9270.GPJ 6/29/09

Continued Next Page

+ 3 x 3 Numbers refer to
Sensitivity 20
15 5
10 (%) STRAIN AT FAILURE

| RECORD OF BOREHOLE No CNH-03 | | | | | | | | | | 2 OF 2 | | METRIC | |
|------------------------------|---|------------------------------------|---------|------------------|------------|--|-----------------|-----------------|-------------------|--------------------------|--------------|---------------------------------------|--|
| G.W.P. 202-95-00 | | LOCATION N 4 845 094.6 E 294 347.1 | | ORIGINATED BY GA | | | | | | | | | |
| HWY 427 | | BOREHOLE TYPE Solid Stem Auger | | COMPILED BY MFA | | | | | | | | | |
| DATUM Geodetic | | DATE 2008.12.11 - 2008.12.11 | | CHECKED BY SKP | | | | | | | | | |
| SOIL PROFILE | | | SAMPLES | | | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | WATER CONTENT (%) | | | REMARKS & GRAIN SIZE DISTRIBUTION (%) | |
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | "N" VALUES | GROUND WATER CONDITIONS | ELEVATION SCALE | 20 40 60 80 100 | PLASTIC LIMIT | NATURAL MOISTURE CONTENT | LIQUID LIMIT | UNIT WEIGHT | |
| | Continued From Previous Page | | | | | | | | | | | | |
| 160.9 | Silty CLAY, trace to some sand, trace gravel Hard Grey (TILL) | | | | | | 161 | | | | | | |
| 10.7 | Silty SAND, trace to some gravel, occasional cobbles Very Dense Grey Wet | | 8 | SS | 116 | | 160 | | | | | | |
| | Shale fragments, occasional inferred cobbles and boulders | | 9 | SS | 123 | | 159 | | | | | | |
| 157.7 | | | | | | | 158 | | | | | | |
| 13.9 | END OF BOREHOLE AT 13.9m. BOREHOLE OPEN TO 12.8m AND WATER LEVEL AT 0.3m UPON COMPLETION OF DRILLING. Piezometer installation consists of 25mm diameter Schedule 40 PVC pipe with a 1.52m slotted screen. | | 10 | SS | 109/ | | | | | | | | |
| | WATER LEVEL READINGS: DATE DEPTH (m) ELEV. (m) 2009.01.21 6.1 165.5 2009.05.05 5.6 166.0 2009.06.08 5.5 166.1 | | | | | | | | | | | | |

ONTMT4S 9270.GPJ 6/29/09

RECORD OF BOREHOLE No CNH-04

1 OF 3

METRIC

G.W.P. 202-95-00

LOCATION N 4 845 119.7 E 294 338.6

ORIGINATED BY WB

HWY 427

BOREHOLE TYPE Solid Stem Auger

COMPILED BY MFA

DATUM Geodetic

DATE 2008.12.15 - 2008.12.15

CHECKED BY SKP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT | | | UNIT WEIGHT Y 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 | | W P — W — W L | | | | |
| | | | | | | | | SHEAR STRENGTH kPa | | WATER CONTENT (%) | | | | |
| | | | | | | | | | | | | | | |
| 181.3 | | | | | | | | | | | | | | |
| 0.0 | ASPHALT: (75mm) | | | | | | | | | | | | | |
| 0.1 | SILT and SAND, some gravel, trace clay Dense to Very Dense Brown Moist (FILL) | | 1 | SS | 60 | | 181 | | | | | | | |
| | | | 2 | SS | 43 | | | | | | | | | |
| | | | | | | | 180 | | | | | | | |
| | | | 3 | SS | 31 | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | 4 | SS | 60 | | 179 | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | 5 | SS | 52 | | 178 | | | | | | | |
| | | | | | | | | | | | | | | |
| 177.3 | | | | | | | | | | | | | | |
| 4.0 | Silty CLAY, with sand, trace gravel Very Stiff to Hard Brown (TILL) | | | | | | 177 | | | | | | | |
| | | | 6 | SS | 23 | | | | | | | | | |
| | | | | | | | 176 | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | 7 | SS | 25 | | 175 | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | 174 | | | | | | | |
| | | | 8 | SS | 48 | | | | | | | | | |
| | | | | | | | 173 | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | 9 | SS | 44 | | 172 | | | | | | | |
| | | | | | | | | | | | | | | |

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ONTMT4S 9270.GPJ 6/29/09

Continued Next Page

+ ³ × ³ Numbers refer to
Sensitivity 20
15 5
10 (%) STRAIN AT FAILURE

| RECORD OF BOREHOLE No CNH-04 | | | | | | | | | | 2 OF 3 | | METRIC | | |
|------------------------------|--|------------------------------------|---------|------------------|-------------|----------------------------|-----------------|---|----------|--------|---|---|--|-----|
| G.W.P. 202-95-00 | | LOCATION N 4 845 119.7 E 294 338.5 | | ORIGINATED BY WB | | | | | | | | | | |
| HWY 427 | | BOREHOLE TYPE Solid Stem Auger | | COMPILED BY MFA | | | | | | | | | | |
| DATUM Geodetic | | DATE 2008.12.15 - 2008.12.15 | | CHECKED BY SKP | | | | | | | | | | |
| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | | 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 | W P | W | | | W L |
| Continued From Previous Page | | | | | | | | | | | | | | |
| | Silty CLAY, with sand, trace gravel Hard Brown (TILL) | | 10 | SS | 30 | V | 171 | | | | | | | |
| | | | | | | | | 170 | | | | | | |
| | | | 11 | SS | 100/ 275 | | | 169 | | | | | | |
| | | | | | | | | 168 | | | | | | |
| | | | 12 | SS | 80 | | | 167 | | | | | | |
| | | | | | | | | 166 | | | | | | |
| | | | 13 | SS | 89 | | | 165 | | | | | | |
| | | | | | | 164 | | | | | | | | |
| 163.4 | | | | | | | | | | | | | | |
| 17.8 | SILT and SAND, some clay, trace gravel Very Dense Grey Moist | | 15 | SS | 100/ 225 | | 163 | | | | | | | |
| | | | | | | | 162 | | | | | | | |
| | | | 16 | SS | 100/ | | | | | | | | | |

ONTMT4S 9270.GPJ 6/29/09

Continued Next Page

+ 3 . X 3 : Numbers refer to
Sensitivity 20
15 5
10 (%) STRAIN AT FAILURE

RECORD OF BOREHOLE No CNH-04

3 OF 3

METRIC

G.W.P. 202-95-00 LOCATION N 4 845 119.7 E 294 338.5 ORIGINATED BY WB
 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY MFA
 DATUM Geodetic DATE 2008.12.15 - 2008.12.15 CHECKED BY SKP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | | | UNIT WEIGHT γ kN/m ³ | REMARKS & GRAIN SIZE DISTRIBUTION (%) |
|---------------|---|------------|---------|------|--------------|----------------------------|-----------------|---|--|--|--|--|--|---|
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | "N" VALUES | | | SHEAR STRENGTH kPa | | | | | | |
| | Continued From Previous Page | | | | | | | 20 40 60 80 100 ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE | | | | | | |
| | SILT and SAND, some clay, trace gravel Very Dense Grey Moist | | | | .100 | | 161 | | | | | | | |
| | | | 17 | SS | 100/ .100 | | 160 | | | | | | | |
| | | | | | | | 159 | | | | | | | |
| 158.0 | Moist to Wet | | 18 | SS | 100/ .225 | | | | | | | | | |
| 23.2 | END OF BOREHOLE AT 23.2m AND WATER LEVEL AT 11.6m UPON COMPLETION OF DRILLING. BOREHOLE BACKFILLED WITH BENTONITE HOLEPLUG AND CUTTINGS TO 0.075m, THEN ASPHALT TO SURFACE. | | | | | | | | | | | | | |

ONTM14S 9270.GPJ 6/29/09

+ 3 . X 3 : Numbers refer to
Sensitivity

20
15 5
10 (%) STRAIN AT FAILURE

RECORD OF BOREHOLE No CNH-05

1 OF 3

METRIC

G.W.P. 202-95-00 LOCATION N 4 845 053.1 E 294 358.8 ORIGINATED BY GA
 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY AN
 DATUM Geodetic DATE 2008.12.04 - 2008.12.04 CHECKED BY SKP

| 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 Y 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 | 40 80 120 160 200 | | | | | |
| 180.2 0.0 0.1 | TOPSOIL (75mm) Silty CLAY, with sand, trace gravel Stiff to Very Stiff Brown (FILL) | | 1 | SS | 14 | | | | | | | | | |
| | | | 2 | SS | 17 | | | | | | | | | |
| | | | 3 | SS | 20 | | | | | | | | | |
| | | | 4 | SS | 18 | | | | | | | | | |
| | | | 5 | SS | 22 | | | | | | | | | |
| | | | 6 | SS | 27 | | | | | | | | | |
| 171.6 8.5 | Silty CLAY, some sand, trace gravel Hard Brown to Grey (TILL) | | 7 | SS | 31 | | | | | | | | | |

ONTMT4S 9270.GPJ 6/29/09

Continued Next Page

+ 3 . X 3 Numbers refer to
Sensitivity 20
15 5
10 (%) STRAIN AT FAILURE

RECORD OF BOREHOLE No CNH-05

2 OF 3

METRIC

G.W.P. 202-95-00 LOCATION N 4 845 053.1 E 294 358.8 ORIGINATED BY GA
 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY AN
 DATUM Geodetic DATE 2008.12.04 - 2008.12.04 CHECKED BY SKP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | | 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 | PLASTIC LIMIT W _p | NATURAL MOISTURE CONTENT W | LIQUID LIMIT W _L | | |
| | Continued From Previous Page | | | | | | | | | | | | |
| | Silty CLAY, some sand, trace gravel Hard Brown (TILL) | | 8 | SS | 41 | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | 9 | SS | 38 | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | 10 | SS | 60 | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | 11 | SS | 48 | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | 12 | SS | 54 | | | | | | | | |
| | | | | | | | | | | | | | |
| | Hard augering | | 13 | SS | 80 | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

ONTMT4S 9270.GPJ 5/29/09

Continued Next Page

+ ³ . X ³ . Numbers refer to
Sensitivity 20 15 10 5 (% STRAIN AT FAILURE)

RECORD OF BOREHOLE No CNH-05

3 OF 3

METRIC

G.W.P. 202-95-00 LOCATION N 4 845 053.1 E 294 358.8 ORIGINATED BY GA
 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY AN
 DATUM Geodetic DATE 2008.12.04 - 2008.12.04 CHECKED BY SKP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | | | UNIT WEIGHT Y kN/m ³ | REMARKS & GRAIN SIZE DISTRIBUTION (%) |
|---------------|---|------------|---------|------|------------|----------------------------|-----------------|---|----|-----|-----|-----|--|---|
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | "N" VALUES | | | 20 | 40 | 60 | 80 | 100 | | |
| | Continued From Previous Page | | | | | | | SHEAR STRENGTH kPa | | | | | | |
| | | | | | | | | O UNCONFINED + FIELD VANE | | | | | | |
| | | | | | | | | ● QUICK TRIAXIAL X LAB VANE | | | | | | |
| | | | | | | | | WATER CONTENT (%) | | | | | | |
| | | | | | | | | 40 | 80 | 120 | 160 | 200 | | |
| | | | | | | | | 20 | 40 | 60 | | | | |
| | | | | | | | | | | | | | | |
| 158.9 | Silty CLAY, some sand, trace gravel Hard Brown (TILL) | | 14 | SS | 92 | | 160 | | | | | | | |
| 21.3 | Silty SAND, trace clay, trace gravel Very Dense Grey Wet | | 15 | SS | 121 | | 159 | | | | | | | 5 64 23 8 |
| | Hard augering | | | | | | 158 | | | | | | | |
| | | | 16 | SS | 128 | | 157 | | | | | | | |
| 155.8 | Some gravel, some clay, occasional shale fragments, occasional cobbles and boulders Hard augering | | 17 | SS | 115 | | 156 | | | | | | | 11 45 29 15 |
| 24.4 | Highly weathered shale | | | | | | 155 | | | | | | | |
| 154.1 | END OF BOREHOLE AT 26.1m UPON REFUSAL ON PROBABLE BEDROCK. BOREHOLE OPEN TO 26m AND WATER LEVEL AT 11.8m UPON COMPLETION OF DRILLING. Piezometer installation consists of 19mm diameter Schedule 40 PVC pipe with a 1.52m slotted screen. WATER LEVEL READINGS: DATE DEPTH (m) ELEV. (m) 2009.01.21 14.5 165.7 2009.05.05 14.2 166.0 2009.06.08 14.2 166.0 | | 18 | SS | 105/ | 0.150 | | | | | | | | |

+ 3, X 3 Numbers refer to
Sensitivity 20
15 10 5 (%) STRAIN AT FAILURE

RECORD OF BOREHOLE No CNH-06

1 OF 2

METRIC

G.W.P. 202-95-00 LOCATION N 4 845 080.9 E 294 358.3 ORIGINATED BY GA
 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY MFA
 DATUM Geodetic DATE 2008.12.09 - 2008.12.10 CHECKED BY SKP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | | | UNIT WEIGHT Y kN/m ³ | REMARKS & GRAIN SIZE DISTRIBUTION (%) |
|---------------|---|-------------------|---------|------|------------|----------------------------|-----------------|--|----|----|----|-----|--|---|
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | "N" VALUES | | | 20 | 40 | 60 | 80 | 100 | | |
| 171.4 | | | | | | | | SHEAR STRENGTH kPa | | | | | | |
| | | | | | | | | ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE | | | | | | |
| | | | | | | | | WATER CONTENT (%) | | | | | | |
| | | | | | | | | PLASTIC LIMIT (P) NATURAL MOISTURE CONTENT (W) LIQUID LIMIT (L) W P W L | | | | | | |
| 0.0 | Silty CLAY, with sand, trace gravel Stiff to Very Stiff Brown (TILL) | [Hatched Pattern] | 1 | SS | 11 | | 171 | | | | | | | 3 23 34 40 |
| | Occasional iron oxide staining | | 2 | SS | 28 | | 170 | | | | | | | |
| 168.5 | | | | | | | 169 | | | | | | | |
| 2.9 | Hard trace sand | [Hatched Pattern] | 3 | SS | 50 | | 168 | | | | | | | 0 3 68 29 |
| | | | | | | | 167 | | | | | | | |
| | Grey | [Hatched Pattern] | 4 | SS | 48 | | 166 | | | | | | | |
| | | | | | | | 165 | | | | | | | |
| | | [Hatched Pattern] | 5 | SS | 34 | | 164 | | | | | | | |
| | | | | | | | 163 | | | | | | | |
| | with sand | [Hatched Pattern] | 6 | SS | 48 | | 162 | | | | | | | 2 31 47 20 |
| | | | 7 | SS | 69 | | | | | | | | | |

ONTMT4S 9270.GPJ 6/29/09

Continued Next Page

+ 3. X 3: Numbers refer to
Sensitivity 20
15 5
10 (%) STRAIN AT FAILURE

RECORD OF BOREHOLE No CNH-06

2 OF 2

METRIC

G.W.P. 202-95-00

LOCATION N 4 845 080.9 E 294 358.3

ORIGINATED BY GA

HWY 427

BOREHOLE TYPE Solid Stem Auger

COMPILED BY MFA

DATUM Geodetic

DATE 2008.12.09 - 2008.12.10

CHECKED BY SKP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | | PLASTIC NATURAL LIQUID LIMIT MOISTURE CONTENT | | | UNIT WEIGHT Y 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 | 40 80 120 160 200 | W _p W W _L | WATER CONTENT (%) | | | | | |
| | Continued From Previous Page | | | | | | | | | | | | | | | |
| 160.7 | Silty CLAY, with sand, trace gravel Hard Grey (TILL) | | | | | | 161 | | | | | | | | | |
| 10.7 | Silty SAND, some gravel, trace clay Very Dense Grey Wet | | 8 | SS | 101 | | 160 | | | | | | | | 11 55 25 9 | |
| | | | | | | | | | | | | | | | | |
| | | | 9 | SS | 110 | | 159 | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | Hard augering | | | | | | 158 | | | | | | | | | |
| | | | 10 | SS | 122 | | 157 | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| 155.8 | | | 11 | SS | 101 | | 156 | | | | | | | | | |
| 15.5 | END OF BOREHOLE AT 15.5m. BOREHOLE OPEN TO 15.2m AND WATER LEVEL AT 5.8m UPON COMPLETION OF DRILLING. Piezometer installation consists of 25mm diameter Schedule 40 PVC pipe with a 1.52m slotted screen. WATER LEVEL READINGS: DATE DEPTH (m) ELEV. (m) 2009.01.21 6.1 165.3 2009.05.05 4.9 166.5 2009.06.08 4.9 166.5 | | | | | | | | | | | | | | | |

ONTMT4S 9270.GPJ 6/29/09

RECORD OF BOREHOLE No CNH-07

1 OF 2

METRIC

G.W.P. 202-95-00 LOCATION N 4 845 100.9 E 294 354.5 ORIGINATED BY GA
 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY MFA
 DATUM Geodetic DATE 2008.12.12 - 2008.12.12 CHECKED BY SKP

| 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 (%) | |
|---------------|---|------------|---------|------|------------|----------------------------|-----------------|---|----------------------------|------------------------------------|-------------------------------------|-----------------------------------|--|---|-------------------|
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | "N" VALUES | | | SHEAR STRENGTH kPa | | | | | | | WATER CONTENT (%) |
| | | | | | | | | ○ UNCONFINED ● QUICK TRIAXIAL | + FIELD VANE × LAB VANE | | | | | | |
| 171.6 | | | | | | | | 20 40 60 80 100 | | | | | | | |
| 0.0 | Silty CLAY, with sand, trace gravel Stiff Mottled Brown to Grey (TILL) | | 1 | SS | 10 | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | 2 | SS | 9 | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | Occasional iron oxide staining Very Stiff | | | 3 | SS | 26 | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| 167.1 | | | | | | | | | | | | | | | |
| 4.4 | Hard Grey | | 4 | SS | 30 | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| 165.6 | | | | | | | | | | | | | | | |
| 5.9 | Layer of sandy silt Very Dense | | 5 | SS | 60 | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| 164.7 | | | | | | | | | | | | | | | |
| 6.9 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | 6 | SS | 79 | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | 7 | SS | 71 | | | | | | | | | | |
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ONTMT4S 9270.GPJ 6/29/09

Continued Next Page

+ ³ × ³ : Numbers refer to Sensitivity 20 15 10 5 (%) STRAIN AT FAILURE

RECORD OF BOREHOLE No CNH-07

2 OF 2

METRIC

G.W.P. 202-95-00 LOCATION N 4 845 100.9 E 294 354.5 ORIGINATED BY GA
 HWY 427 BOREHOLE TYPE Solid Stem Auger COMPILED BY MFA
 DATUM Geodetic DATE 2008.12.12 - 2008.12.12 CHECKED BY SKP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | | | 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 | 120 140 160 180 200 | PLASTIC LIMIT W _p | NATURAL MOISTURE CONTENT W | LIQUID LIMIT W _L | | |
| | Continued From Previous Page | | | | | | | SHEAR STRENGTH kPa ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL x LAB VANE | | | | | | |
| 160.9 | Silty CLAY, with sand, trace gravel Hard Grey (TILL) | | | | | | 161 | | | | | | | |
| 10.7 | Silty SAND, trace gravel Very Dense Grey Wet | | 8 | SS | 101 | | 160 | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | 9 | SS | 115 | | 159 | | | | | | | |
| | Hard augering | | | | | | | | | | | | | |
| | occasional inferred cobbles | | | | | | 158 | | | | | | | |
| | | | 10 | SS | 111 | | 157 | | | | | | | |
| 156.0 | | | 11 | SS | 122 | | | | | | | | | |
| 15.5 | END OF BOREHOLE AT 15.5m. BOREHOLE OPEN TO 14.6m AND WATER LEVEL AT 0.5m UPON COMPLETION OF DRILLING. BOREHOLE BACKFILLED WITH BENTONITE GROUT TO 1.5m. THEN SEALED WITH BENTONITE HOLEPLUG TO SURFACE. | | | | | | | | | | | | | |

ONTMT4S 9270.GPJ 6/29/09

+ 3. x 3. Numbers refer to
Sensitivity

20
15 5
10 (%) STRAIN AT FAILURE

RECORD OF BOREHOLE No CNH-08

1 OF 2

METRIC

G.W.P. 202-95-00

LOCATION N 4 845 128.7 E 294 354.8

ORIGINATED BY WB

HWY 427

BOREHOLE TYPE Solid Stem Auger

COMPILED BY AN

DATUM Geodetic

DATE 2008.12.18 - 2008.12.18

CHECKED BY SKP

| SOIL PROFILE | | | SAMPLES | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | UNIT WEIGHT Y kN/m ³ | REMARKS & GRAIN SIZE DISTRIBUTION (%) |
|--------------|--|------------|---------|------|-------------------------|-----------------|--|-----------------|------------------------------|---------------------------------------|---------------------------------------|
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | | | *N-VALUES | 20 40 60 80 100 | PLASTIC LIMIT W _p | | |
| 181.3 | ASPHALT: (75mm) | | | | | | | | | | |
| 0.0 0.1 | Gravelly SAND Very Dense Brown Moist (FILL) | | 1 | SS | 53 | | | | | | |
| 180.3 | SILT and SAND, trace clay Loose Brown Moist (FILL) | | 2 | SS | 7 | | | | | | |
| 176.8 | Silty CLAY, with sand, trace gravel Hard Brown (TILL) | | 3 | SS | 30 | | | | | | |
| 4.6 | Occasional layers of silty sand | | 4 | SS | 42 | | | | | | |
| | | | 5 | SS | 30 | | | | | | |

Continued Next Page

+³, ×³: Numbers refer to Sensitivity

ONTMT4S 9270.GPJ 6/29/09

RECORD OF BOREHOLE No CNH-08

2 OF 2

METRIC

G.W.P. 202-95-00

LOCATION N 4 845 128.7 E 294 354.8

ORIGINATED BY WB

HWY 427

BOREHOLE TYPE Solid Stem Auger

COMPILED BY AN

DATUM Geodetic

DATE 2008.12.18 - 2008.12.18

CHECKED BY SKP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | UNIT WEIGHT γ kN/m ³ | REMARKS & GRAIN SIZE DISTRIBUTION (%) |
|---------------|---|------------|---------|------|---------------|----------------------------|-----------------|---|--|--|---|---|
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | "N" VALUES | | | SHEAR STRENGTH kPa | | | | |
| | | | | | | | | WATER CONTENT (%) | | | | |
| | Continued From Previous Page | | | | | | | | | | | |
| | Silty CLAY, with sand, trace gravel Hard Brown (TILL) | | 6 | SS | 35 | | 171 | | | | | 1 21 38 40 |
| | | | | | | | 170 | | | | | |
| | | | 7 | SS | 100/ 0.275 | | 169 | | | | | |
| | | | | | | | 168 | | | | | 4 32 43 21 |
| | | | 8 | SS | 100/ 0.225 | | 167 | | | | | |
| | | | | | | | 166 | | | | | |
| 165.7 | Hard augering | | 9 | SS | 100/ 0.250 | | | | | | | |
| 15.6 | END OF BOREHOLE AT 15.6m. BOREHOLE BACKFILLED WITH BENTONITE HOLEPLUG TO 0.075m THEN ASPHALT TO SURFACE. | | | | | | | | | | | |

ONTMT4S 9270.GPJ 6/29/09

+³ X³: Numbers refer to
Sensitivity 20
15 5
10 (%) STRAIN AT FAILURE

RECORD OF BOREHOLE No CNH-09

1 OF 1

METRIC

G.W.P. 202-95-00 LOCATION N 4 845 035.8 E 294 359.8
 HWY 427 BOREHOLE TYPE Solid Stem Auger
 DATUM Geodetic DATE 2008.12.05 - 2008.12.05
 ORIGINATED BY GA
 COMPILED BY AN
 CHECKED BY SKP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | | | UNIT WEIGHT Y kN/m ³ | REMARKS & GRAIN SIZE DISTRIBUTION (%) |
|---------------|--|------------|---------|------|------------|----------------------------|-----------------|---|----|----|----|-----|--|---|
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | "N" VALUES | | | 20 | 40 | 60 | 80 | 100 | | |
| 179.8 | TOPSOIL (50mm) | | | | | | | | | | | | | |
| 0.0 | Silty CLAY, with sand, trace gravel Stiff to Very Stiff Brown (FILL) | | 1 | SS | 12 | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | 2 | SS | 16 | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | 3 | SS | 8 | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | 4 | SS | 27 | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | 5 | SS | 26 | | | | | | | | | |
| 173.1 | | | | | | | | | | | | | | |
| 6.7 | END OF BOREHOLE AT 6.7m. BOREHOLE OPEN AND DRY UPON COMPLETION OF DRILLING. BOREHOLE BACKFILLED WITH BENTONITE HOLEPLUG TO SURFACE. | | | | | | | | | | | | | |

+ 3 . X 3 . Numbers refer to
Sensitivity

20
15
10
(%) STRAIN AT FAILURE

RECORD OF BOREHOLE No CNH-10

1 OF 1

METRIC

G.W.P. 202-95-00

LOCATION N 4 845 130.8 E 294 336.8

ORIGINATED BY WB

HWY 427

BOREHOLE TYPE Solid Stem Auger

COMPILED BY MFA

DATUM Geodetic

DATE 2008.12.17 - 2008.12.17

CHECKED BY SKP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | | UNIT WEIGHT Y kN/m ³ | REMARKS & GRAIN SIZE DISTRIBUTION (%) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------|-------------|------------|---------|------|------------|----------------------------|-----------------|---|----|------------|-----|--|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | "N" VALUES | | | SHEAR STRENGTH kPa | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | UNCONFINED | | FIELD VANE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 181.3 | | | | | | | 20 | 40 | 60 | 80 | 100 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

+³ ×³: Numbers refer to
Sensitivity

20
15 5
10 (%) STRAIN AT FAILURE

RECORD OF BOREHOLE No 1

METRIC

W P 153-80-02 LOCATION Co-ords. N 4 844 821.2; E 294 318.3 ORIGINATED BY V.P.
 DIST 6 HWY 427 BOREHOLE TYPE Hollow Stem Augers and Cone Test COMPILED BY V.P.
 DATUM Gravetric DATE 81-12-10 to 81-12-11 CHECKED BY GP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | PLASTIC NATURAL LIQUID LIMIT MOISTURE LIMIT CONTENT | | | UNIT WEIGHT Y | REMARKS & GRAIN SIZE DISTRIBUTION [%] |
|---------------|---|------------|---------|------|------------|----------------------------|--------------------|---|---------------------------------|---|--|--|---------------------|---|
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | 'N' VALUES | | | 20 40 60 80 100 | W _p W W _L | WATER CONTENT (%) | | | | |
| 171.9 | Ground Surface | | | | | | | | | | | | | GR SA SI CL |
| 0.0 | | | | | | | | | | | | | | |
| | Mottled | | 1 | SS | 9 | | 170 | | | | | | | 2-20-45-33 |
| | | | 2 | SS | 13 | | | | | | | | | |
| | | | 3 | SS | 29 | | | | | | | | | |
| | Brown Grey | | 4 | SS | 27 | | | | | | | | | |
| | (Glacial Till) | | 5 | SS | 21 | | 168 | | | | | | | 3-20-57-20 |
| | Silty Clay with Sand trace of Gravel | | 6 | SS | 15 | | | | | | | | | |
| | | | 7 | SS | 14 | | 166 | | | | | | | |
| | Stiff to Hard | | 8 | SS | 16 | | 164 | | | | | | | |
| | | | 9 | SS | 53 | | 162 | | | | | | | |
| | | | 10 | SS | 37 | | 160 | | | | | | | 0-28-42-30 |
| 160.0 | | | | | | | | | | | | | | |
| 11.9 | | | | | | | | | | | | | | |
| 57.0 | Silty Sand Dense | | 11 | SS | 37 | | | | | | | | | |
| 158.0 | | | | | | | | | | | | | | |
| | Boulder | | 12 | gr | - | | | | | | | | | |
| 13.9 | Break corebarrel in borehole | | | | | | | | | | | | | |
| 45.4 | Abandon hole End of Borehole | | | | | | | | | | | | | |
| | * Borehole caved at shallow depth. Perched water level at 0.5 metres. | | | | | | | | | | | | | |

OFFICE REPORT ON SOIL EXPLORATION

METRIC

ORIGINATED BY V.P.
COMPILED BY V.P.
CHECKED BY GI.

* J, x^S: Numbers refer to Sensitivity

OFFICE REPORT ON SOIL EXPLORATION

RECORD OF BOREHOLE No 3

METRIC

W P 153-80-02 LOCATION Co-ords. N 4 844 869.0; E 294 354.2 ORIGINATED BY V.P.
DIST 5 HWY 427 BOREHOLE TYPE Hollow Stem Augers/Solid Stem Augers 24.4 m to 33.4 m COMPILED BY V.P.
DATUM Gander's DATE 81-12-16, 81-12-17 and Cone Test CHECKED BY [Signature]

| 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 | | | |
| 171.5 | Ground Surface | | | | | | | | | | | | | | |
| 0.0 | (Glacial Till) | | 1 | SS | 9 | | | | | | | | | | |
| | | | 2 | SS | 26 | | | | | | | | | | |
| | | | 3 | SS | 49 | | | | | | | | | | |
| | | | 4 | SS | 50 | | | | | | | | | | |
| | Silty Clay with Sand trace of Gravel | | 5 | SS | 28 | | | | | | | | | | |
| | | | 6 | SS | 21 | | | | | | | | | | |
| | occ. Cobbles and Boulders | | 7 | SS | 26 | | | | | | | | | | |
| | | | 8 | SS | 30 | | | | | | | | | | |
| | Stiff to Hard | | 9 | SS | 44 | | | | | | | | | | |
| 161.1 | | | 10 | SS | 36 | | | | | | | | | | |
| 10.4 | Grey | | 11 | SS | 105 | | | | | | | | | | |
| 14.1 | Silty Sand to Sand Varying Amounts of Gravel | | 12 | SS | 58 | | | | | | | | | | |
| | Occasional Cobbles and Boulders throughout | | 13 | SS | 58 | 15 cm | | | | | | | | | |
| | Alternating Seams and Layers of Silt, Sand and Gravel | | 14 | SS | 105 | 13 cm | | | | | | | | | |
| | Dense to Very Dense | | | | | | | | | | | | | | |
| 136.1 | | | | | | | | | | | | | | | |
| 33.4 | Refusal to Solid Augers, Possible Boulder or Bedrock End of Borehole | | | | | | | | | | | | | | |
| | * Perched Water Table at 0.9 m Borehole Caved at 3.5 m | | | | | | | | | | | | | | |
| | Note: This borehole is a combination of two borings the first meeting refusal at 10.7 metres on a probable boulder. | | | | | | | | | | | | | | |

* 3, x 5: Numbers refer to
Sensitivity

20
15 x 5 (%) STRAIN AT FAILURE
10

OFFICE REPORT ON SOIL EXPLORATION

OFFICE REPORT ON SOIL EXPLORATION

| RECORD OF BOREHOLE No 4 | | | | | | | | | | METRIC | | | |
|-------------------------|---|---|---------|------------------------|-------------------------|-----------------|--|----|------------------------------|----------------------------|-----------------------------|---------------|---------------------------------------|
| W.P. 153-20-02 | | LOCATION Co-ords N 4 844 838.7; E 294 313.7 | | ORIGINATED BY V.P. | | | | | | | | | |
| DIST 6 HWY 427 | | BOREHOLE TYPE Hollow Stem Auger and Cone Test | | COMPILED BY V.P. | | | | | | | | | |
| DATUM Geodetic | | DATE 81-12-18 to 81-12-21 | | CHECKED BY [Signature] | | | | | | | | | |
| 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 Y | REMARKS & GRAIN SIZE DISTRIBUTION (%) |
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | | | 20 | 40 | | | | | |
| 171.4 | Ground Surface | | | | | | | | | | | | |
| 0.0 | (Glacial Till) | | 1 | SS | 42 | | | | | | | | |
| | Brown Grey | | 2 | SS | 60 | | | | | | | | 1-17-67-15 |
| | Silty Sand | | 3 | SS | 46 | | | | | | | | |
| | Silty Clay some Sand trace of Gravel | | 4 | SS | 75 | | | | | | | | |
| | Hard | | 5 | SS | 33 | | | | | | | | 5-15-60-20 |
| | | | 6 | SS | 83 | | | | | | | | |
| | | | 7 | SS | 45 | | | | | | | | |
| 159.8 | | | 8 | SS | 20 | | | | | | | | 15-53-30-2 |
| 11.6 | Cobbles | | 9 | SS | 84 | | | | | | | | |
| 38.1 | Grey Compact | | 10 | SS | 105/15 | | | | | | | | 6-75-(19) |
| | Silty Sand to Gravel and Cobble layers | | 11 | SS | 115/13 | | | | | | | | 12-51-33-4 |
| | Sand Varying Amounts of Gravel occasional Cobbles and Boulders throughout | | 12 | SS | 120/3 | | | | | | | | |
| 148.5 | Very Dense | | | | | | | | | | | | |
| 22.9 | End of Borehole | | | | | | | | | | | | |
| 25.1 | * Borehole caved at 9.3 metres. | | | | | | | | | | | | |
| | Perched Water Table | | | | | | | | | | | | |

RECORD OF BOREHOLE No 6

METRIC

W P 153-80-02 LOCATION Co-ords. N 4 844 864.4; E 294 316.3
DIST 6 HWY 427 BOREHOLE TYPE Solid Stem Auger/Drive "B" Casing
DATUM Geodetic DATE 81-12-21
ORIGINATED BY V.P.
COMPILED BY V.P.
CHECKED BY CP

| 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 Y | REMARKS & GRAIN SIZE DISTRIBUTION (%) | |
|---------------|---|------------|---------|------|------------|----------------------------|-----------------|---|----|----|------------------------------------|-------------------------------------|-----------------------------------|---------------------|---|------------|
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | 'N' VALUES | | | 20 | 40 | 60 | | | | | | 80 |
| 170.6 | Ground Surface | | | | | | | | | | | | | | | |
| 0.0 | | | | | | | | | | | | 10 | 20 | 30 | | |
| | (Glacial Till) | | 1 | SS | 31 | * | 170 | | | | | | | | | 4-26-52-18 |
| | | | 2 | SS | 44 | | | | | | | | | | | |
| | | | 3 | SS | 47 | | | | | | | | | | | |
| | Brown Grey | | 4 | SS | 35 | | 168 | | | | | | | | | 2-4-82-12 |
| | Silty Clay with Sand trace of Gravel | | 5 | SS | 40 | | | | | | | | | | | |
| | | | 6 | SS | 100/7 | 8 cm | 166 | | | | | | | | | |
| | | | 7 | SS | 26 | | 164 | | | | | | | | | |
| | Hard | | 8 | SS | 40 | | | | | | | | | | | |
| | Gravel & Cobbles | | 9 | SS | 31 | | 162 | | | | | | | | | 2-10-56-32 |
| 160.5 | | | 10 | SS | 36 | | 160 | | | | | | | | | 24-47-25-4 |
| 10.1 | Grey | | 11 | SS | 74 | | 158 | | | | | | | | | 3-56-35-6 |
| 33.1 | Silty Sand to Sand | | 12 | SS | 149/23 | 23 cm | 156 | | | | | | | | | |
| | Cobbles | | 13 | SS | 168/23 | 23 cm | 154 | | | | | | | | | |
| | Varying Amounts of Gravel | | | | | | 152 | | | | | | | | | |
| | Occasional Cobbles and Boulders throughout | | | | | | 150 | | | | | | | | | |
| | Dense to Very Dense | | | | | | | | | | | | | | | |
| 149.0 | | | 14 | SS | 125/21 | 21 cm | | | | | | | | | | 15-67-32-5 |
| 21.6 | End of Borehole | | | | | | | | | | | | | | | |
| 20.1 | * Perched Water Level at Ground Surface. BH Caved at 6.9 m. | | | | | | | | | | | | | | | |

OFFICE REPORT ON SOIL EXPLORATION

RECORD OF BOREHOLE No 7

METRIC

W P 153-80-02 LOCATION Co-ords. N 4 844 880.0; E 294 310.4 ORIGINATED BY V.P.
 DIST 6 HWY 427 BOREHOLE TYPE Hollow Stem Augers and Cone Test COMPILED BY V.P.
 DATUM Geodetic DATE 81-12-22 CHECKED BY CP

| 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 Y | 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 ● QUICK TRIAXIAL | + FIELD VANE x LAB VANE | WATER CONTENT (%) | | | | |
| 171.7 | Ground Surface | | | | | | | | | | | | | |
| 0.0 | (Glacial Till) | | 1 | SS | 27 | * | 170 | | | | | | | |
| | | | 2 | SS | 44 | | 168 | | | | | | | |
| | Silty Clay with Sand trace of Gravel occ. cobbles | | 3 | SS | 30 | | 166 | | | | | | | |
| | | | 4 | SS | 75 | | 164 | | | | | | | |
| | Very Stiff to Hard | | 5 | SS | 122/ | 22 cm | 162 | | | | | | | |
| 161.6 | | | 6 | SS | 40 | | 160 | | | | | | | |
| 10.1 | Grey Silty Sand to Sand | | 7 | SS | 107 | | 160 | | | | | | | |
| 33.1 | | | 8 | SS | 79 | | 158 | | | | | | | |
| | Varying Amounts of Gravel | | 9 | SS | 103 | | 156 | | | | | | | |
| | occasional Cobbles and Boulders throughout | | 10 | SS | 102 | | 154 | | | | | | | |
| | Very Dense | | 11 | SS | 157/ | 20 cm | 152 | | | | | | | |
| 151.5 | End of Borehole | | | | | | | | | | | | | |
| 66.3 | * Note: W.L. not established at time of investigation. | | | | | | | | | | | | | |

OFFICE REPORT ON SOIL EXPLORATION

RECORD OF BOREHOLE No 8

METRIC

W P 153-80-02 LOCATION Co-ords. N 4 864 895.5 E 294 357.7 ORIGINATED BY V.P.
DIST 6 HWY 427 BOREHOLE TYPE Solid Stem Auger/"B" Casing COMPILED BY V.P.
DATUM Geodetic DATE 81-12-22 CHECKED BY [Signature]

| 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 Y | REMARKS & GRAIN SIZE DISTRIBUTION (%) |
|---------------|--|-------------|---------|------|------------|----------------------------|-----------------|---|----|----|----|------------------------------------|-------------------------------------|-----------------------------------|---------------------|---|
| ELEV DEPTH | DESCRIPTION | STRAT. PLOT | NUMBER | TYPE | "N" VALUES | | | 20 | 40 | 60 | 80 | 100 | | | | |
| 170.8 | Ground Surface | | | | | | | | | | | | | | | |
| 0.0 | (Glacial Till) | | | | | | | | | | | | | | | |
| | Brown Grey | | 1 | SS | 31 | | 170 | | | | | | | | | |
| | Silty Clay with Sand trace of Gravel | | 2 | SS | 25 | | 168 | | | | | | | | | |
| | | | 3 | SS | 22 | | 166 | | | | | | | | | |
| | Silty Sand | | 4 | SS | 27 | | 164 | | | | | | | | | |
| | Very Stiff to Hard | | 5 | SS | 100 | | 162 | | | | | | | | | |
| 162.0 | | | | | | | | | | | | | | | | |
| 8.8 | Grey | | 6 | SS | 100 | | 162 | | | | | | | | | |
| 18.8 | Silty Sand to Sand | | 7 | SS | 118 | | 160 | | | | | | | | | |
| | | | 8 | SS | 11 | | 158 | | | | | | | | | |
| | Varying Amounts of Gravel | | 9 | SS | 156 | | 156 | | | | | | | | | |
| | occasional Cobbles and Boulders Throughout | | 10 | SS | 111 | | 154 | | | | | | | | | |
| | | | 11 | SS | 100 | 15 cm | 152 | | | | | | | | | |
| | Very Dense | | | | | | 150 | | | | | | | | | |
| 147.7 | | | 12 | SS | 100 | 8 cm | 148 | | | | | | | | | |
| 23.1 | End of Borehole | | | | | | | | | | | | | | | |
| 25.8 | * W.L. not established at time of investigation. | | | | | | | | | | | | | | | |

* 1, x 5 : Numbers refer to Sensitivity 20
15 5 (%) STRAIN AT FAILURE
10

OFFICE REPORT ON SOIL EXPLORATION

RECORD OF BOREHOLE No 1

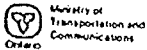
Metric

W.P. 153-80-02 LOCATION Co-ords. 4,845, 115N; 294, 281E ORIGINATED BY M.R.
 DIST. 6 HWY 427 BOREHOLE TYPE Hollow Stem Auger COMPILED BY S.P.
 DATUM Geodetic DATE February 17, 1982 CHECKED BY SP

OFFICE REPORT ON SOIL EXPLORATION

| SOIL PROFILE | | | SAMPLES | | | GR. UND. WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | PLASTIC LIMIT W _p | NATURAL MOISTURE CONTENT W | LIQUID LIMIT W _L | UNIT WEIGHT Y | REMARKS & GRAIN SIZE DISTRIBUTION (%) | | | | | | | | |
|--|--|-------------|---------|------|------------|------------------------------|-----------------|---|-----------------|------------------------------------|-------------------------------------|-----------------------------------|---------------------|---|------|-----------------|------------|--------|------------|--------|------------|--------|
| ELEV. DEPTH | DESCRIPTION | STRAT. PLOT | NUMBER | TYPE | 'N' VALUES | | | 20 40 60 80 100 | 20 40 60 80 100 | | | | | | | | | | | | | |
| 172.37 | Ground Level | | | | | | | | | | | | | | | | | | | | | |
| 172.01 | Topsoil, silty clay, low organic, dark brown | | 1 | SS | 10 | | | | | | | | | | | | | | | | | |
| 0.31 | Silty clay with sand, trace gravel, fissured, thin fine sand layers, (Glacial Till) | | 2 | SS | 7 | | | | | | | | | | | | | | | | | |
| 170.15 | Intermediate plasticity | | | | | | | | | | | | | | | | | | | | | |
| 2.13 | Stiff to Firm, Brown | | | SS | 37 | | | | | | | | | | | | | | | | | |
| | Silty clay with sand, trace gravel, fissured, thin sand layers (Glacial Till) Low Plasticity | | 4 | SS | 59 | | | | | | | | | | | | | | | | | |
| 167.75 | Hard, Brown | | 5 | SS | 30 | | | | | | | | | | | | | | | | | |
| 4.57 | becoming very stiff, Grey | | 6 | SS | 26 | | | | | | | | | | | | | | | | | |
| | | | 7 | SS | 27 | | | | | | | | | | | | | | | | | |
| 165.31 | | | | | | | | | | | | | | | | | | | | | | |
| 7.01 | Silty sand fine to coarse with gravel, (Glacial Till) | | 8 | SS | 93 | | | | | | | | | | | | | | | | | |
| | Very Dense Grey | | 9 | SS | 100/280 mm | | | | | | | | | | | | | | | | | |
| | | | 10 | SS | 100/200 mm | | | | | | | | | | | | | | | | | |
| | | | 11 | SS | 100/280 mm | | | | | | | | | | | | | | | | | |
| | | | 12 | SS | 100 | | | | | | | | | | | | | | | | | |
| | | | 13 | SS | 100/200 mm | | | | | | | | | | | | | | | | | |
| 16.17 | | | | | | | | | | | | | | | | | | | | | | |
| 16.15 | Sand, fine with silt, occasional thin layers of silty clay | | 14 | SS | 80/180 mm | | | | | | | | | | | | | | | | | |
| 151.75 | Very Dense Grey | | 15 | SS | 100/280 mm | | | | | | | | | | | | | | | | | |
| 18.57 | End of Borehole | | | | | | | | | | | | | | | | | | | | | |
| <p>Note: 1/2 hr. after sample 11, water at elevation 160.42 inside augers Upon completion of auguring, water at elevation 161.42 inside augers Piezometer installed at elevation 154.03 seal at elevation 163.48</p> <table border="1"> <thead> <tr> <th>Date</th> <th>Water Elevation</th> </tr> </thead> <tbody> <tr> <td>Feb. 13/82</td> <td>165.02</td> </tr> <tr> <td>Feb. 19/82</td> <td>165.42</td> </tr> <tr> <td>Feb. 26/82</td> <td>167.02</td> </tr> </tbody> </table> | | | | | | | | | | | | | | | Date | Water Elevation | Feb. 13/82 | 165.02 | Feb. 19/82 | 165.42 | Feb. 26/82 | 167.02 |
| Date | Water Elevation | | | | | | | | | | | | | | | | | | | | | |
| Feb. 13/82 | 165.02 | | | | | | | | | | | | | | | | | | | | | |
| Feb. 19/82 | 165.42 | | | | | | | | | | | | | | | | | | | | | |
| Feb. 26/82 | 167.02 | | | | | | | | | | | | | | | | | | | | | |

3, x5; Numbers refer to Sensitivity
 20
 15
 10
 5 (%) STRAIN AT FAILURE



RECORD OF BOREHOLE No 2

Metric

W.P. 153-00-02 LOCATION Co-ords. 4,845, 119N, 294, 317E
DIST 6 HWY 427 BOREHOLE TYPE Hollow Stem Auger
DATUM Geodetic DATE February 19, 1982
ORIGINATED BY H.R.V.
COMPILED BY S.P.
CHECKED BY SP

| 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 Y | REMARKS & GRAIN SIZE DISTRIBUTION (%) |
|---|-------------|--|--------|------|----------------------------|-----------------|---|----|----|----|------------------------------------|-------------------------------------|-----------------------------------|---------------------|---|
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | 'N' VALUES | | 20 | 40 | 60 | 80 | 100 | | | | |
| 0 | 172.70 | Ground Level | | | | | | | | | | | | | |
| 2 | 172.05 | Topsoil, silty clay, low organic Dark Brown | | | | | | | | | | | | | |
| | 0.61 | Silty clay with sand, trace gravel, fissured, thin fine sand layers (Glacial Till) | 1 | SS | 10 | | | | | | | | | | |
| | | Intermediate plasticity | 2 | SS | 28 | | | | | | | | | | |
| 10 | 169.65 | Very Stiff Brown | 3 | SS | 28 | | | | | | | | | | |
| | 3.05 | Silty clay with sand, trace gravel, fissured, thin fine sand layers (Glacial Till) | 4 | SS | 42 | | | | | | | | | | |
| | | Low plasticity | 5 | SS | 32 | | | | | | | | | | |
| | | | 6 | SS | 35 | | | | | | | | | | |
| | | Hard Brown to Grey | 7 | SS | 41 | | | | | | | | | | |
| 23 | 165.69 | | | | | | | | | | | | | | |
| | 7.01 | Silty sand fine to coarse with gravel (Glacial Till) | 8 | SS | 100 | | | | | | | | | | |
| 30.7 | 163.28 | Very Dense Grey | 9 | SS | 1007 30 mm | | | | | | | | | | |
| | 9.42 | End of Borehole | | | | | | | | | | | | | |
| <p>Note: After removal of augers upon completion of drilling, borehole caved at elevation 164.24, no free water</p> | | | | | | | | | | | | | | | |

OFFICE REPORT ON SOIL EXPLORATION

*3, *5: Numbers refer to Sensitivity
20
15 *5 (%) STRAIN AT FAILURE
10

RECORD OF BOREHOLE No 3

Metric

W.P. 153-80-02 LOCATION Co-ords. 4, R45, 141 N; 294, 277E
DIST 6 HWY 427 BOREHOLE TYPE Hollow Stem Auger ORIGINATED BY D.L.K.
DATUM Geodetic DATE February 18, 1982 COMPILED BY S.P.
CHECKED BY SP

| 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 | | | 20 | 40 | 60 | 80 | 100 | | | | |
| 0.72-57 | Ground Level | | | | | | | | | | | | | | |
| 0.72-81 | Topsoil, silty clay, low organic, Dark Brown | | 1 | SS | 20 | 172 | | | | | | | | | |
| 0.76 | Silty clay with sand, trace gravel, fissured, thin fine sand layers (Glacial Till) | | 2 | TH | PH | | | | | | | | | | |
| 169.52 | Intermediate plasticity Very Stiff to Hard Brown | | 3 | SS | 14 | 170 | | | | | | | | | |
| 3.05 | Silty clay with sand, trace gravel, fissured, thin fine sand layers (Glacial Till) | | 4 | SS | 55 | | | | | | | | | | |
| | Low plasticity | | 5 | SS | 48 | | | | | | | | | | |
| | Hard to Brown Very Stiff to Grey | | 6 | SS | 25 | 168 | | | | | | | | | |
| 6.40 | Silty sand fine to coarse with gravel (Glacial Till) | | 7 | SS | 44 | 166 | | | | | | | | | |
| 63.18 | Very Dense Grey | | 8 | SS | 100/250 mm | 164 | | | | | | | | | |
| 9.39 | End of Borehole | | 9 | SS | 100/250 mm | | | | | | | | | | |

Note:
After removal of augers
upon completion of
drilling, water level
at elevation 163.89
Borehole caved at
elevation 164.04

OFFICE REPORT ON SOIL EXPLORATION

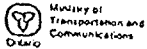
RECORD OF BOREHOLE No 4

Metric

W.P. 152-B0-02 LOCATION Co-ords 4, 845, 145 N. 294, 313E ORIGINATED BY D.I.K.
 DIST. 6 HWY. 427 BOREHOLE TYPE Hollow Stem Auger COMPILED BY S.P.
 DATUM Canadian DATE February 19, 1982 CHECKED BY SP

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT | | | UNIT WEIGHT Y | REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL |
|---|---|------------|---------|------|------------|----------------------------|-----------------|---|--|---|--|--|---------------------|--|
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | 'N' VALUES | | | 20 40 60 80 100 | | W _p W W _L | | | | |
| | | | | | | | | SHEAR STRENGTH | | WATER CONTENT (%) | | | | |
| | | | | | | | | | | | | | | |
| 172.59 | Ground Level | | | | | | | | | | | | | |
| 172.28 | Topsoil, silty clay, low organic, dark brown | | | | | | | | | | | | | |
| 0.31 | Silty clay with sand, trace gravel, fissured, thin fine sand layers (Glacial Till) | | 1 | SS | 18 | | | | | | | | | |
| | Intermediate plasticity | | 2 | SS | 21 | | | | | | | | | |
| | | | | SS | 28 | | | | | | | | | |
| 168.92 | Very Stiff Brown | | 4 | SS | 24 | | | | | | | | | |
| 3.66 | Silty clay with sand, trace gravel, fissured, thin fine sand layers, (Glacial Till) | | 5 | SS | 39 | | | | | | | | | |
| | Low plasticity | | 6 | SS | 45 | | | | | | | | | |
| 166.45 | Hard Grey | | | | | | | | | | | | | |
| 6.10 | Silty sand fine to coarse with gravel (Glacial Till) | | 7 | SS | 91 | | | | | | | | | |
| | | | 8 | SS | 88 | | | | | | | | | |
| 163.09 | Very Dense Grey | | 9 | SS | 100/200 cm | | | | | | | | | |
| 9.50 | End of Borehole | | | | | | | | | | | | | |
| Note: After removal of augers on completion of drilling, water level and elevation 165.78 and borehole caved at elevation 165.68 | | | | | | | | | | | | | | |

OFFICE REPORT ON SOIL EXPLORATION



RECORD OF BOREHOLE No 5

Metric

W P 153-80-02

LOCATION Co-ords. 4, 04S, 161N; 294, 274E

ORIGINATED BY B.L.K.

DIST 6

HWY 427

BOREHOLE TYPE

Hollow Stem Auger

COMPILED BY S.P.

DATUM Canadian

DATE February 18, 1982

CHECKED BY SP

| 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 Y | REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL | | | | | | | | |
|---|--|------------|---------|------|------------|----------------------------|-----------------|---|--|--|--|------------------------------------|-------------------------------------|-----------------------------------|---------------------|--|-------------------|--|------|--|------------|--------|------------|--------|
| ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | 'N' VALUES | | | SHEAR STRENGTH | | | | | | | | | WATER CONTENT (%) | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 172.89 | Ground Level | | | | | | | | | | | | | | | | | | | | | | | |
| 2 172.28 | Topsoil, silty clay, low organic (dark brown) | | | | | | | | | | | | | | | | | | | | | | | |
| 0.61 | Silty clay with sand, trace gravel, fissured, thin fine sand layers (Glacial Till) | | 1 | SS | 26 | | 172 | | | | | | | | | | | | | | | | | |
| | Intermediate plasticity | | 2 | SS | 27 | | | | | | | | | | | | | | | | | | | |
| | Very Stiff | | 3 | SS | 31 | | | | | | | | | | | | | | | | | | | |
| 10 169.84 | Hard Brown | | 4 | SS | 49 | | 170 | | | | | | | | | | | | | | | | | |
| 3.05 | Silty Clay with sand, trace gravel, fissured, thin fine sand layers, (Glacial Till) low plasticity | | 5 | SS | 54 | | | | | | | | | | | | | | | | | | | |
| 16 168.01 | Hard Brown | | 6 | SS | 43 | | 168 | | | | | | | | | | | | | | | | | |
| 4.88 | Silty sand, fine to coarse with gravel (Glacial Till) | | 7 | SS | 63 | | | | | | | | | | | | | | | | | | | |
| | | | 8 | SS | 93 | | 166 | | | | | | | | | | | | | | | | | |
| | | | 9 | SS | 100/230 mm | | 164 | | | | | | | | | | | | | | | | | |
| 313 163.36 | Very Dense Gray | | | | | | | | | | | | | | | | | | | | | | | |
| 9.53 | End of Borehole | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Note: After removal of augers upon completion of drilling, water level at elevation 164.97 and borehole caved at elevation 165.57 Piezometer installed at elevation 163.44 seal at elevation 171.06</p> <table><tr><th colspan="2">Water Elevation</th></tr><tr><td>Date</td><td></td></tr><tr><td>Feb. 19/82</td><td>169.92</td></tr><tr><td>Feb. 26/82</td><td>170.51</td></tr></table> <p>(possible perched water infiltration)</p> | | | | | | | | | | | | | | | | | Water Elevation | | Date | | Feb. 19/82 | 169.92 | Feb. 26/82 | 170.51 |
| Water Elevation | | | | | | | | | | | | | | | | | | | | | | | | |
| Date | | | | | | | | | | | | | | | | | | | | | | | | |
| Feb. 19/82 | 169.92 | | | | | | | | | | | | | | | | | | | | | | | |
| Feb. 26/82 | 170.51 | | | | | | | | | | | | | | | | | | | | | | | |

OFFICE REPORT ON SOIL EXPLORATION

*3, *5: Numbers refer to Sensitivity

20
15 $\frac{1}{5}$ (%) STRAIN AT FAILURE
10

RECORD OF BOREHOLE No 6

Metric

W P 153-80-02 LOCATION Co-ords. 4, 845, 168N, 294, 309E
DIST 6 HWY 427 BOREHOLE TYPE Hollow Stem Auger
DATUM Geodetic DATE February 17/18, 1982
ORIGINATED BY B.J.L.K.
COMPILED BY S.P.
CHECKED BY R

OFFICE REPORT ON SOIL EXPLORATION

| 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 | 50 100 150 200 kPa | | | | | |
| 173.22 | Ground Level | | | | | | | | | | | | | |
| 172.62 | Topsoil, silty clay, low organic Dark Brown | | 1 | SS | 15 | | | | | | | | | |
| 0.61 | Silty clay with sand, trace gravel, fissured, thin fine sand layers (Glacial Till) | | 2 | SS | 21 | | | | | | | | | |
| 170.42 | Intermediate plasticity Very Stiff Brown | | 3 | TH | PH | | | | | | | | | |
| 2.74 | Silty clay, with sand, trace gravel, fissured, thin fine sand layers, (Glacial Till) | | 4 | SS | 59 | | | | | | | | | |
| | Low plasticity | | 5 | SS | 52 | | | | | | | | | |
| 168.12 | Hard Brown to Grey | | 6 | SS | 27 | | | | | | | | | |
| 5.18 | Silty sand, fine to coarse with gravel (Glacial Till) | | 7 | SS | 08 | 250 mm | | | | | | | | |
| | | | 8 | SS | 100 | 200 mm | | | | | | | | |
| | Very Dense Grey | | 9 | SS | 100 | 200 mm | | | | | | | | |
| | | | 10 | SS | 100 | 180 mm | | | | | | | | |
| | | | 11 | SS | 94 | | | | | | | | | |
| | | | 12 | SS | 100 | 150 mm | | | | | | | | |
| 157.52 | | | 13 | SS | 100 | 250 mm | | | | | | | | |
| 15.65 | End of Borehole | | | | | | | | | | | | | |

Note:
After removal of auger upon completion of drilling, water level at elevation 163.47 and borehole caved at elevation 167.43

*3, *5: Numbers refer to Sensitivity
20
15
10
5 (%) STRAIN AT FAILURE



RECORD OF BOREHOLE No 1

W P 153-80-04 LOCATION Co-ords. 4, 845, 498 N; 294, 227.5 E. ORIGINATED BY MT
DIST 6 HWY 427 BOREHOLE TYPE Hollow-stem auger COMPILED BY RR
DATUM Geodetic DATE February 12, 1982 CHECKED BY JRB

| 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 (%) |
|-------------------------|--|------------|---------|------|------------|----------------------------|--------------------|---|----|----|----|-----|------------------------------------|-------------------------------------|-----------------------------------|---------------------|---|
| Metres ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | 'N' VALUES | | | 20 | 40 | 60 | 80 | 100 | | | | | |
| 175.63 | Ground Level | | | | | | | | | | | | | | | | |
| 0.00 | Topsoil 150 mm thick | | | | | Seal | | | | | | | | | | | |
| | Till, Silty Clay with some sand & gravel | | 1 | SS | 38 | | 174 | | | | | | | | | | 5 18 49 28 |
| | Very Stiff to Hard Brown | | 2 | SS | 29 | | | | | | | | | | | | |
| 172.73 | | | 3 | SS | 35 | | | | | | | | | | | | |
| 2.90 | Interbedded Silty Sand and Sandy Silt, 10 to 50 mm thick layers | | 4 | SS | 108 | | 172 | | | | | | | | | | |
| | | | 5 | SS | 59 | | | | | | | | | | | | |
| 170.45 | Very Dense. Brown | | 6 | SS | 115 | | | | | | | | | | | | |
| 5.18 | Fine Sand, silty | | 7 | SS | 78 | | 170 | | | | | | | | | | |
| | | | 8 | SS | 65 | Water Level Mar. 1/82 | | | | | | | | | | | |
| | | | 9 | SS | 73 | | 168 | | | | | | | | | | |
| | | | 10 | SS | 125/25 | 25 mm | | | | | | | | | | | |
| | | | 11 | SS | 73 | | | | | | | | | | | | |
| | Very Dense Brown to Grey | | 12 | SS | 35 | | 166 | | | | | | | | | | |
| | | | 13 | SS | 79 | | | | | | | | | | | | |
| | | | 14 | SS | 72 | | 164 | | | | | | | | | | |
| | | | 15 | SS | 80/50 | 50 mm | | | | | | | | | | | |
| 162.52 | | | | | | | 162 | | | | | | | | | | |
| 13.11 | Till, Silty Clay with some sand and gravel | | 16 | SS | 122/25 | 25 mm | | | | | | | | | | | |
| | | | 17 | SS | 100/25 | 25 mm | 160 | | | | | | | | | | 9 23 40 23 |
| | | | 18 | SS | 100/50 | 50 mm | | | | | | | | | | | |
| | Very Hard Grey | | 19 | SS | 100/15 | 15 mm | 158 | | | | | | | | | | |
| 19.81 | Fine Sand, silty | | | | | Seal | | | | | | | | | | | |
| 20.43 | Dense Grey | | 20 | SS | W.H. | Piezometer | 156 | | | | | | | | | | |
| 154.08 | | | | | | | | | | | | | | | | | |
| 21.55 | End of Borehole | | 21 | SS | 100/200 | | 154 | | | | | | | | | | |
| | | | | | | | 152 | | | | | | | | | | |

+³, x⁵: Numbers refer to
Sensitivity

20
15 ϕ 5 (%) STRAIN AT FAILURE
10

RECORD OF BOREHOLE No 2

W P 153-80-04 LOCATION Co-ords. 4, 845, 540 N; 294, 253 E. ORIGINATED BY MT
DIST 6 HWY 427 BOREHOLE TYPE Hollow-stem auger COMPILED BY RR
DATUM Geodetic DATE February 15, 1982 CHECKED BY JRB

[illegible]

RECORD OF BOREHOLE No 3

W P 153-80-04 LOCATION Co-ords. 4,845,559 N; 294,218.5 E ORIGINATED BY NT
 DIST 6 HWY 427 BOREHOLE TYPE Hollow Stem Auger COMPILED BY RR
 DATUM Geodetic DATE February 16, 1982 CHECKED BY JRB

| 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 Y | REMARKS & GRAIN SIZE DISTRIBUTION (%) |
|--------------|---------------|--|------------|--------|------|----------------------------|--------------------------|---|----|----|----|-----|------------------------------------|-------------------------------------|-----------------------------------|---------------------|---|
| Metres | ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | | | 20 | 40 | 60 | 80 | 100 | | | | | |
| 176.28 | | Ground Level | | | | | | | | | | | | | | | |
| 0.00 | | Topsoil, 150 mm thick | | | | | 176 | | | | | | | | | | |
| | | Till, silty clay, with some sand and gravel | | 1 | SS | | Seal | | | | | | | | | | |
| | | | | 2 | SS | | | | | | | | | | | | |
| | | Very Stiff to Hard Brown | | 3 | SS | | 174 | | | | | | | | | | |
| 173.08 | | | | 4 | SS | | Seal | | | | | | | | | | |
| 3.20 | | Interbedded Silty Sand and Sandy Silt | | 5 | SS | | | | | | | | | | | | |
| | | Very Dense Brown | | 6 | SS | | 172 | | | | | | | | | | |
| | | | | 7 | SS | | | | | | | | | | | | |
| 170.34 | | Fine Sand, Silty | | 8 | SS | | Water Level Mar. 1/82 | | | | | | | | | | |
| 5.94 | | Very Dense Brown | | 9 | SS | | 170 | | | | | | | | | | |
| 168.81 | | Sand, with some Gravel and trace Silt | | 10 | SS | | Piezometer | | | | | | | | | | |
| 7.47 | | | | | | | | | | | | | | | | | |
| 166.83 | | Very Dense Brown | | | | | 168 | | | | | | | | | | 10 78 9 3 |
| 9.45 | | End of Borehole | | | | | 166 | | | | | | | | | | |
| | | | | | | | 164 | | | | | | | | | | |

+³, x⁵: Numbers refer to
Sensitivity

20
15 ϕ 5 (%) STRAIN AT FAILURE
10

RECORD OF BOREHOLE No 4

W P 153-80-04 LOCATION Co-ords. 4,845,572 N; 294,247 E. ORIGINATED BY MI
DIST 6 HWY 427 BOREHOLE TYPE Hollow Stem Auger COMPILED BY RR
DATUM Geodetic DATE February 16, 1982 CHECKED BY JRB

| 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 | | |
|-------------------------|--|------------|---------|------|------------|----------------------------|--------------------------|--|--|--|------------------------------------|-------------------------------------|-----------------------------------|---------------------|--|--|--|
| Metres ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | 'N' VALUES | | | 20 40 60 80 100 | | | | | | | | | |
| | | | | | | | | SHEAR STRENGTH ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE | | | | | | | | | |
| 175.98 | Ground Level | | | | | | | | | | | | | | | | |
| 0.00 | Topsoil, 150 mm thick | | | | | | Seal | | | | | | | | | | |
| | Till, silty clay, with some sand and gravel | | 1 | SS | 28 | | | | | | | | | | | | |
| | Very Stiff to Hard | | 2 | SS | 39 | | 174 | | | | | | | | | | |
| | Brown | | 3 | SS | 42 | | | | | | | | | | | | |
| 172.78 | Interbedded Silty Sand and Sandy Silt | | 4 | SS | 85/150 | mm | Seal | | | | | | | | | | |
| 3.20 | Very Dense Brown | | 5 | SS | 120 | | 172 | | | | | | | | | | |
| 170.80 | Fine Sand, Silty | | 6 | SS | 81 | | | | | | | | | | | | |
| 5.18 | Very Dense Brown | | 7 | SS | 56 | | Water Level Mar. 1/82 | | | | | | | | | | |
| | | | 8 | SS | 48 | | 170 | | | | | | | | | | |
| | | | 9 | SS | 61 | | | | | | | | | | | | |
| 168.06 | Sand, seam, some gravel | | 10 | SS | 92 | | 168 | | | | | | | | | | |
| 7.92 | Very Dense Brown | | 11 | SS | 118 | | Piezometer | | | | | | | | | | |
| 166.99 | | | 12 | SS | 50 | | | | | | | | | | | | |
| 8.99 | | | | | | | | | | | | | | | | | |
| 166.38 | | | | | | | | | | | | | | | | | |
| 9.60 | End of Borehole | | | | | | 166 | | | | | | | | | | |
| | | | | | | | 164 | | | | | | | | | | |

W P 153-80-04 LOCATION Co-ords. 4,845,533 N; 294,223 E. ORIGINATED BY MT
DIST 6 HWY 427 BOREHOLE TYPE Hollow Stem Auger COMPILED BY RR
DATUM Geodetic DATE February 16, 1982 CHECKED BY JRB

+3, x5: Numbers refer to Sensitivity

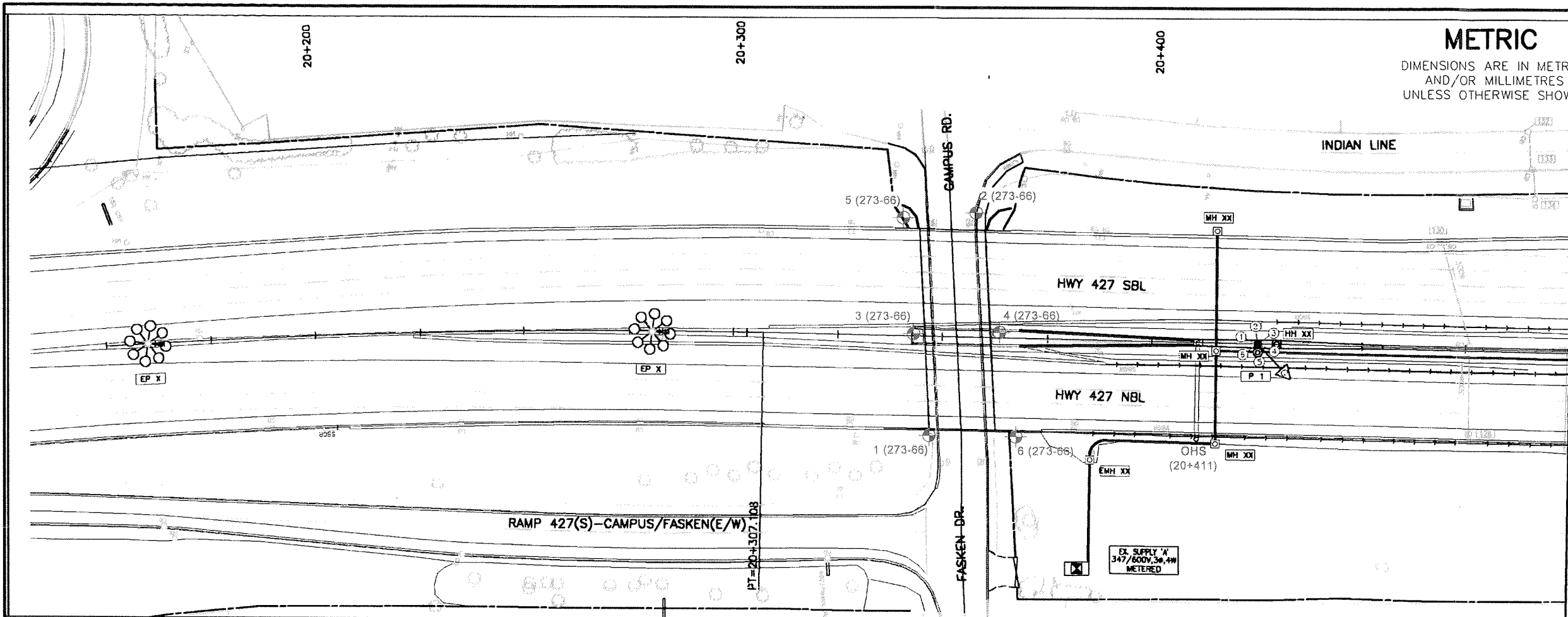
RECORD OF BOREHOLE No 6

W P 153-80-04 LOCATION Co-ords. 4, 845, 514 N; 294, 256 E. ORIGINATED BY MT
 DIST 6 HWY 427 BOREHOLE TYPE Hollow-stem auger COMPILED BY RR
 DATUM Geodetic DATE February 15, 1982 CHECKED BY JRB

| SOIL PROFILE | | | SAMPLES | | | GROUND WATER CONDITIONS | ELEVATION SCALE | DYNAMIC CONE PENETRATION RESISTANCE PLOT | | | | | UNIT WEIGHT Y | REMARKS & GRAIN SIZE DISTRIBUTION (%) |
|-------------------------|--|------------|---------|------|------------|----------------------------|--------------------------|---|----|----|----|-----|---------------------|---|
| Metres ELEV DEPTH | DESCRIPTION | STRAT PLOT | NUMBER | TYPE | 'N' VALUES | | | 20 | 40 | 60 | 80 | 100 | | |
| 75.33 | Ground Level | | | | | | | | | | | | | |
| 0.00 | Topsoil, 150 mm thick | | | | | | | | | | | | | GR SA SI CL |
| | Till, silty clay, with some sand and gravel | | 1 | SS | 32 | | Seal | | | | | | | |
| | Very Stiff to Hard | | 2 | SS | 30 | | 174 | | | | | | | |
| | Brown | | 3 | SS | 45 | | | | | | | | | |
| 171.67 | | | 4 | SS | 35 | | Seal | | | | | | | |
| 3.66 | Interbedded Silty Sand and Sandy Silt | | 5 | SS | 73 | | 172 | | | | | | | |
| | Very Dense Brown | | 6 | SS | 55 | | Water Level Mar. 1/82 | | | | | | | |
| | | | 7 | SS | 89 | | 170 | | | | | | | 0 35 62 3 |
| 168.62 | | | 8 | SS | 82 | | | | | | | | | |
| 6.71 | Fine Sand, Silty | | 9 | SS | 76 | | | | | | | | | |
| 167.10 | Very Dense Brown | | 10 | SS | 69 | | 168 | | | | | | | |
| 8.23 | Sand, with some Gravel | | 11 | SS | 69 | | | | | | | | | |
| | Very Dense Gray | | 12 | SS | 34 | | 166 | | | | | | | |
| | | | 13 | SS | 76 | | Piezometer | | | | | | | |
| 164.20 | | | 14 | SS | 39 | | | | | | | | | |
| 11.13 | End of Borehole | | | | | | 164 | | | | | | | |
| | | | | | | | 162 | | | | | | | |

Appendix C

Borehole Location Drawings



METRIC

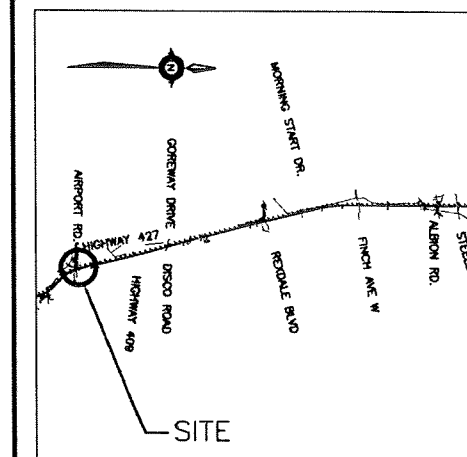
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

CONT No
GWP No 202-95-00



**HWY 427 WIDENING
FROM FASKEN DR. TO STEELES AVE.
PROPOSED HIGH MAST LIGHTING POLES
& OVERHEAD SIGN SUPPORTS**

SHEET



KEYPLAN

LEGEND



Approximate Borehole Locations

OHS

Overhead Sign



High Mast Lighting Pole

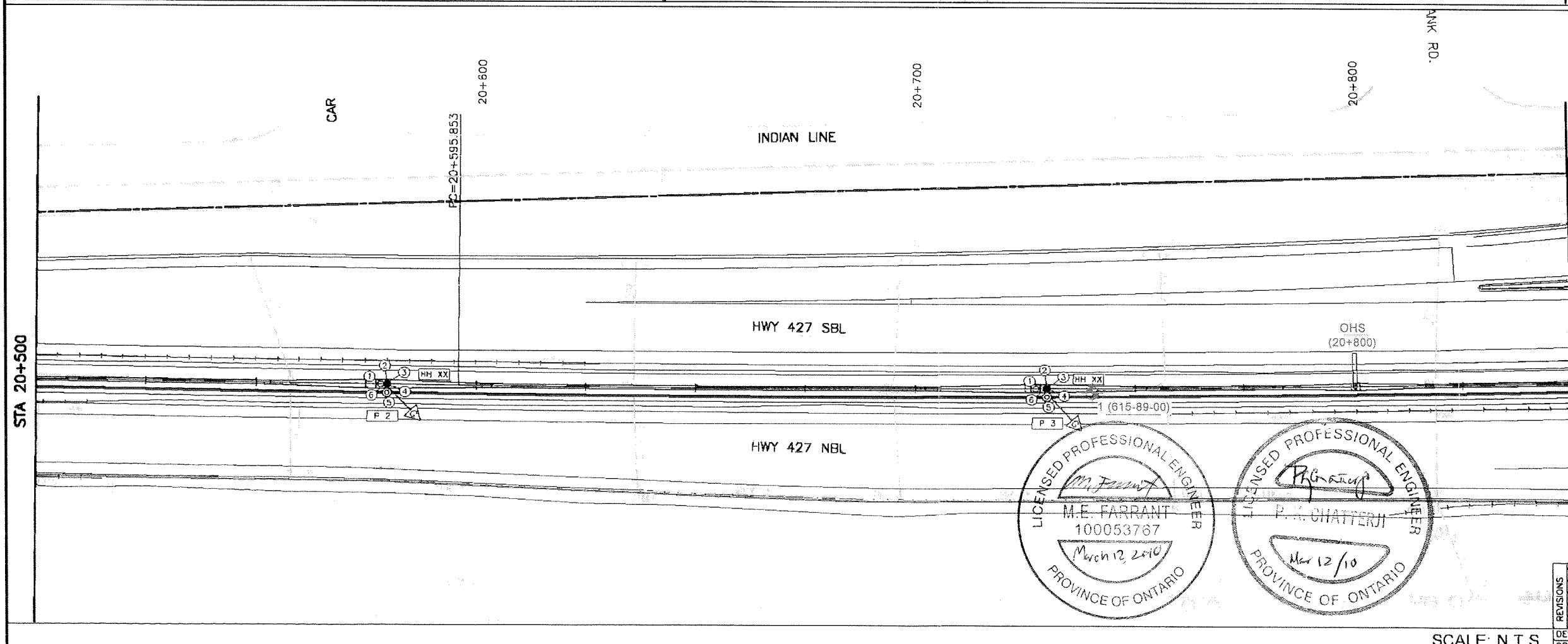
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-NOTES-

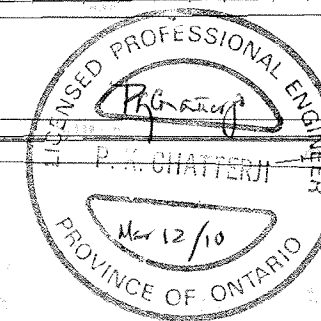
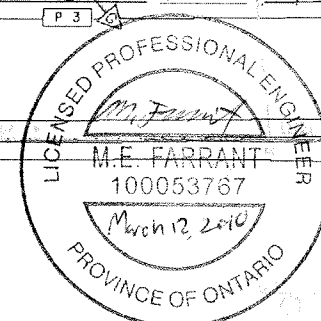
- 1) The boundaries between soil strata have been established only at Borehole locations. Between Boreholes the boundaries are assumed from geological evidence.
- 2) This drawing is for subsurface information only. Surface details and features are for conceptual illustration.

GEOCRES No. 30M12-291

STA 20+500



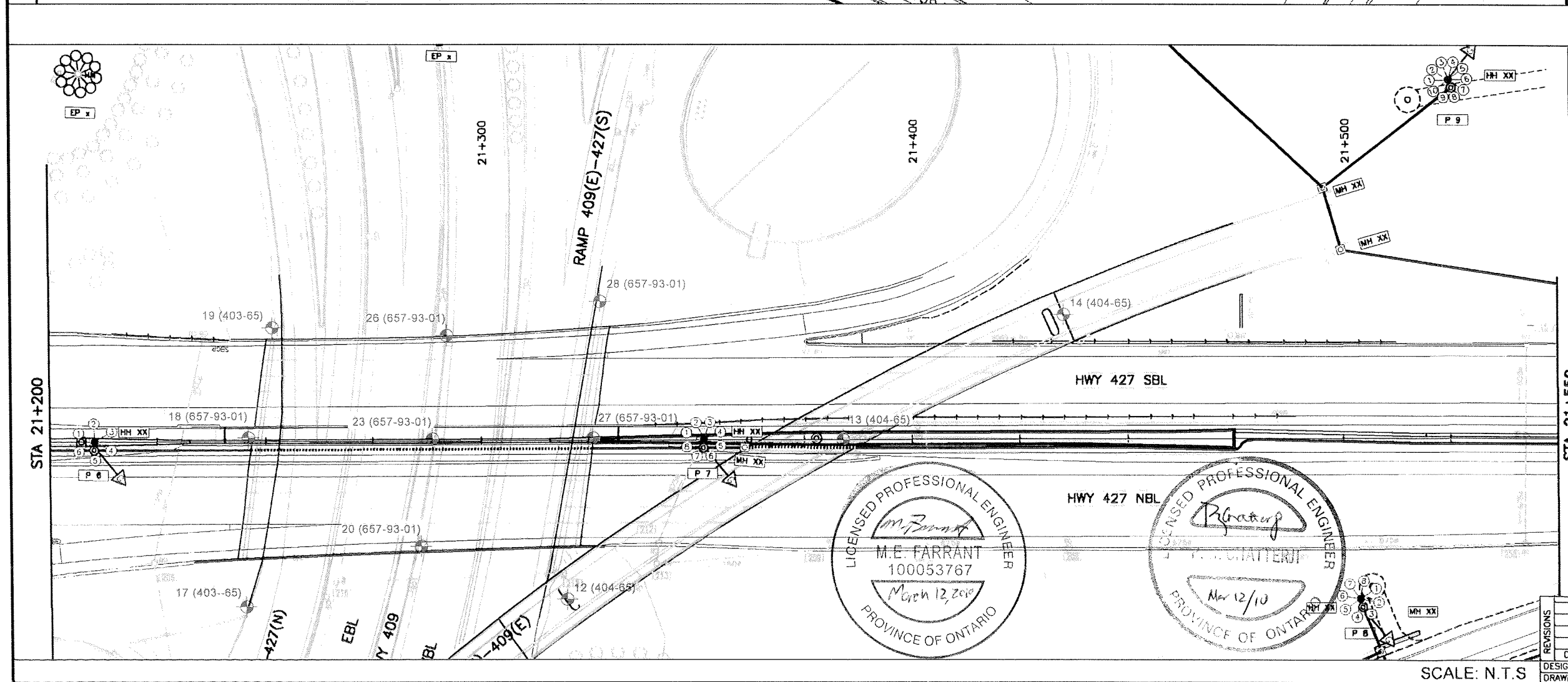
STA 20+850



SCALE: N.T.S

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| | | | | | | OWG | |

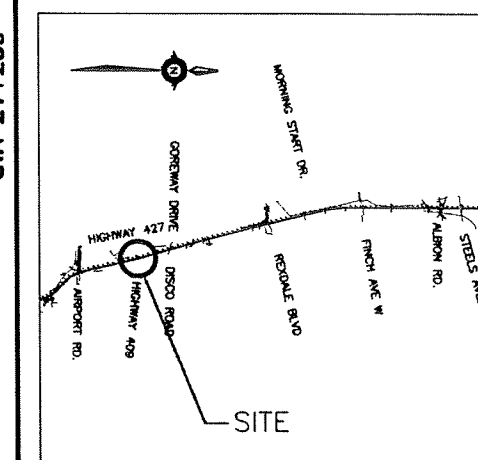
3. NAME -



DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN



CONT No
GWP No 202-95-00

**HWY 427 WIDENING
FROM FASKEN DR. TO STEELES AVE.
PROPOSED HIGH MAST LIGHTING POLES
& OVERHEAD SIGN SUPPORTS**



KEYPLAN

LEGEND

- | | |
|---|--------------------------------|
|  | Approximate Borehole Locations |
| OHS | Overhead Sign |
|  | High Mast Lighting Pole |

[illegible]

-NOTES-

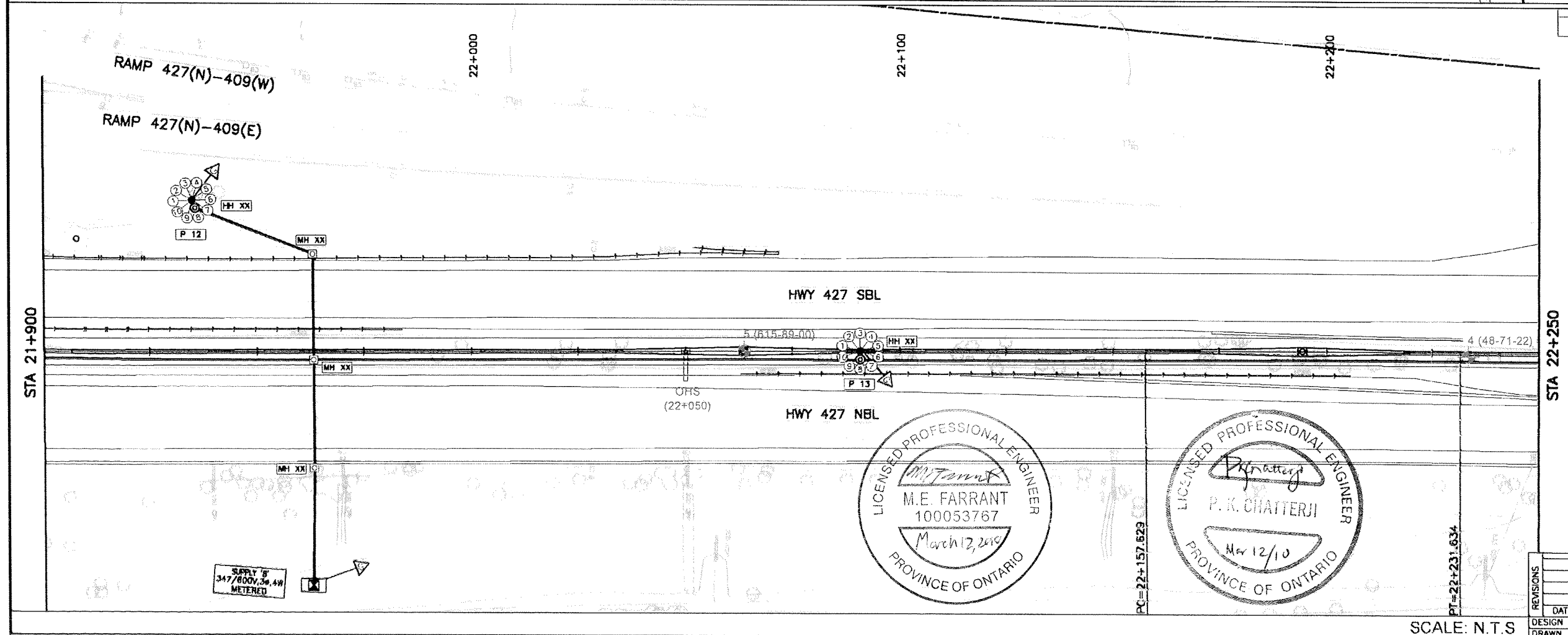
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GEOCRES No. 30M12-291

| DATE | BY | DESCRIPTION | | |
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10. Other



METRIC

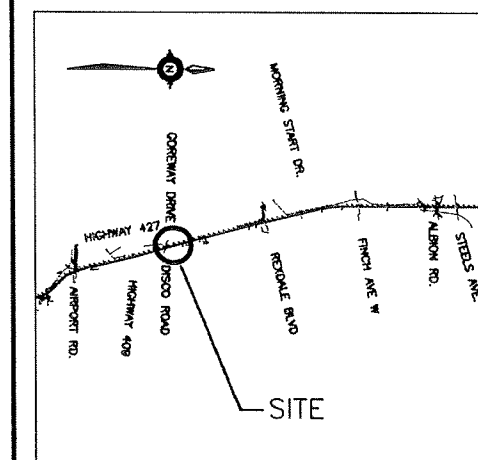
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AND/OR MILLIMETRES
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CONT No
GWP No 202-95-00





SHEET

**HWY 427 WIDENING
FROM FASKEN DR. TO STEELES AVE.
PROPOSED HIGH MAST LIGHTING POLES
& OVERHEAD SIGN SUPPORTS**



KEYPLAN
LEGEND

- | | |
|---|--------------------------------|
|  | Approximate Borehole Locations |
| OHS | Overhead Sign |
|  | High Mast Lighting Pole |

[illegible]

-NOTES-

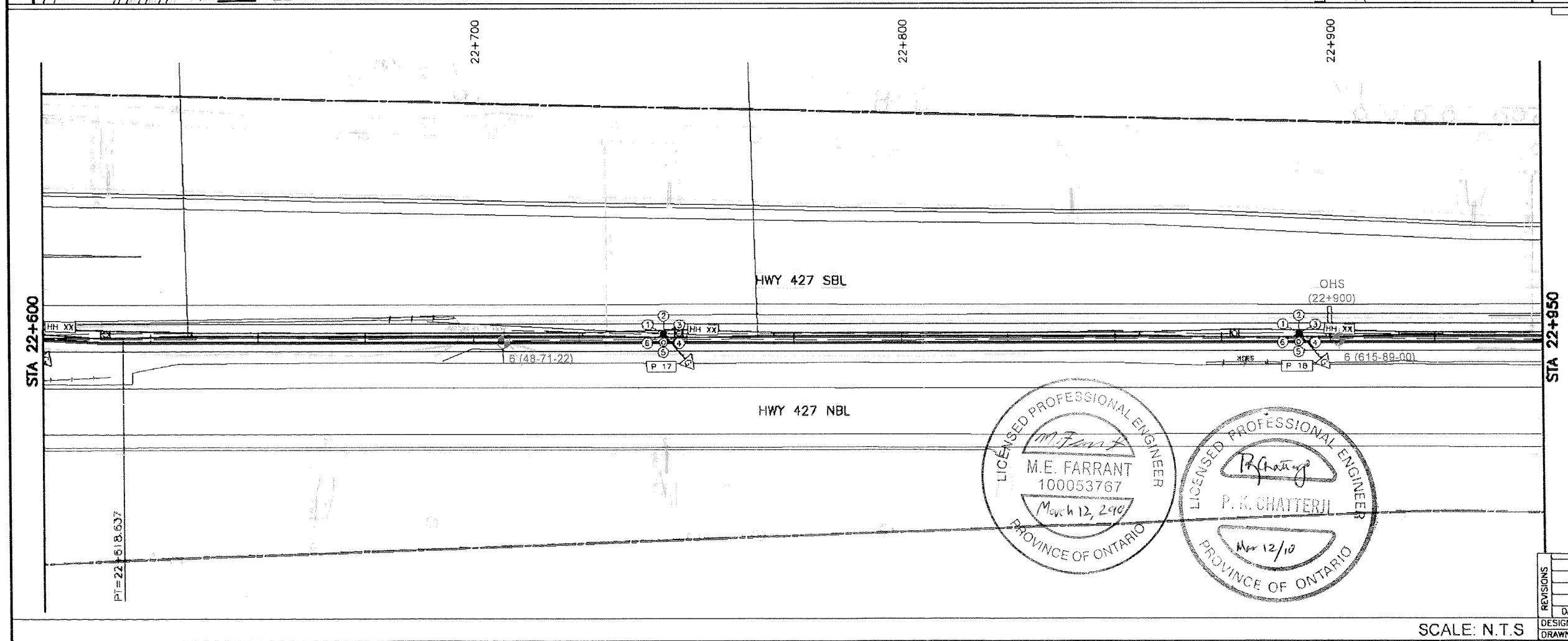
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GEOCRES No. 30M12-291

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SCALE: N.T.S

FILE NAME: 010000075

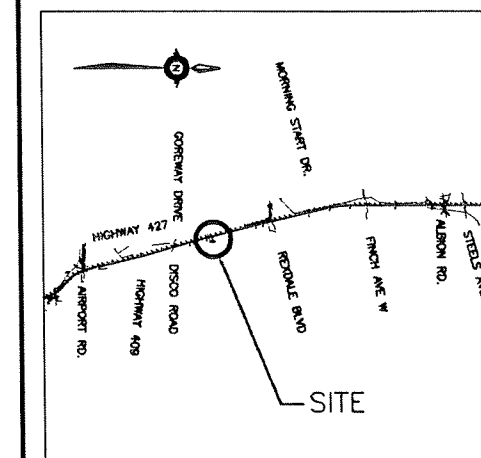


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DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

CONT No
GWP No 202-95-00

**HWY 427 WIDENING
FROM FASKEN DR. TO STEELES AVE.
PROPOSED HIGH MAST LIGHTING POLES
& OVERHEAD SIGN SUPPORTS**



KEYPLAN
LEGEND

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|---|--------------------------------|
|  | Approximate Borehole Locations |
| OHS | Overhead Sign |
|  | High Mast Lighting Pole |

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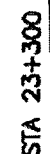
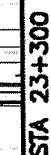
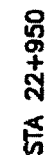
- 1) The boundaries between soil strata have been established only at Borehole locations. Between Boreholes the boundaries are assumed from geological evidence.
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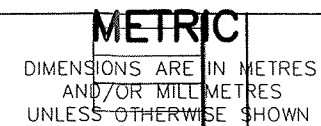
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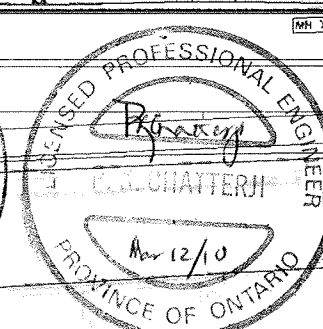
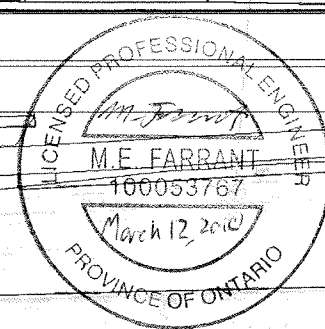


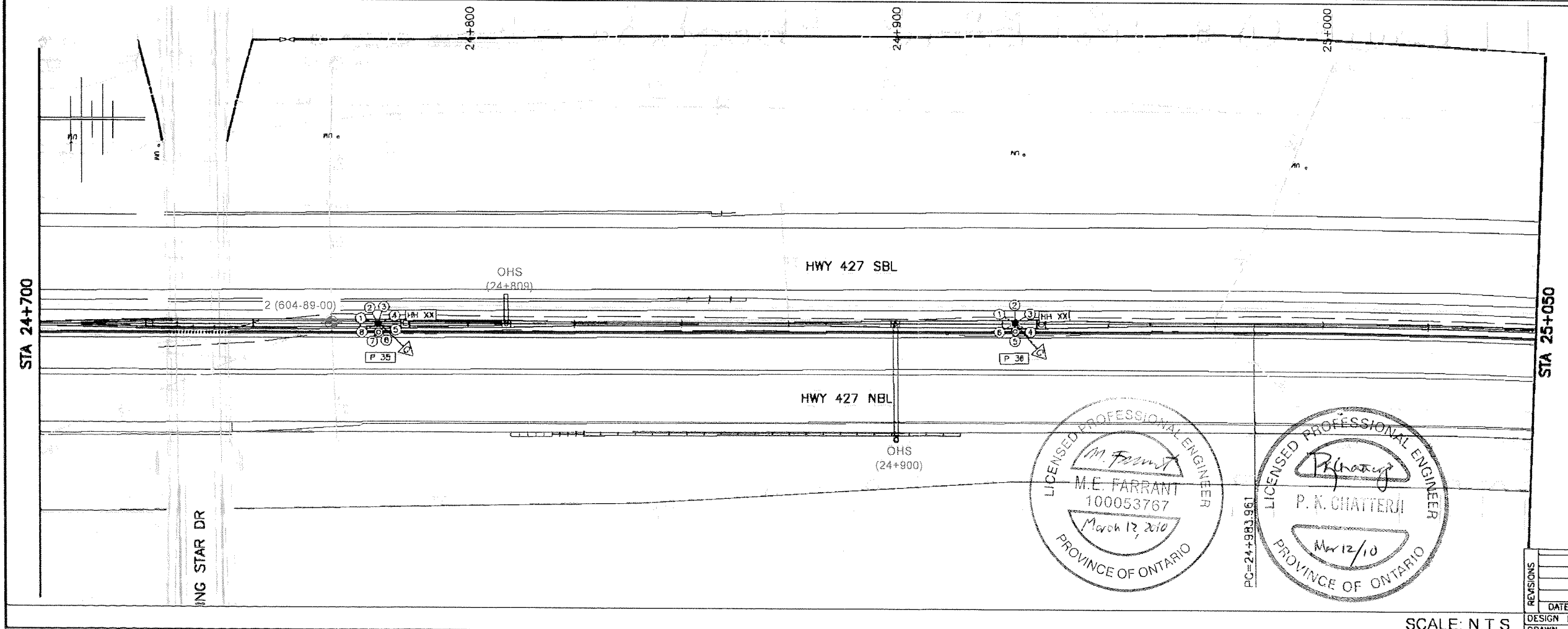
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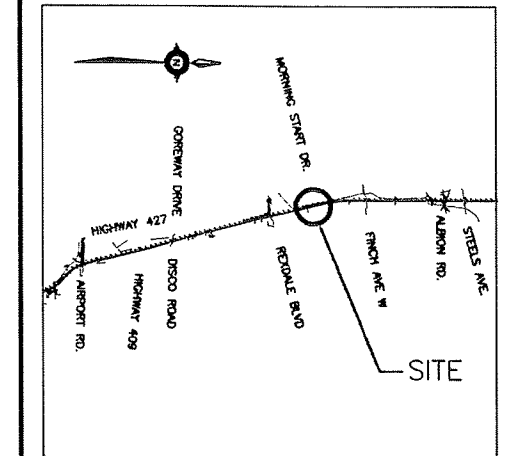
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
**HWY 427 WIDENING
FROM FASKEN DR. TO STEELES AVE.
PROPOSED HIGH MAST LIGHTING POLES
& OVERHEAD SIGN SUPPORTS**

SHEET



KEYPLAN

LEGEND

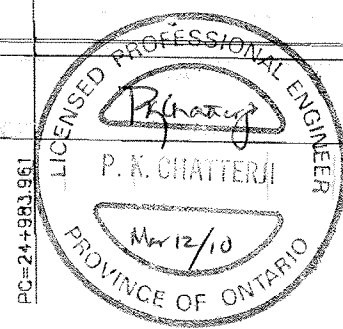
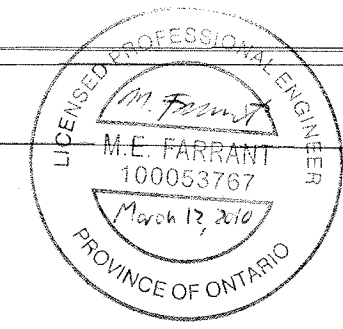
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|  | Approximate Borehole Locations |
| OHS | Overhead Sign |
|  | High Mast Lighting Pole |

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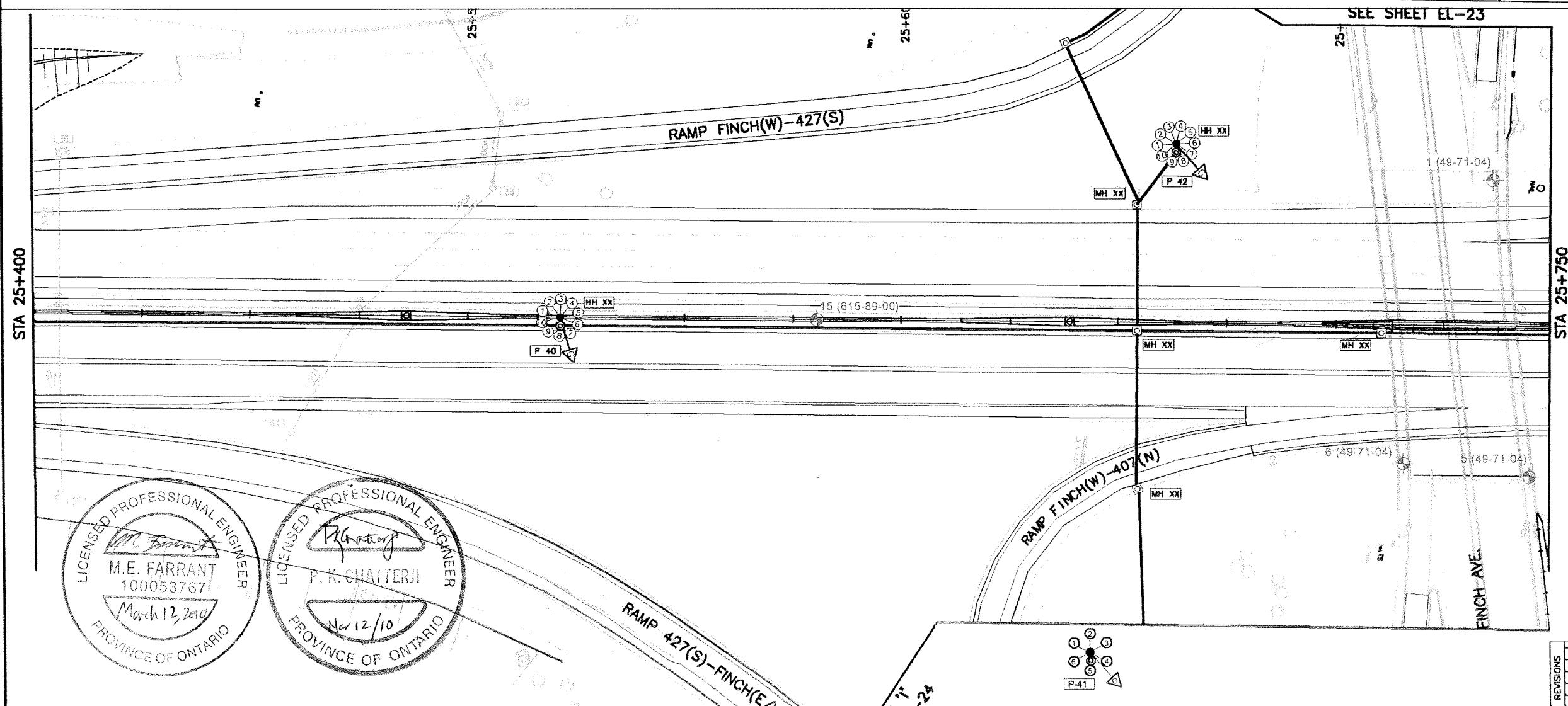
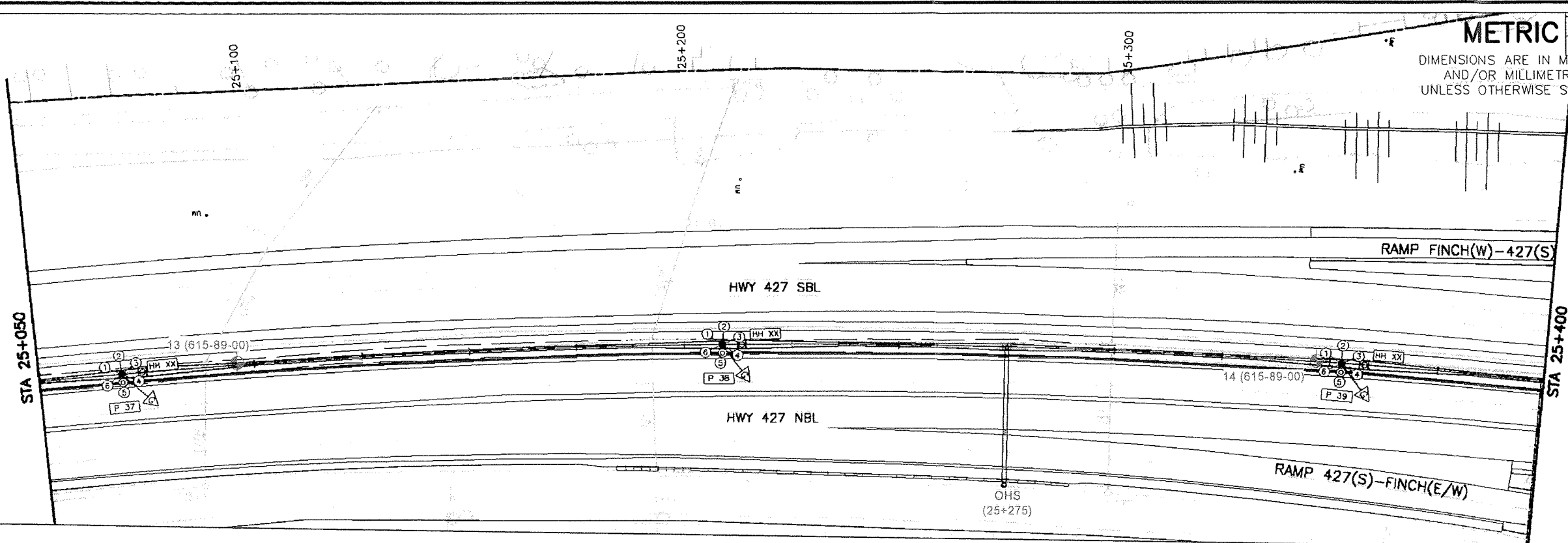
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GEOCREs No. 30M12-291



SCALE: N.T.S

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GWP No 202-95-00

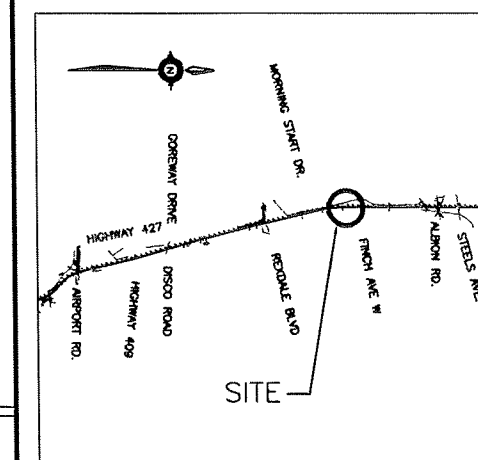
**HWY 427 WIDENING
FROM FASKEN DR. TO STEELES AVE.
PROPOSED HIGH MAST LIGHTING POLES
& OVERHEAD SIGN SUPPORTS**




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KEYPLAN
LEGEND

- 
- Approximate Borehole Locations
- Overhead Sign
- High Mast Lighting Pole

[illegible]

-NOTES-

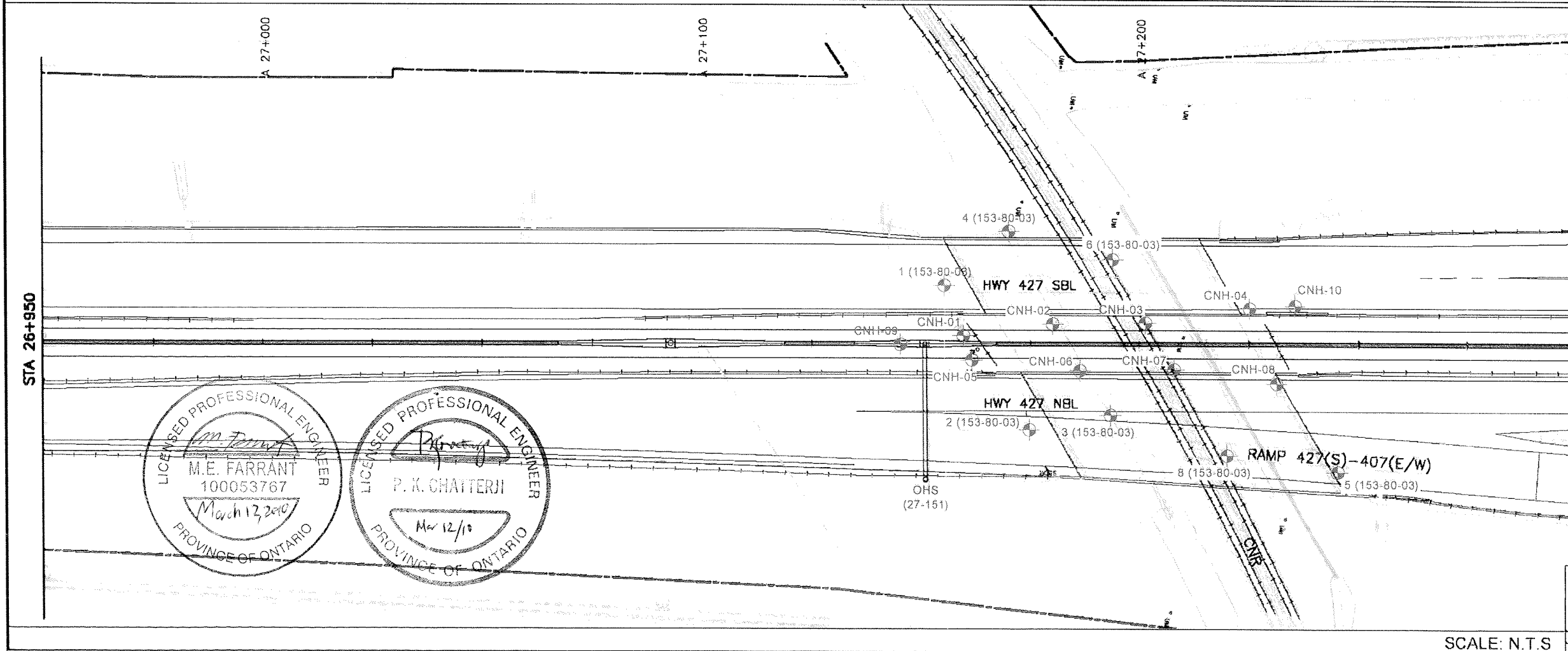
- 1) The boundaries between soil strata have been established only at Borehole locations. Between Boreholes the boundaries are assumed from geological evidence.
- 2) This drawing is for subsurface information only. Surface details and features are for conceptual illustration.

GEOCRES No. 30M12-291

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| | DATE | BY | DESCRIPTION | | | | | |
| DESIGN | MEF | CHK | MEF | CODE | LOAD | | DATE | DEC. 200 |
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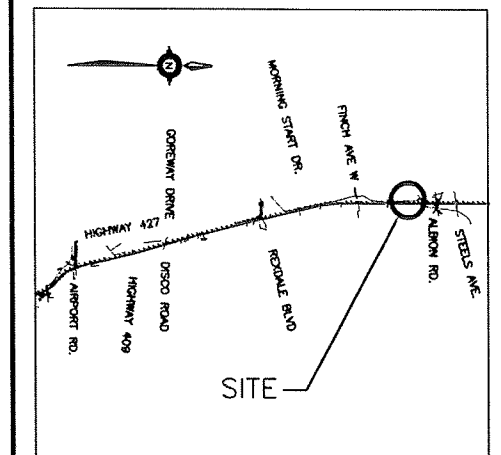
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AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

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GWP No 202-95-00



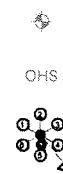
SHEET

**HWY 427 WIDENING
FROM FASKEN DR. TO STEELES AVE.
PROPOSED HIGH MAST LIGHTING POLES
& OVERHEAD SIGN SUPPORTS**



KEYPLAN

LEGEND



Approximate Borehole Locations

Overhead Sign

High Mast Lighting Pole

[illegible]

-NOTES-

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GEOCRES No. 30M12-291

SCALE: N.T.S

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AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN~~



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