Saskatchewan

Ministry of Municipal Affairs

Community Planning

420 – 1855 Victoria Avenue
Regina, Saskatchewan S4P 3T2
(306) 787-5317
(306) 798-0194 (fax)

SCANNED

Notice of Decision
CERTIFICATE OF APPROVAL

Under *The Planning and Development Act, 2007*

Our File: R0982-08R
Your File: 189-4992/
H-0329-08
March 31, 2009

[redacted]
Harding, Boss & McLeod Surveys Ltd.
660 - 13th Avenue East
REGINA SK S4N 6C7

RECEIVED
APR - 6 2009

Dear Mr. McLeod:

Re: RM of Lumsden No. 189
NE ¼ & NW ¼ 8-19-21-W2M
[redacted]
Residential Subdivision

Under Sections 128 (4) c) ii) and 129 of *The Planning and Development Act, 2007*, the proposed subdivision shown within the bold dashed line on the attached plan is hereby **APPROVED subject to compliance with the following directives regarding development standards issued under Section 130 of the Act.**

Development Standards

Geotechnical Considerations

At the time of this decision, the authors of the geotechnical report determined that the approved lots have a building area that is suitable for development provided specific development standards are undertaken in order to minimize the activities of development from activating slope instability and causing damage to property improvements. Therefore, all new permanent buildings and structures to be located within the proposed subdivision shall comply with the following development standards:

1. All lot purchasers shall obtain a copy of, and comply with, the recommendations contained in the attached geotechnical report described as: *Geotechnical Investigation, Proposed Golf Course and Residential Subdivision (Phase I),*

. . . 2

2. *Sections 7 & 8-19-21-W2M, South of Lumsden, Saskatchewan*, for Deer Valley Developments Inc., prepared by Ground Engineering, their file No. GE-0005, dated April 25, 2000 and supplement report describe as: *Geotechnical Investigation, Proposed Whitetail Ridge Subdivision Development, Deer Valley, Saskatchewan,* Deer Valley Developments Inc., prepared by Ground Engineering, their file GE-0005, dated September 11, 2008.

   The developer shall make a copy of each report available to all future lot purchasers and the lot purchasers shall review and become familiar with the findings and conclusions of the Geotechnical investigation by Ground Engineering. A copy of the report is available for review by contacting Information Services Corporation of Saskatchewan (ISC) in conjunction with the following "interest registration".

   1. The Report identifies safe building areas, as shown on the attached plan. To minimize the potential problems associated with slope stability, the following guidelines are provided for development at this time. Construction of all buildings or structures shall only occur within the identified geo-technically recommended safe building area.

   2. Buildings constructed in landslide terrain should be located entirely on one (1) slump block. Therefore, if movement occurs, the building would move with the block so that only minor damage would occur to the structure. If a building is constructed across two (2) slump blocks, the blocks may move at different rates and cause severe damage to the building. The contact areas between slump blocks which were identified in their preliminary inspection shown on Drawing No. GE-0005-1

   3. A bored concrete pile type foundation system is recommended for all buildings in this development. The minimum pile length should be 5.0 metres for the 22 proposed residential lots. The minimum pile length for the condominiums shall be 6.0 metres.

   4. Water should be encouraged to drain off property. No. landscaping should be done which results in water ponding on the slope. The natural drainage courses down the valley wall should be maintained.

   5. The valley walls are highly susceptible to erosion. Removal of existing vegetation should be kept to a minimum. Areas where the vegetation is disturbed should be re-vegetated as soon as possible. Any erosion which does occur should be repaired immediately.

6. Excessive lawn and garden watering should not be permitted. Excessive water may lead to slope instability.

7. Cuts and fills on the valley wall should be kept to a minimum and no cut or fill greater than 2.0 metres is recommended.

8. Embankments for roadway construction should be backsloped to a maximum slope of one (1) horizontal to two (2) vertical.

9. Swimming pools usually leak and contribute substantial quantities of water into the soil. For this reason, swimming pools should not be permitted without a liner system designed by a geotechnical engineer.

10. All underground utilities (especially sewer and water) should be placed before any homes are constructed. The placement of the underground lines should be done as quickly as possible. Water and sewer lines should be designed and constructed for early leak detection and to minimize potential seepage into the valley wall.

The valley wall in this area is stable at present, therefore, development of the proposed lots is considered feasible from a geotechnical engineering standpoint, however, it must be appreciated that because the lots are located on the valley wall, there is always a risk of future instability. If you proceed to develop these lots you must be willing to accept that future slope movement may occur. Although it is not possible to totally eliminate this risk, the recommendations of the above stated geotechnical reports are provided to reduce the risk of future slope instability so that the lots can be safely developed.

Notice of Appeal

Within 30 days of your receipt of Notice, you may appeal this decision under Section 147 of the Act. To appeal, you must send a written notice of appeal to the: **Planning Appeals Committee, Saskatchewan Municipal Board, 2151 Scarth Street, Regina, Saskatchewan, S4P 3V7**. We would appreciate a copy of your notice of appeal for our file.

If you do not appeal, the enclosed development standards caveat containing the directives must be registered in a Land Titles office with your subdivision documents.

Interest Registration

Accordingly, pursuant to Section 142(2) of *The Planning and Development Act, 1983*, to ensure that the above provincial interests and development standards are protected,

the Director of Community Planning has registered an interest with respect to the above development standards at Information Services Corporation of Saskatchewan. A copy is enclosed for your records. Our interest will remain on the land unless directed otherwise by the Saskatchewan Municipal Board.

Municipal Reserve

Section 181 of the Act requires a landowner who is subdividing land, to provide without compensation, part of the land, or money in lieu of that part of the land, as municipal reserve for public use. On this proposal, we note the requirement is being met by the dedication of the municipal reserve and environmental reserve shown on the attached plan.

Legal

This certificate is subject to the following legal limitations and qualifications:

a) It does not establish the method of registration prescribed under *The Land Titles Act, 2000*. In order to register the approved subdivision in the Saskatchewan Land Titles Registry, this Certificate must be submitted with other documents to the Controller of Surveys.

b) It is valid for 24 months from the date of issue. If requested before the expiry date, it may be reissued for a fee of $25.00. After the expiry date, such a request must be considered a new application subject to the full examination fees.

c) It does not eliminate the need to comply with the requirements of any other government department or authority, or with the municipality's building, zoning or other bylaws.

Comments

The Saskatchewan Watershed Authority has reviewed the proposal and has no objection, provided that any natural drainage in the area must not be impeded or enhanced in any way without prior approval from their office.

Please contact Mr. Dwayne Siba, Senior Technologist at (306) 848-2355 should you have any questions regarding their comments.

The Regina Qu'Appelle Health Region has also reviewed the proposal and have no objection provided the subdivision complies with:

- The Saskatchewan Plumbing and Drainage Regulations, 1996;
- All local bylaws.

. . . 5

Please contact Mr. Michael McCann, Public Health Inspector at 766-7716 should you require clarification or additional information.

Fees

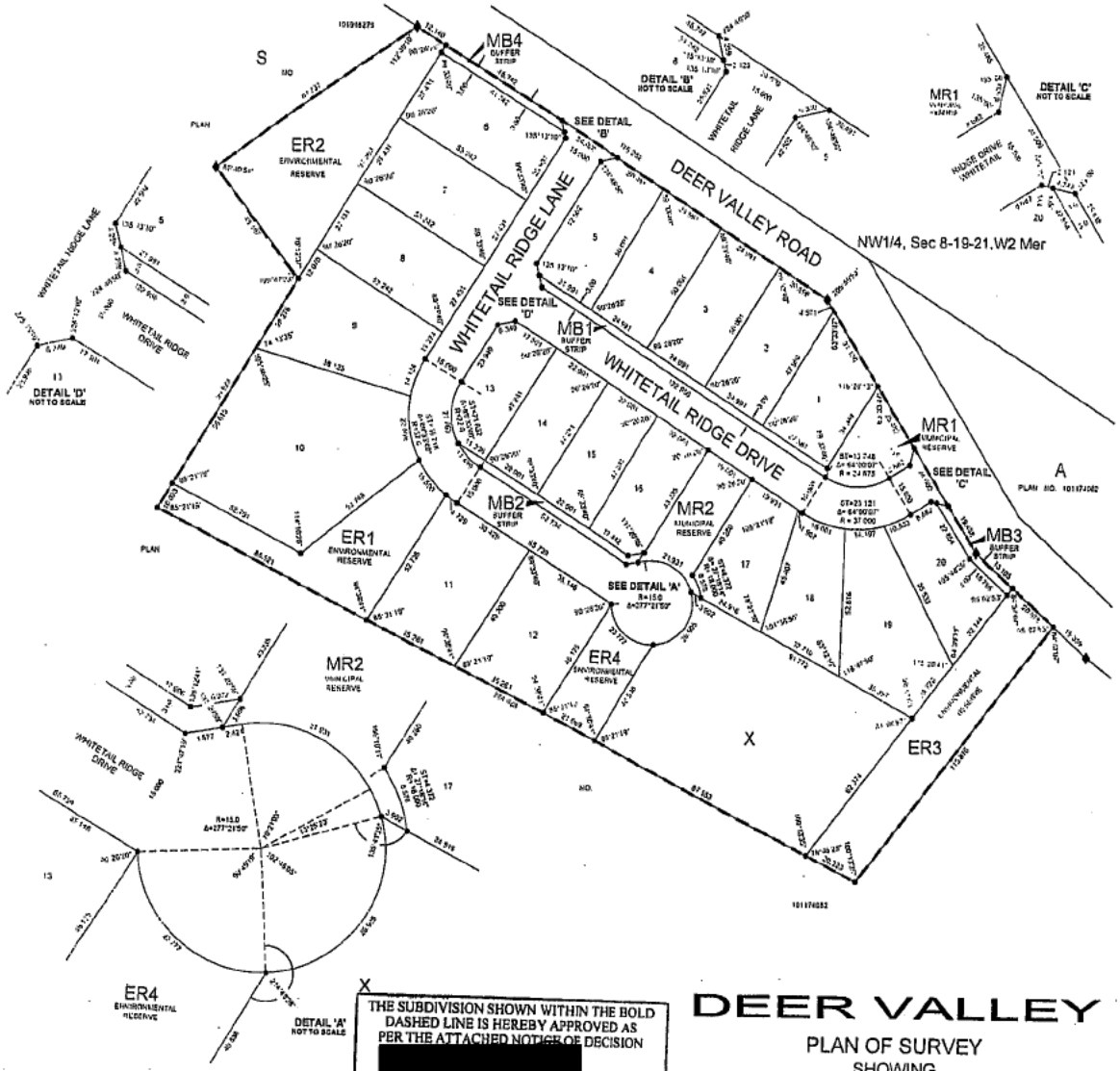
Thank you for the payment covering our examination and approval fees.

An additional fee will be required as an interest (caveat) must be registered with Information Services Corporation (ISC) against the property by this office prior to our approval. This additional fee would cover the cost of registering the interest with ISC. Our **Invoice** is included with our decision.

[redacted]
Barry Braitman, P.P.S., M.C.I.P.
Director of Community Planning

Attachment

cc: RM of Lumsden No. 189
SaskTel (Schmidt – File LMSD 4035)
SaskPower (Crerar – File 25724)
SaskEnergy (Aldag – File 08-11657)
Tourism, Parks, Culture and Sport (Ebert – File 08-1304)
Sask Watershed Authority (Newcombe – File R8-1-3/RM #189)
Regina Qu'Appelle Health Region
[redacted]

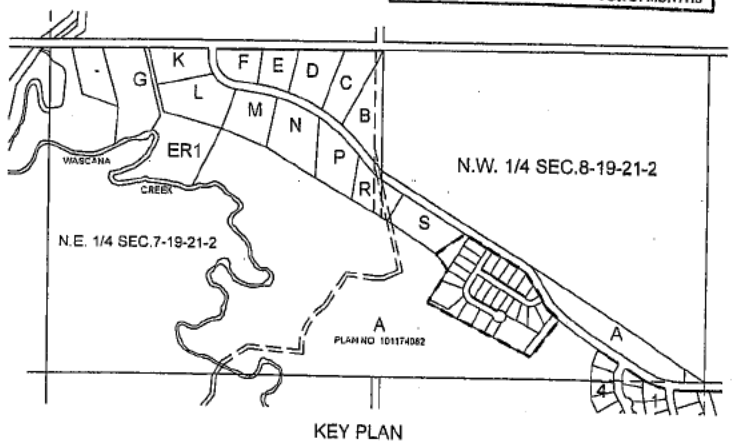


THE SUBDIVISION SHOWN WITHIN THE BOLD DASHED LINE IS HEREBY APPROVED AS PER THE ATTACHED NOTICE OF DECISION

[redacted]

DIRECTOR OF COMMUNITY PLANNING

VALID FROM MAR 3 FOR 24 MONTHS



KEY PLAN

DEER VALLEY

PLAN OF SURVEY
SHOWING
SURFACE SUBDIVISION
OF PART OF
PARCEL A
PLAN NO. 101174082
N.W. 1/4 SEC.8,TWP.19,RGE.21,W.2Mer.
R.M. OF LUMSDEN NO. 189
SASKATCHEWAN

BY: [redacted]

DECEMBER , 2008

SCALE 1 : 1000

NOTE:

-Measurements are in metres and decimals thereof.
-Area to be approved is outlined by a heavy dashed line.
-All parcels within the line of approval have an extension 0.
-Standard iron posts found are shown thus ———♦
-Standard iron posts planted are marked SGM and shown thus ———●

[redacted]

INTEREST

To the Registrar of Titles

Take notice that Her Majesty the Queen (Saskatchewan) as represented by the Director of Community Planning, Government Relations, claiming pursuant to subsection 130(2) of *The Planning and Development Act, 2007* an interest as the duly authorized approving authority in the need to ensure compliance with the following directive:

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in the following land:

All that portion of the NW ¼ Section 8, Township 19, Range 21, West of the 2nd Meridian, in the RM of Lumsden No. 189 in the Province of Saskatchewan, described as Surface Parcel Number

163474780 (Parcel A), Plan No. 101174082, Ext 13.

Forbid the registration of any transfer or other instrument affecting such land or the granting of a Certificate of Title thereto except subject to the claim herein set forth.

My address in Saskatchewan is 420 - 1855 Victoria Avenue, Regina, SK S4P 3T2

Dated this 31st day of March, 2009.

[redacted]

Director of Community Planning

TABLE OF CONTENTS

DRAWINGS

APPENDICES

GROUND ENGINEERING LTD.

CIVIL & GEOENVIRONMENTAL ENGINEERS

415 - 7th AVENUE • REGINA • SASKATCHEWAN • CANADA • S4N 1P1
TELEPHONE: (306) 569-9075 FAX: (306) 565-3677 EMAIL: geground@accesscomm.ca

FILE: GE-0005

September 11, 2008

[redacted]

ATTENTION: [redacted]

Dear Sir:

SUBJECT: GEOTECHNICAL INVESTIGATION
PROPOSED [redacted]
SUBDIVISION DEVELOPMENT
DEER VALLEY, SASKATCHEWAN

1.0 INTRODUCTION

This report presents the results of a site specific subsurface soils investigation and geotechnical analysis carried out for the above captioned subdivision development. It is understood that the proposed subdivision development covers an area of 10 acres and consists of 22 residential lots and one (1) lot (Parcel X) which will be developed with condominiums. We inspected the subject property together on April 3, 2008 at which time it was concluded that the proposed development was considered feasible from a geotechnical standpoint insofar as slope stability was concerned. The purpose of this investigation was to supplement our geotechnical report dated April 25, 2000 by determining the subsurface soil stratigraphy and allowable soil bearing values within the limits of the proposed development.

Authorization to proceed with this work was received in your letter dated May 21, 2008.

2.0 FIELD AND LABORATORY INVESTIGATION

The subsurface conditions were investigated by drilling four (4) test holes at the locations shown on Drawing No. GE-0005-1, attached. The test holes were drilled on June 5, 2008, using a truck-mounted, Brat 22 digger equipped with a 150 mm diameter continuous flight auger and were terminated at a depth of 12.2 metres below existing ground surface.

Representative disturbed auger samples and undisturbed Shelby tube samples were recovered from the test borings and taken to our laboratory for analysis. Each soil sample was visually examined to determine its textural classification and natural moisture content tests were performed on each soil sample. In addition, Atterberg Limits, unconfined compressive strength, dry density, grain size analysis and sulphate content tests were performed on selected samples. Details of the soil profile, samples taken, laboratory test results and stratigraphic interpretations of the subsoils are presented on Drawing Nos. GE-0005-5 to -9, inclusive.

3.0 GEOTECHNICAL ANALYSIS

The drilling information indicates that the surficial topsoil is underlain by a highly plastic silty clay stratigraphic unit which extends to depths ranging from 2.1 to 5.5 metres. The lacutrine clay unit is underlain by a clayey till stratigraphic unit which extends to depths ranging from 5.2 to 9.8 metres in Test Holes 702 and 704 and to the maximum depth penetrated in Test Holes 701 and 703 (12.2 metres). In Test Holes 702 and 704, the till unit is underlain by the shale bedrock which extends to the maximum depth penetrated in the test holes (12.2 metres). The bedrock surface was not penetrated in Test Holes 701 and 703.

4.0 CONCLUSIONS

The information obtained during this investigation indicates that the stratigraphy within the proposed development is consistent with the previous investigations conducted at Deer Valley and consists of highly plastic clay, glacial till and highly plastic shale bedrock. On this basis, the previous recommendations provided in our geotechnical report dated April 25,

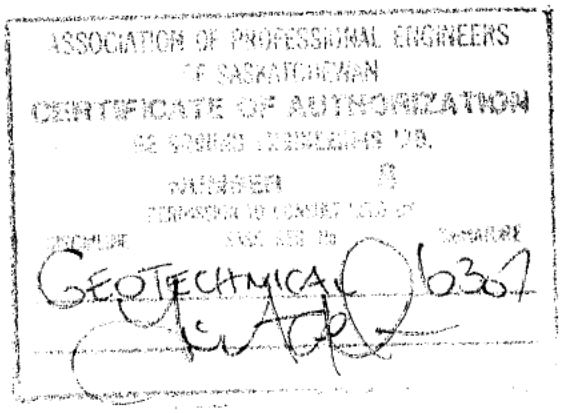
2000 (included in Appendix A) for areas with highly plastic clay are applicable to this development. The only exceptions are that the minimum pile length may be reduced to 5.0 metres for the 22 proposed residential lots. The minimum recommended pile length for the condominiums remains at 6.0 metres. The buildings may be constructed anywhere on the property with the exception of portions of Lots 8, 9, 10 and 11, as shown on Drawing No. GE-0005-1.

5.0 LIMITATIONS

The valley wall in this area is stable at present, therefore, development of the proposed lots is considered feasible from a geotechnical engineering standpoint, however, it must be appreciated that because the lots are located on the valley wall, there is always a risk of future instability. If you proceed to develop these lots, you must be willing to accept the risk that future slope movements may occur. Although it is not possible to totally eliminate this risk, the recommendations provided in our geotechnical report dated April 25, 2000 and this supplementary report are provided to reduce the risk of future slope instability so that the lots can be safely developed.

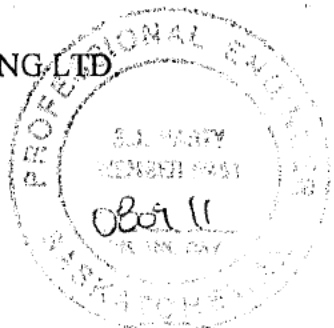
6.0 CLOSURE

We trust that this report is satisfactory for your purposes. If you have any questions, please contact this office.



Yours very truly
GE GROUND ENGINEERING LTD.

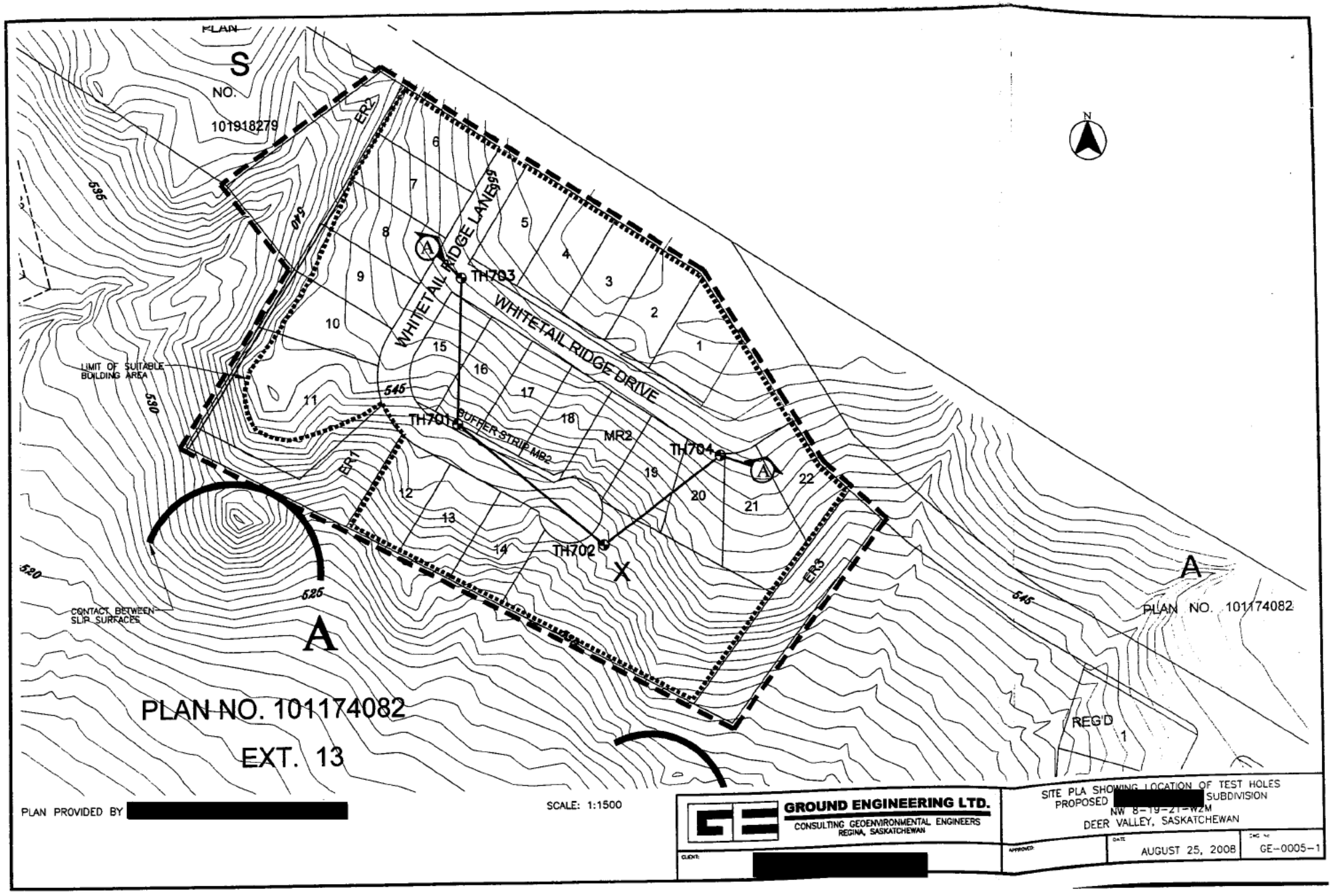
Prepared [redacted]



Reviewed By: [redacted]

SH:ss
Attach.
Distribution: [redacted]
UMA Engineering Ltd. (1 copy)
SH920 Office (1 copy)

08/09/11

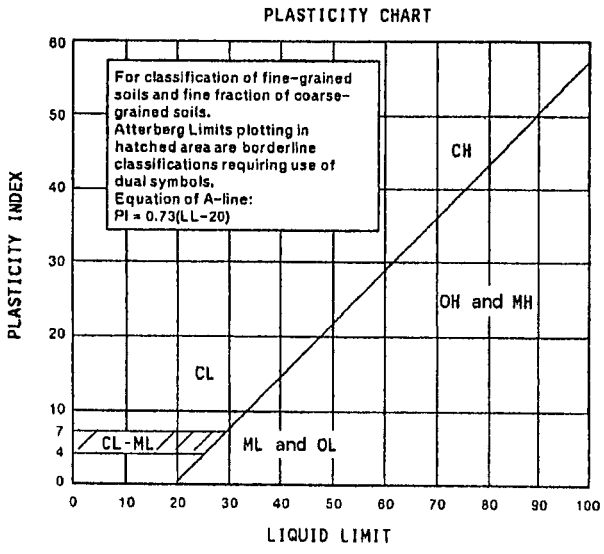

PLAN
S
NO.
101918279
WHITETAIL RIDGE LANE
WHITETAIL RIDGE DRIVE
TH703
TH701
TH704
TH702
BUFFER STRIP MR2
MR2
ER1
ER2
ER3
LIMIT OF SUITABLE BUILDING AREA
CONTACT BETWEEN SLIP SURFACES
535
540
545
530
520
525
545
A
PLAN NO. 101174082
EXT. 13
PLAN NO. 101174082
REG'D
1
N
PLAN PROVIDED BY [redacted]
SCALE: 1:1500
GROUND ENGINEERING LTD.
CONSULTING GEOENVIRONMENTAL ENGINEERS
REGINA, SASKATCHEWAN
CLIENT: [redacted]
SITE PLA SHOWING LOCATION OF TEST HOLES
PROPOSED [redacted] SUBDIVISION
NW 8-19-21-W2M
DEER VALLEY, SASKATCHEWAN
APPROVED:
DATE
AUGUST 25, 2008
DWG No
GE-0005-1

CLASSIFICATION OF SOILS FOR ENGINEERING PURPOSES

ASTM Designation: D 2487 - 69 AND D 2488 - 69

(Unified Soil Classification System)

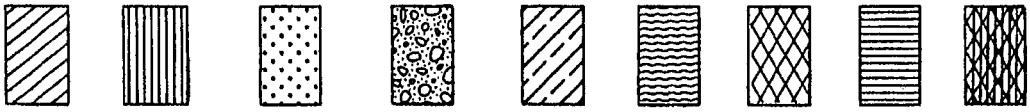
Major Divisions			Group Symbols	Typical Names	Classification Criteria
Coarse-grained soils * More than 50% retained on No. 200 sieve	Gravels 50% or more of coarse fraction retained on No. 4 sieve	Clean gravels	GW	Well-graded gravels and gravel-sand mixtures, little or no fines	Classification on basis of percentage of fines: Less than 5% pass No. 200 sieve ..... GW, GP, SW, SP; More than 12% pass No. 200 sieve ..... GM, GC, SM, SC; 5 to 12% pass No. 200 sieve ..... Borderline classifications requiring use of dual symbols. $C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_z = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			GP	Poorly graded gravels and gravel-sand mixtures, little or no fines	Not meeting both criteria for GW
		Gravels with fines	GM	Silty gravels, gravel-sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4; Atterberg limits above "A" line with P.I. greater than 7: Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols
			GC	Clayey gravels, gravel-sand-clay mixtures	
	Sands More than 50% of coarse fraction passes No. 4 sieve	Clean sands	SW	Well-graded sands and gravelly sands, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ greater than 6; $C_z = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			SP	Poorly graded sands and gravelly sands, little or no fines	Not meeting both criteria for SW
		Sands with fines	SM	Silty sands, sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4; Atterberg limits above "A" line with P.I. greater than 7: Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols
			SC	Clayey sands, sand-clay mixtures	
Fine-grained soils 50% or more passes No. 200 sieve *	Silts and clays Liquid limit 50% or less		ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands	PLASTICITY CHART
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	For classification of fine-grained soils and fine fraction of coarse-grained soils. Atterberg Limits plotting in hatched area are borderline classifications requiring use of dual symbols. Equation of A-line: PI = 0.73(LL-20)
			OL	Organic silts and organic silty clays of low plasticity	
	Silts and clays Liquid limit greater than 50%		MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts	
			CH	Inorganic clays of high plasticity, fat clays	
			OH	Organic clays of medium to high plasticity	
	Highly organic soils		Pt	Peat, muck and other highly organic soils	



*Based on the material passing the 75mm (3in) sieve.

SYMBOLS AND TERMS USED IN THE REPORT

CLAY SILT SAND GRAVEL ORGANIC PEAT TILL SHALE FILL



The symbols may be combined to denote various soil combinations, the predominate soil being heavier.

RELATIVE PROPORTIONS

TERM	RANGE
Trace	0 - 5%
A Little	5 - 15%
Some	15 - 30%
With	30 - 50%

ASTM CLASSIFICATION BY PARTICLE SIZE

Boulder		> 300 mm
Cobble		300 mm - 75 mm
Gravel		75 mm - 4.75 mm
Sand		
	coarse	4.75 mm - 2 mm
	medium	2 mm - 425 um
	fine	425 um - 75 um
Silt		75 um - 5 um
Clay		< 5 um

DENSITY OF SANDS AND GRAVELS

DESCRIPTIVE TERM	RELATIVE DENSITY [1]	N VALUE STANDARD [2] PENETRATION TEST
Very loose	0 - 15%	0 - 4 Blows per 300mm
Loose	15 - 35%	4 - 10 Blows per 300mm
Medium Dense	35 - 65%	10 - 30 Blows per 300mm
Dense	65 - 85%	30 - 50 Blows per 300mm
Very Dense	85 - 100%	> 50 Blows per 300mm

CONSISTENCY OF CLAYS AND SILTS

DESCRIPTIVE TERM	UNDRAINED SHEAR STRENGTH (kPa) (CFEM, 2nd Edt., 1985)	N VALUE STANDARD [2] PENETRATION TEST	FIELD IDENTIFICATION (ASTM D 2488-84)
Very Soft	<12	< 2 Blows per 300mm	Thumb will penetrate soil more than 25 mm
Soft	12 - 25	2 - 4 Blows per 300mm	Thumb will penetrate soil about 25 mm
Firm	25 - 50	4 - 8 Blows per 300mm	Thumb will indent soil about 6 mm
Stiff	50 - 100	8 - 15 Blows per 300mm	Thumb will indent, but only with great effort (CFEM)
Very Stiff	100 - 200	15 - 30 Blows per 300mm	Readily indented by thumbnail (CFEM)
Hard	>200	> 30 Blows per 300mm	Thumb will not indent soil but readily indented with thumbnail

NOTES: 1. Relative Density determined by standard laboratory tests.
2. N Value - Blows/300mm of a 620N hammer falling 762mm on a 50mm O.D. Split Spoon.

GE GROUND ENGINEERING LTD.

SYMBOLS AND TERMS USED IN THE REPORT (continued)

GROUNDWATER

▼ Water level measured in the borings at the time and under the conditions indicated. In sand, the indicated levels can be considered reliable groundwater levels. In clay soil, it is not possible to determine the groundwater level within the normal scope of a test boring investigation, except where lenses or layers of more pervious waterbearing soil are present and then a long period of time may be necessary to reach equilibrium. Therefore, the position of the water level symbol for cohesive or mixed texture soils may not indicate the true level of the groundwater table. The available water level information is given at the bottom of the log sheet.

▽ Water level determined by piezometer installation - In all soils the levels can be considered reliable groundwater levels.

DESCRIPTIVE SOIL TERMS

WELL GRADED	Having wide range of grain sizes and substantial amounts of all intermediate sizes.
POORLY GRADED	Predominantly of one grain size.
SLICKENSIDES	Refers to a clay that has planes that are slick and glossy in appearance; slickensides are caused by shear movements.
SENSITIVE	Exhibiting loss of strength on remolding.
FISSURED	Containing cracks, usually attributable to shrinkage. Fissured clays are sometimes described as having a nuggetty structure.
STRATIFIED	Containing layers of different soil types.
ORGANIC	Containing organic matter; may be decomposed or fibrous.
PEAT	A fibrous mass of organic matter in various stages of decomposition. Generally dark brown to black in color and of spongy consistency.
BEDROCK	Preglacial material.
DRIFT	Material deposited directly by glaciers or glacial melt-water.
ALLUVIAL	Soils that have been deposited from suspension from moving water.
LACUSTRINE	Soils that have been deposited from suspension in fresh water lakes.

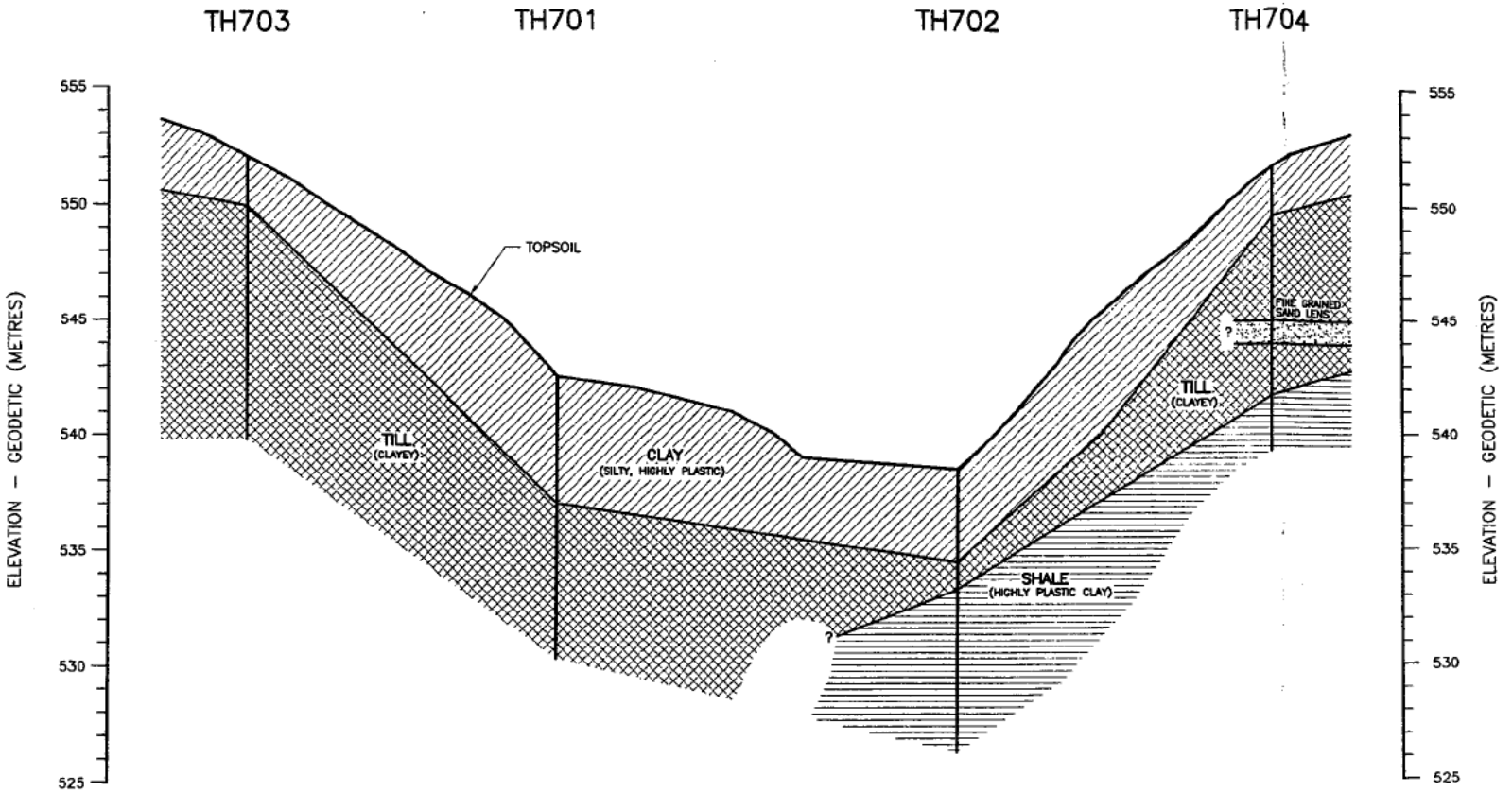
DRILLING AND SAMPLING TERMS

SYMBOL	DEFINITION
C.S.	Continuous Sampling
Sy	75mm Thin Wall Tube Sample
Sy (2)	50mm Thin Wall Tube Sample
SPT (SS)	50mm O.D. Split Spoon Sample
BLOWS / 300mm	"N" Value - Standard Penetration Test
Bag	Disturbed Bag Sample
No.	Sample Identification Number
——►	Piezometer Tip
S.I.	Slope Indicator
SPG ——►	Observed Seepage

LABORATORY TEST SYMBOLS

SYMBOL	DEFINITION
●	Moisture Content - Percent of Dry Weight
⊢——►	Plastic and Liquid Limit determined in accordance with ASTM D-423 and D-424
◆	Dry Density - t/m^3
■	Shear Strength - As determined by Unconfined Compression Test
▲	Shear Strength - As determined by Field Vane
▲	Shear Strength - As determined by Pocket Penetrometer Test
$\%SO_4$	Water Soluable Sulphates - Percent of Dry Weight
M.A.	Grain Size Analysis

GE GROUND ENGINEERING LTD.



SECTION 'A-A'

SCALE: HOR. 1:1000
VERT. 1:200

The boundaries between soil strata have been established only at Bore Hole locations. Between Bore Holes, the boundaries are interpolated and may be subject to considerable error.

GROUND ENGINEERING LTD.
CONSULTING GEOENVIRONMENTAL ENGINEERS
REGINA, SASKATCHEWAN

CLIENT: [redacted]

STRATIGRAPHIC CROSS SECTION 'A–A'
PROPOSED [redacted] SUBDIVISION
NW 8–19–21–W2M
DEER VALLEY, SASKATCHEWAN

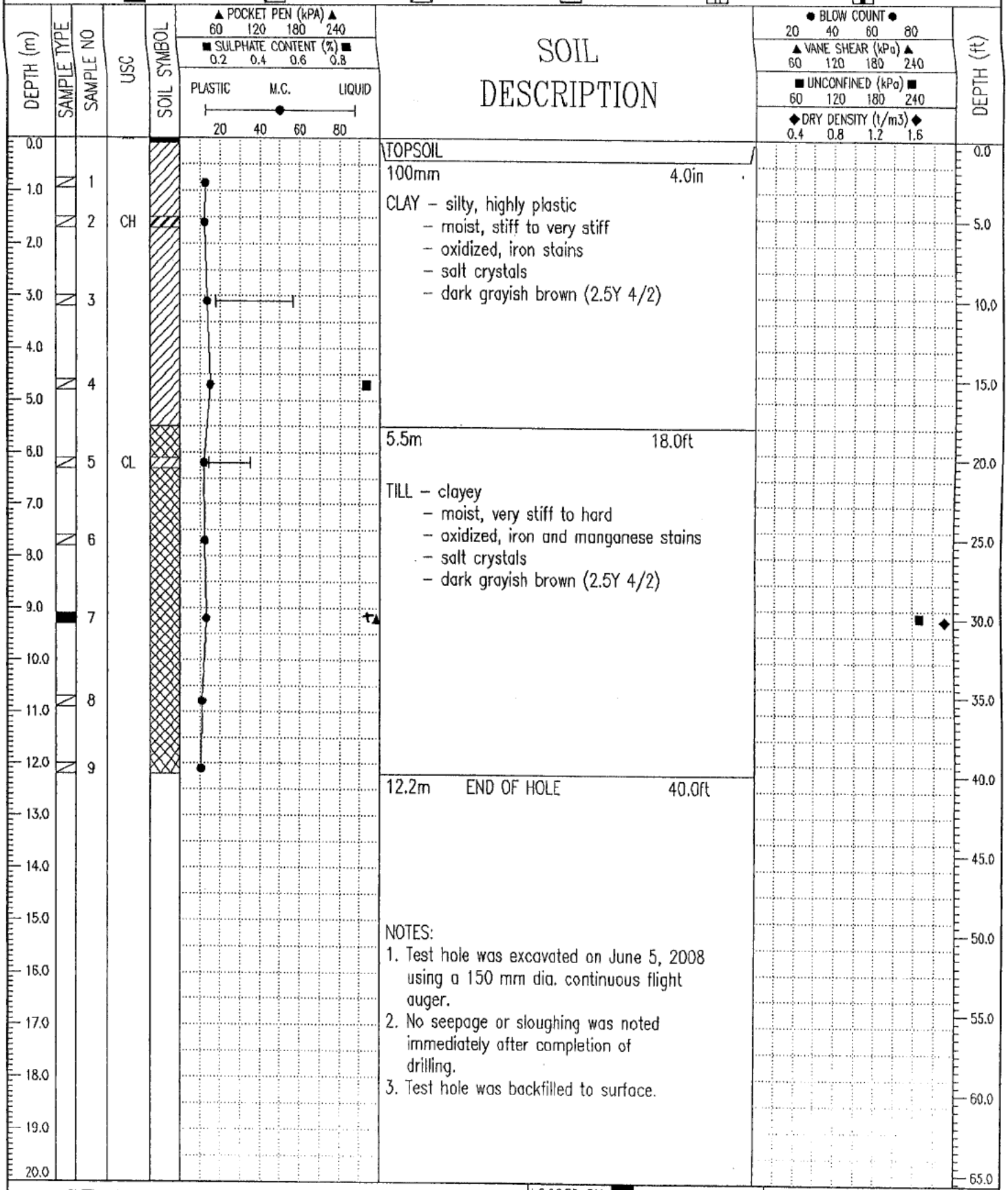
APPROVED

DATE: AUGUST 27, 2008

FILE NO: GE–0005–5

PROJECT: PROP. [redacted]	LOCATION:	TEST HOLE NO: 0005-TH701
CLIENT: [redacted]	LOCATION: DEER VALLEY, SASKATCHEWAN	PROJECT NO: GE-0005
DRILL RIG: BRAT 22 DIGGER	ELEVATION: 542.50 metres (GEODETIC)	ELEVATION: 542.50 (m)

SAMPLE TYPE: SHELBY TUBE | DISTURBED | SPT SAMPLE | PAIL SAMPLE | NO RECOVERY | JAR SAMPLE

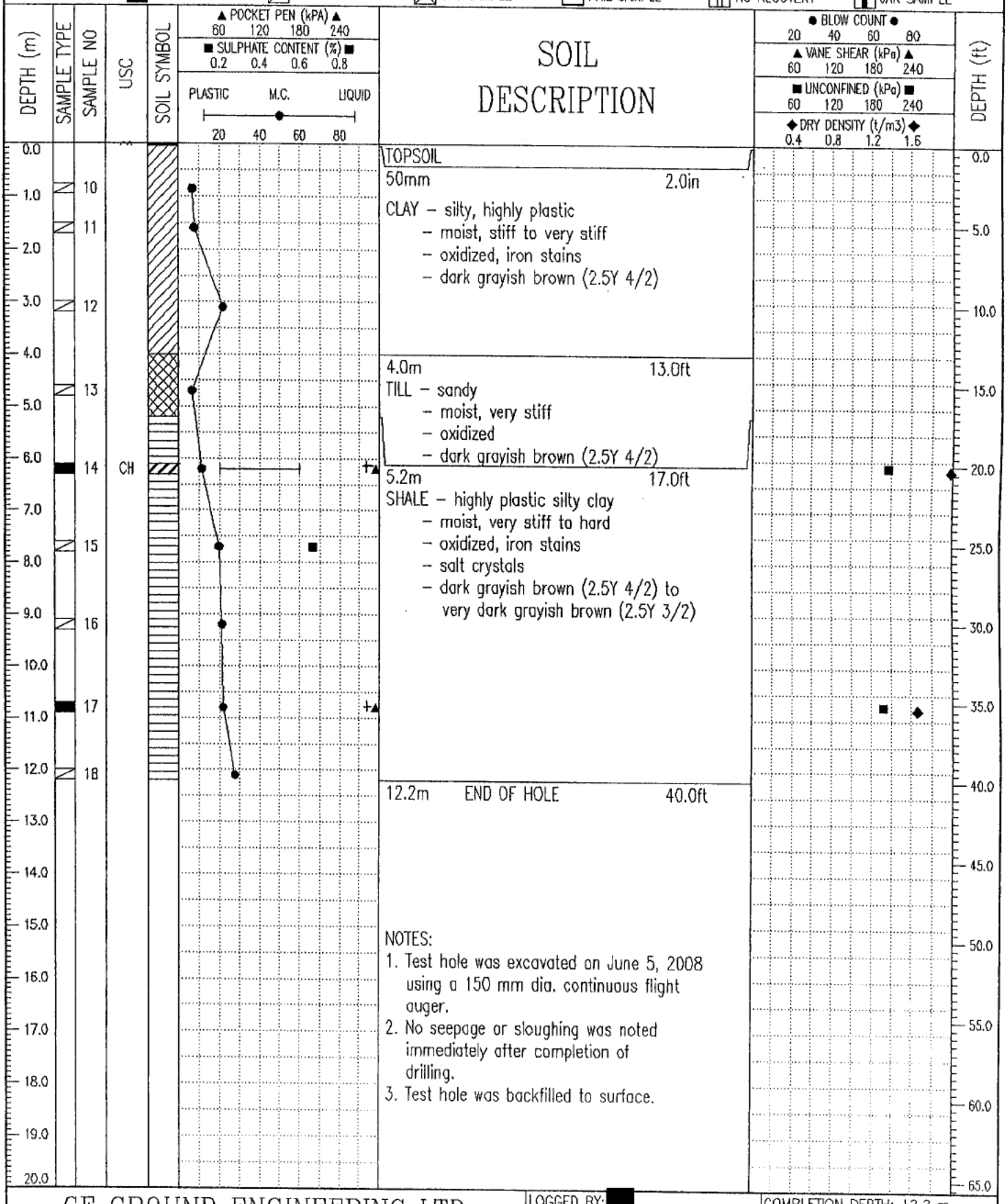


GE GROUND ENGINEERING LTD. Regina, Saskatchewan	LOGGED BY: [redacted]	COMPLETION DEPTH: 12.2 m
	REVIEWED BY: [redacted]	COMPLETE: 08/06/05
	Fig. No: GE-0005-6	Page 1 of 1

08/08/22 01:34PM

PROJECT: PROP. [redacted]	LOCATION:	TEST HOLE NO: 0005-TH702
CLIENT: [redacted]	LOCATION: DEER VALLEY, SASKATCHEWAN	PROJECT NO: GE-0005
DRILL RIG: BRAT 22 DIGGER	ELEVATION: 538.50 metres (GEODETIC)	ELEVATION: 538.50 (m)

SAMPLE TYPE: SHELBY TUBE | DISTURBED | SPT SAMPLE | PAIL SAMPLE | NO RECOVERY | JAR SAMPLE



TOPSOIL
50mm 2.0in

CLAY – silty, highly plastic
- moist, stiff to very stiff
- oxidized, iron stains
- dark grayish brown (2.5Y 4/2)

4.0m 13.0ft

TILL – sandy
- moist, very stiff
- oxidized
- dark grayish brown (2.5Y 4/2)

5.2m 17.0ft

SHALE – highly plastic silty clay
- moist, very stiff to hard
- oxidized, iron stains
- salt crystals
- dark grayish brown (2.5Y 4/2) to very dark grayish brown (2.5Y 3/2)

12.2m END OF HOLE 40.0ft

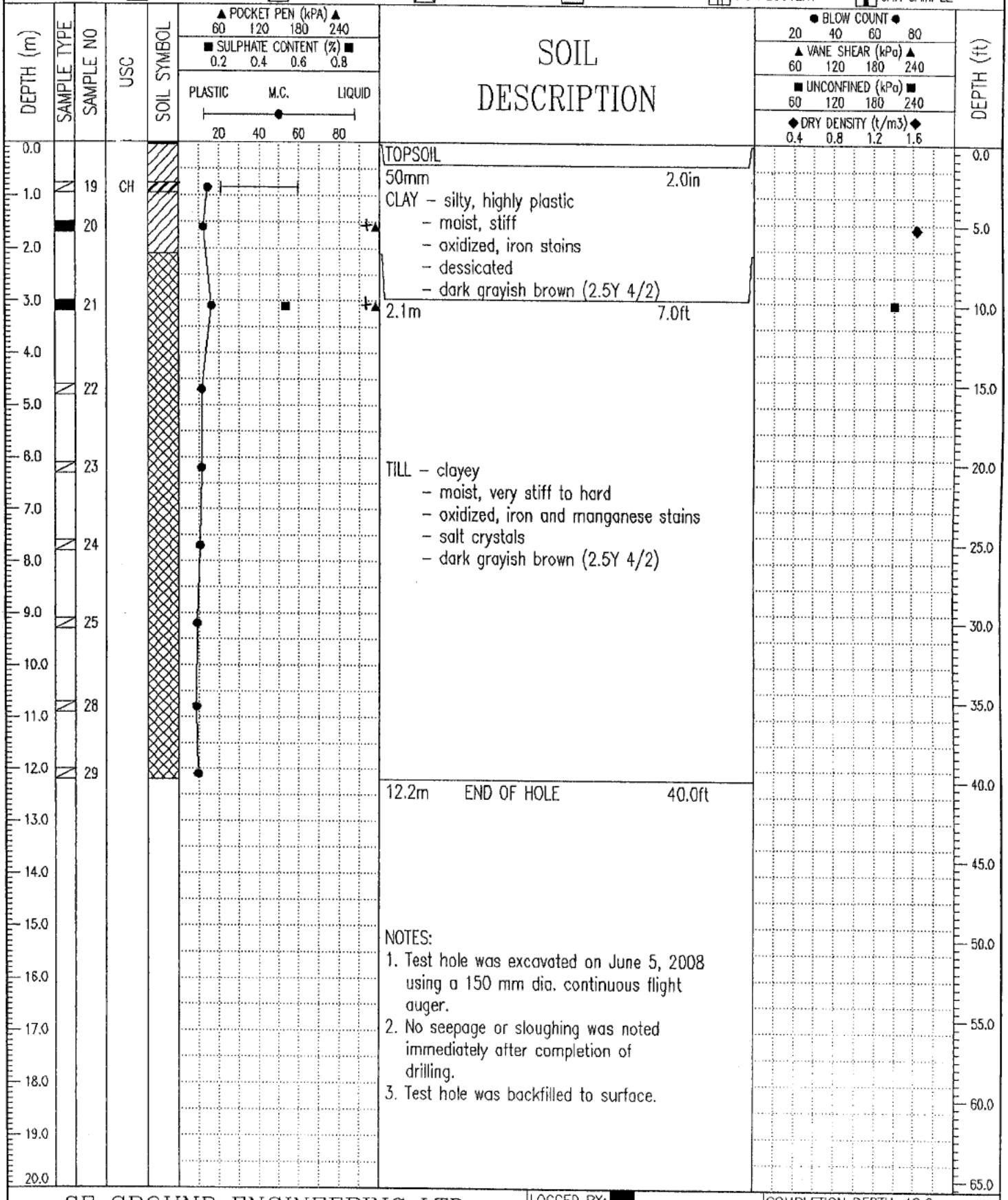
NOTES:
1. Test hole was excavated on June 5, 2008 using a 150 mm dia. continuous flight auger.
2. No seepage or sloughing was noted immediately after completion of drilling.
3. Test hole was backfilled to surface.

GE GROUND ENGINEERING LTD. Regina, Saskatchewan	LOGGED BY: [redacted]	COMPLETION DEPTH: 12.2 m
	REVIEWED BY: [redacted]	COMPLETE: 08/06/05
	Fig. No: GE-0005-7	Page 1 of 1

08/06/22 01:37PM

PROJECT: PROP. [redacted]	LOCATION:	TEST HOLE NO: 0005-TH703
CLIENT: [redacted]	LOCATION: DEER VALLEY, SASKATCHEWAN	PROJECT NO: GE-0005
DRILL RIG: BRAT 22 DIGGER	ELEVATION: 552.00 metres (GEODETIC)	ELEVATION: 552.00 (m)

SAMPLE TYPE: SHELBY TUBE | DISTURBED | SPT SAMPLE | PAIL SAMPLE | NO RECOVERY | JAR SAMPLE



TOPSOIL
50mm 2.0in
CLAY – silty, highly plastic
- moist, stiff
- oxidized, iron stains
- dessicated
- dark grayish brown (2.5Y 4/2)

2.1m 7.0ft

TILL – clayey
- moist, very stiff to hard
- oxidized, iron and manganese stains
- salt crystals
- dark grayish brown (2.5Y 4/2)

12.2m END OF HOLE 40.0ft

NOTES:
1. Test hole was excavated on June 5, 2008 using a 150 mm dia. continuous flight auger.
2. No seepage or sloughing was noted immediately after completion of drilling.
3. Test hole was backfilled to surface.

GE GROUND ENGINEERING LTD. Regina, Saskatchewan	LOGGED BY: [redacted]	COMPLETION DEPTH: 12.2 m
	REVIEWED BY: [redacted]	COMPLETE: 08/06/05
	Fig. No: GE-0005-8	Page 1 of 1

08/08/22 01:37PM

PROJECT: PROP. [redacted]	LOCATION:	TEST HOLE NO: 0005-TH704
CLIENT: [redacted]	LOCATION: DEER VALLEY, SASKATCHEWAN	PROJECT NO: GE-0005
DRILL RIG: BRAT 22 DIGGER	ELEVATION: 551.50 metres (GEODETIC)	ELEVATION: 551.50 (m)

SAMPLE TYPE: ■ SHELBY TUBE ⧄ DISTURBED ☒ SPT SAMPLE ▤ PAIL SAMPLE ▯ NO RECOVERY ▮ JAR SAMPLE

DEPTH (m)	SAMPLE TYPE	SAMPLE NO	USC	SOIL SYMBOL	▲ POCKET PEN (kPA) ▲ 60 120 180 240 ■ SULPHATE CONTENT (%) ■ 0.2 0.4 0.6 0.8 PLASTIC M.C. LIQUID 20 40 60 80	SOIL DESCRIPTION	● BLOW COUNT ● 20 40 60 80 ▲ VANE SHEAR (kPa) ▲ 60 120 180 240 ■ UNCONFINED (kPa) ■ 60 120 180 240 ◆ DRY DENSITY (t/m3) ◆ 0.4 0.8 1.2 1.6	DEPTH (ft)
0.0						TOPSOIL		0.0
						50mm 2.0in		
1.0	N	30				CLAY – silty, highly plastic		
						– moist, stiff to very stiff		
2.0		31	CL			– oxidized, iron stains		5.0
						– dark grayish brown (2.5Y 4/2)		
						2.1m 7.0ft		
3.0		32						10.0
4.0								
5.0		33				TILL – clayey		15.0
						– moist, very stiff to hard		
6.0	N	34				– oxidized, iron and manganese stains		20.0
						– moist, fine grained sand lens from 6.6 to 7.6 metres		
7.0						– salt crystals		
8.0	N	35				– dark grayish brown (2.5Y 4/2)		25.0
9.0	N	36						30.0
10.0						9.8m 32.0ft		
						SHALE – highly plastic silty clay		
11.0	N	37				– moist, very stiff to hard		35.0
						– oxidized, iron stains		
12.0	N	38				– salt crystals		40.0
						– dark grayish brown (2.5Y 4/2) to very dark grayish brown (2.5Y 3/2)		
13.0						12.2m END OF HOLE 40.0ft		
14.0								45.0
15.0								50.0
16.0								
17.0								55.0
18.0								60.0
19.0								
20.0								65.0

NOTES:
1. Test hole was excavated on June 5, 2008 using a 150 mm dia. continuous flight auger.
2. No seepage or sloughing was noted immediately after completion of drilling.
3. Test hole was backfilled to surface.

GE GROUND ENGINEERING LTD.
Regina, Saskatchewan

LOGGED BY: [redacted]	COMPLETION DEPTH: 12.2 m
REVIEWED BY: [redacted]	COMPLETE: 08/06/05
Fig. No: GE-0005-9	Page 1 of 1

08/08/22 01:45PM

GE GROUND ENGINEERING LTD.
CIVIL & GEOENVIRONMENTAL ENGINEERS
415 - 7th AVENUE, REGINA, SASKATCHEWAN, CANADA
S4N 4P1 TELEPHONE: (306) 569-9075, FAX: (306) 565-3677

GRAIN SIZE CURVE

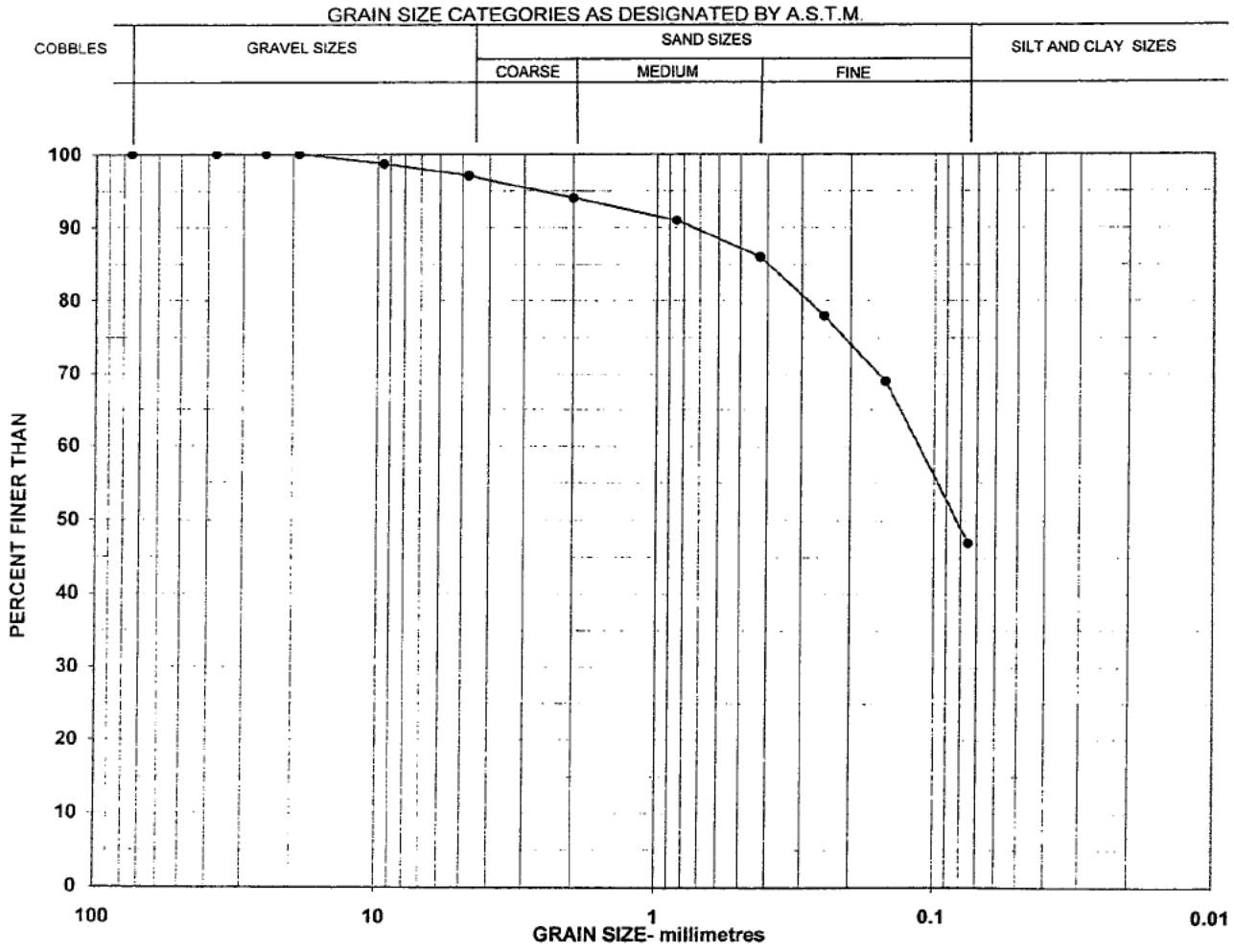
(A.S.T.M. C-136, C.S.A. A23.2-2A & 5A)

JOB No: GE-0005 DATE: July 2, 2008 TECH: [redacted]

CLIENT: [redacted]

PROJECT: PROPOSED SUBDIVISION

LOCATION: DEER VALLEY, SASKATCHEWAN



SIZE OF OPENING (mm)	SPECIFIED % FINER THAN	PERCENT FINER THAN
75.0		100
37.5		100
25.0		100
19.0		100
9.51		99
4.75		97
2.00		94
0.850		91
0.425		86
0.250		78
0.150		69
0.075		47

GRAIN SIZE CATEGORY	PARTICLE SIZE RANGE (mm)	PERCENT RETAINED
GRAVEL	75 to 4.75	3
COARSE SAND	4.75 to 2.0	3
MEDIUM SAND	2.0 to 0.425	8
FINE SAND	0.425 to 0.075	39
SILT & CLAY	< 0.075	47

SAMPLE DESCRIPTION : SILT AND CLAY, WITH SAND, AND A TRACE OF GRAVEL.

MATERIAL SUPPLIED BY: SAMPLED BY : D.STORLE OF GE GROUND ENGINEERING LTD.

SAMPLE LOCATION: TEST HOLE 702

SAMPLE NUMBER: 13 AT 15' BELOW GRADE DATE SAMPLED : June 5, 2008

DISTRIBUTION:

WE CERTIFY TESTING PROCEDURES IN ACCORDANCE WITH C.S.A. & A.S.T.M. STANDARDS FOR THAT PORTION OF THE TESTING PERFORMED BY THIS COMPANY GE GROUND ENGINEERING LTD.

Per: [redacted]

GE-0005-10

GE GROUND ENGINEERING LTD.
CIVIL & GEOENVIRONMENTAL ENGINEERS
415 - 7th AVENUE, REGINA, SASKATCHEWAN, CANADA
S4N 4P1 TELEPHONE: (306) 569-9075, FAX: (306) 565-3677

GRAIN SIZE CURVE

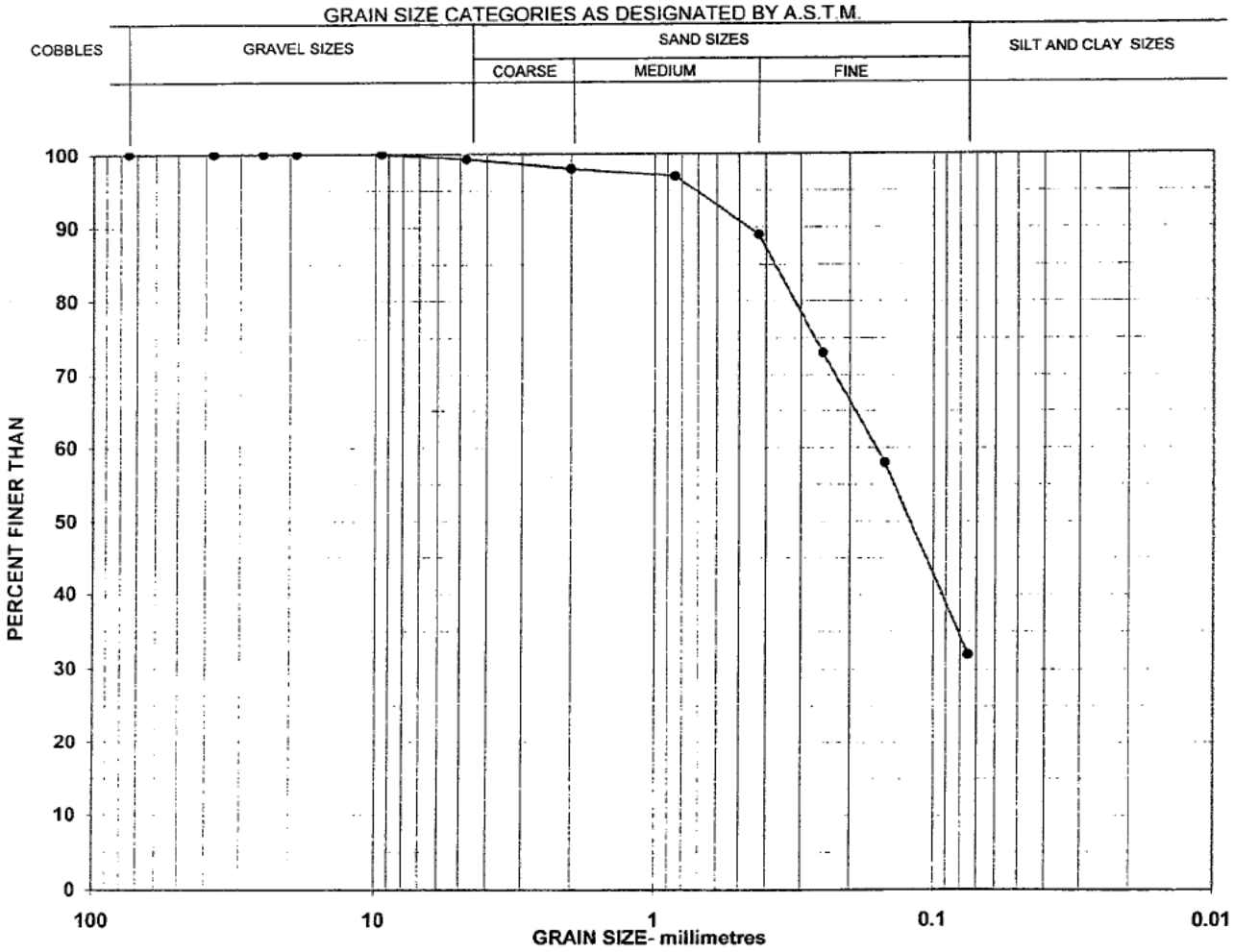
(A.S.T.M. C-136, C.S.A. A23.2-2A & 5A)

JOB No: GE-0005 **DATE:** July 2, 2008 **TECH:** [redacted]

CLIENT: [redacted]

PROJECT: PROPOSED SUBDIVISION

LOCATION: DEER VALLEY, SASKATCHEWAN



SIZE OF OPENING (mm)	SPECIFIED % FINER THAN	PERCENT FINER THAN
75.0		100
37.5		100
25.0		100
19.0		100
9.51		100
4.75		99
2.00		98
0.850		97
0.425		89
0.250		73
0.150		58
0.075		32

GRAIN SIZE CATEGORY	PARTICLE SIZE RANGE (mm)	PERCENT RETAINED
GRAVEL	75 to 4.75	1
COARSE SAND	4.75 to 2.0	1
MEDIUM SAND	2.0 to 0.425	9
FINE SAND	0.425 to 0.075	57
SILT & CLAY	< 0.075	32

SAMPLE DESCRIPTION : FINE SAND, SOME SILT AND CLAY, AND A TRACE OF GRAVEL.

MATERIAL SUPPLIED BY: _____ **SAMPLED BY :** D. STORLE OF GE GROUND ENGINEERING LTD.

SAMPLE LOCATION: TEST HOLE 704

SAMPLE NUMBER: 35 AT 25' BELOW GRADE **DATE SAMPLED :** June 5, 2008

DISTRIBUTION:

WE CERTIFY TESTING PROCEDURES IN ACCORDANCE WITH C.S.A. & A.S.T.M. STANDARDS FOR THAT PORTION OF THE TESTING PERFORMED BY THIS COMPANY GE GROUND ENGINEERING LTD.

Per: [redacted]

GE-0005-11