



**GEOTECHNICAL INVESTIGATION
PROPOSED RESIDENTIAL SUBDIVISION
50 SAUNDERS STREET
COLLINGWOOD, ONTARIO**

**for
VENETIAN GROUP**

PETO MACCALLUM LTD.
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PML Ref.: 17CF012
Report: 1
July 2017

July 20, 2017

PML Ref.: 17CF012
Report: 1

Mr. Morris Bonakdar
Venetian Group
110 Konrad Crescent
Unit 6
Markham, Ontario
L3R 9X2

Dear Mr. Bonakdar

**Geotechnical Investigation
Proposed Residential Subdivision
50 Saunders Street
Collingwood, Ontario**

Peto MacCallum Ltd. (PML) is pleased to present the results of the preliminary geotechnical investigation recently completed at the above noted project site. Authorization for this work was provided by Mr. Morris Bonakdar in the signed Engineering Services Agreement, dated June 9, 2017.

A 64 lot single family residential development is being proposed at the 3.89 ha site at 50 Saunders Street located in the northeast corner of the intersection of Poplar Sideroad and Saunders Street in Collingwood, Ontario. The site will be fully serviced, however service inverts and final grading plans were not yet determined at the time of this report.

The purpose of the geotechnical investigation was to explore the generalized subsurface conditions at the site, and based on this information, provide comments and geotechnical engineering recommendations to assist in planning and design of the proposed development.

This Report 1, presents the results of the preliminary geotechnical investigation. A Phase One Environmental Site Assessment is being carried out for the site and the results will be reported under separate cover in Report 2.



The comments and recommendations provided in this report are based on the site conditions as revealed in a limited number of boreholes at the time of the investigation. Design is in the conceptual stages and service inverts and final grades were not available at the time of this study. Accordingly, the comments and recommendations provided in this report are general in nature, and suitable only for preliminary design and planning purposes. When design details are available, they should be submitted for review by PML to verify the applicability of the recommendations presented in this report.

INVESTIGATION PROCEDURES

The field work for this investigation was conducted on July 10, 2017, and consisted of Boreholes 1 to 6 advanced to 5.0 m depth. Borehole locations are shown on Drawing 1-1, appended.

Co-ordination of clearances of underground utilities was provided by PML.

The boreholes were advanced using continuous flight solid stem augers, powered by a rubber tire mounted CMED-50 drill rig, equipped with an automatic hammer, supplied and operated by a specialist drilling contractor working under the full time supervision of a member of our engineering staff.

Representative samples of the overburden were recovered at frequent depth intervals for identification purposes using a conventional split spoon sampler. Standard penetration tests were carried out simultaneously with the sampling operations to assess the strength characteristics of the subsoil. Standpipes comprising 19 mm diameter CPVC pipe were installed in three boreholes. Ground water conditions in the boreholes were closely monitored during the course of the field work.

Boreholes without standpipes were backfilled in accordance with O.Reg. 903. As per O.Reg. 903, the standpipes become the property of the Owner and will have to be decommissioned when no longer required by the Owner. PML would be pleased to assist in this regard.



The locations of the boreholes were established in the field by PML based on a plan provided by the Client and cognizant of underground utilities. Ground surface elevations of the boreholes were established relative to Control Points, provided by Rudy Mak Surveying Ltd. as shown on appended Drawing 1-2:

All recovered soil samples were returned to our laboratory for moisture content determinations and detailed examination to confirm field classification.

SITE DESCRIPTION AND SUMMARIZED SUBSURFACE CONDITIONS

The site comprises a 3.89 ha parcel of land in the northeast corner of Poplar Sideroad and Saunders Street in Collingwood. The site is undeveloped and vacant with some scattered vegetation. The topography is relatively flat with about 2 m of relief gently sloping down from south to north. There are existing residential subdivisions to the west and east, with open agricultural land to the north and south.

Reference is made to the appended Log of Borehole sheets for details of the subsurface conditions, including soil classifications, inferred stratigraphy, Standard Penetration "N" values, standpipe installation details, ground water observations and the results of laboratory water content determinations.

Due to the soil sampling procedures and limited sample size, the depth demarcations on the borehole logs must be viewed as "transitional" zones between layers, and cannot be construed as exact geologic boundaries between layers.

The stratigraphic profile revealed in the boreholes comprised a topsoil mantle, over a layer of sand, underlain by a deposit layered clays and silts. A summary of the distribution and characteristics of the subsurface soils and ground water observations are presented below.



Topsoil

A 150 to 300 mm thick sandy topsoil mantle was noted at the boreholes.

Sand

Below the topsoil mantle, there was a sand layer that extended down to 1.4 to 2.9 m depth (elevation 195.0 to 195.8). The unit contained trace to some silt, becoming silty at depth. The relative density was loose. The sand was described as moist to wet with depth, with moisture contents measured at 12 to 22%.

Layered Clays and Silts

This deposit was contacted below the sand layer at 1.4 to 2.1 m depth (elevation 195.0 to 195.8) and continued to the full 5.0 m depth of exploration in the boreholes. The deposit comprised grey layered silty clay, clayey silt and silt, becoming predominantly silty clay at depth. The consistency/relative density was typically firm/loose with stiff to very stiff conditions noted locally at depth in Borehole 5. The soils were wet with moisture contents typically in the 20 to 25% range.

Ground Water

Ground water was first observed during drilling (first water strike) at depths of 0.8 to 1.1 m, elevation 195.6 to 197.2. Water levels in the standpipes one week following installation, were at the 1.1, 1.1 and 1.2 m depth, elevation 193.5, 193.5 and 196.4, respectively, in Boreholes 1, 2 and 5. These observations suggest that the stabilized ground water table was some 1.1 to 1.2 m below the ground surface, with hydraulic gradient towards the north.

Ground water levels are subject to seasonal fluctuations and in response to variations in precipitation.



GEOTECHNICAL ENGINEERING CONSIDERATIONS

General

The development is in its conceptual stage and site grading plans and service invert depths were not available at the time of this study. For purposes of this report, it is assumed that site grading will involve minor cuts of less than 0.5 m, with up to 1.0 m of fill, and service inverts will be maximum 3 m below existing grade.

The boreholes revealed a topsoil mantle over a loose sand layer down to 1.4 to 2.1 m depth, over a deposit of generally firm/loose layered clays and silts, with the ground water table at 1.1 to 1.2 m below present ground surface.

A relatively low bearing capacity is available in the native loose sand for supporting footings for the houses.

The design should appreciate the relatively high ground water table at 1.1 and 1.2 m below existing grade, which would impact basement levels, and the need for dewatering for excavation of services below the ground water table.

Site Preparation

Following stripping of topsoil, the native subgrade is expected to comprise sand. The ground water table was 1.1 to 1.2 m below existing grade and therefore should not impact stripping operations. Where fill is required under buildings and road areas, the fill should be placed in thin lifts and compacted to 100% Standard Proctor maximum dry density. The excavated native sand from shallow cut areas/from above the ground water table should be suitable for reuse, subject to geotechnical review and approval during construction.



Footings

Houses can be supported on spread and strip footings founded on the native sand, where a net geotechnical bearing resistance of 50 kPa at Serviceability Limit State (SLS) and factored geotechnical bearing resistance of 75 kPa at Ultimate Limit State (ULS) are recommended for design. The footing should be no more than 0.6 m below existing grade, in order to minimize ground water control and associated difficulties during excavation.

The geotechnical bearing resistance at SLS is based on total 25 mm settlement with differential settlement of 75% of this value. The bearing resistance at ULS is based on minimum 600 mm wide footings with at least 600 mm of embedment.

Prior to placement of structural concrete, all founding surfaces should be inspected by geotechnical personnel to verify the design bearing capacity is available throughout.

Footings subject to frost action should be provided with 1.2 m of earth cover.

Basement Floor Slabs

At the time of this study the ground water table was noted at 1.1 to 1.2 m below existing grade. It is recommended that the lowest floor/basements be established at least 0.6 m above the ground water table, in order to minimize ground water difficulties during construction and to reduce long term sump pumping requirements.

Native sand subgrade is expected which would be suitable for slab-on-grade construction.

A minimum 200 mm thick bedding layer of nominal 19 mm clear stone is recommended under the floor slab, in addition to an underfloor drainage system of weeping tile leading to a frost free sump. Prior to placement of the clear stone, a synthetic filter fabric should be placed to cover the sand subgrade, to prevent potential sand movement into the clear stone. A polyethylene sheet should be placed over the clear stone as a vapour barrier.



Basement walls should be damp proofed, and provided with a perimeter weeping tile leading to a frost free sump. The weeping tile should be surrounded with clear stone, fully wrapped in synthetic filter fabric.

Reference is made to the appended Figure 1-1 for general recommendations regarding drainage and backfill requirements for basement wall and floor slab construction.

Site Servicing

At the time of this report, design inverts were not established. For purposes of this report, it is assumed that service inverts will not extend more than 3 m below existing grade.

Excavation is expected to encounter the loose native sand over layered clays and silts, with the ground water table some 1 m below grade.

Subject to effective ground water control, the site soils are considered to be Type 3 soil in accordance with the Occupational Health and Safety Act, requiring trench side slopes to be cut back at no steeper than one horizontal to one vertical (1H:1V) from the base of the excavation. Flattening of cut slopes may be needed locally where concentrated seepage develops.

The ground water table should be lowered to at least 0.5 m below the bottom of the deepest excavation. It is envisioned the system of vacuum well points will be needed in conjunction with supplementary sump pumping from within the excavation. Dewatering should be designed and installed by specialists in this field.

It is anticipated that a Permit to Take Water (PTTW) from the MOECC will be needed for construction dewatering. In this regard, a site specific Hydrogeological Site Assessment will be needed to further assess dewatering requirements, and for support of an application for a PTTW, subject to review of the final development plans.

Subject to effective ground water control and provided the subgrade is not underlying disturbed. OPSS standard granular bedding should be satisfactory. Provision should be made for increased



bedding thickness where unstable subgrade conditions are encountered, subject to geotechnical review during construction.

Trench backfill should comprise select inorganic soil placed in maximum 200 mm thick lifts compacted to minimum 95% Standard Proctor maximum dry density, to minimize post construction settlement. Topsoil, organic/peat, excessively wet, frozen, oversized (greater than 200 mm), or otherwise deleterious material should not be incorporated as trench backfill.

The moisture content should be within 2% of optimum in order to achieve the specified compaction, and closer to optimum moisture content in the upper 1 m to prevent instability issues. Ideally the backfill should comprise excavated site soil in order to minimize differential frost heave.

The excavated native sand from above the ground water table should generally be suitable for reuse as trench backfill. Inorganic material from below the ground water table will be too wet for reuse unless allowed to dry out or mixed with drier soil to render the material suitable for reuse. Weather will also impact the moisture conditions of the soil and suitability for reuse. Geotechnical review of the excavated soil and approval for use as backfill will be necessary during construction.

Earthworks operations should be inspected by PML to approve materials, placement and compaction efforts and ensure the specified degree of compaction is achieved throughout.

Pavement Design and Construction

Based on the prevailing native sand, the Town of Collingwood pavement standard for local residential street is considered applicable, comprising 40 mm HL 3, 50 mm HL 8, 150 mm Granular A Base and 300 mm Granular B Subbase.

Following rough grading, the subgrade should be proofrolled and compacted to minimum 95% Standard Proctor maximum dry density, under geotechnical review by PML. Unsuitable/unstable zones identified during this process should be removed and replaced with compacted select material.



Imported material for the granular base and subbase should conform to OPSS gradation specification for Granular A and Granular B, and should be compacted to 100% Standard Proctor maximum dry density. Asphaltic concrete should be compacted in accordance with OPSS 310.

For the pavement to function properly, it is essential that provisions be made for water to drain out of it and not collect in the base material. The incorporation of subdrains is recommended in conjunction with crowning of the final surface to promote drainage away from the structure.

Geotechnical Review

The comments and recommendations provided in this report are based on the site conditions as revealed in a limited number of boreholes at the time of the investigation. Details of the development plans, including final grades and service inverts were not available at the time of this study. Accordingly, the comments and recommendations provided in this report are general in nature, and suitable only for preliminary design and planning purposes. When design details are available they should be submitted for review by PML to verify the design is compatible with the site geotechnical conditions.

Conditions away from and between boreholes may vary. Geotechnical field review should be carried out during construction to verify the actual conditions are consistent with the borehole findings.

Earthworks operations should be carried out with review by PML to approve subgrade preparation, backfill materials, placement and compaction procedures and check the specified degree of compaction is achieved throughout.

Prior to placement of structural concrete, the subgrade surface must be examined by PML to verify that the design bearing capacity is available throughout.



CLOSURE

We trust this report is complete within our terms of reference, and the information presented is sufficient for your present purposes. If you have any questions, or when we may be of further assistance, please do not hesitate to call our office.

Sincerely

Peto MacCallum Ltd.



Geoffrey R. White, P.Eng.
Associate
Manager, Geotechnical and Geoenvironmental Services

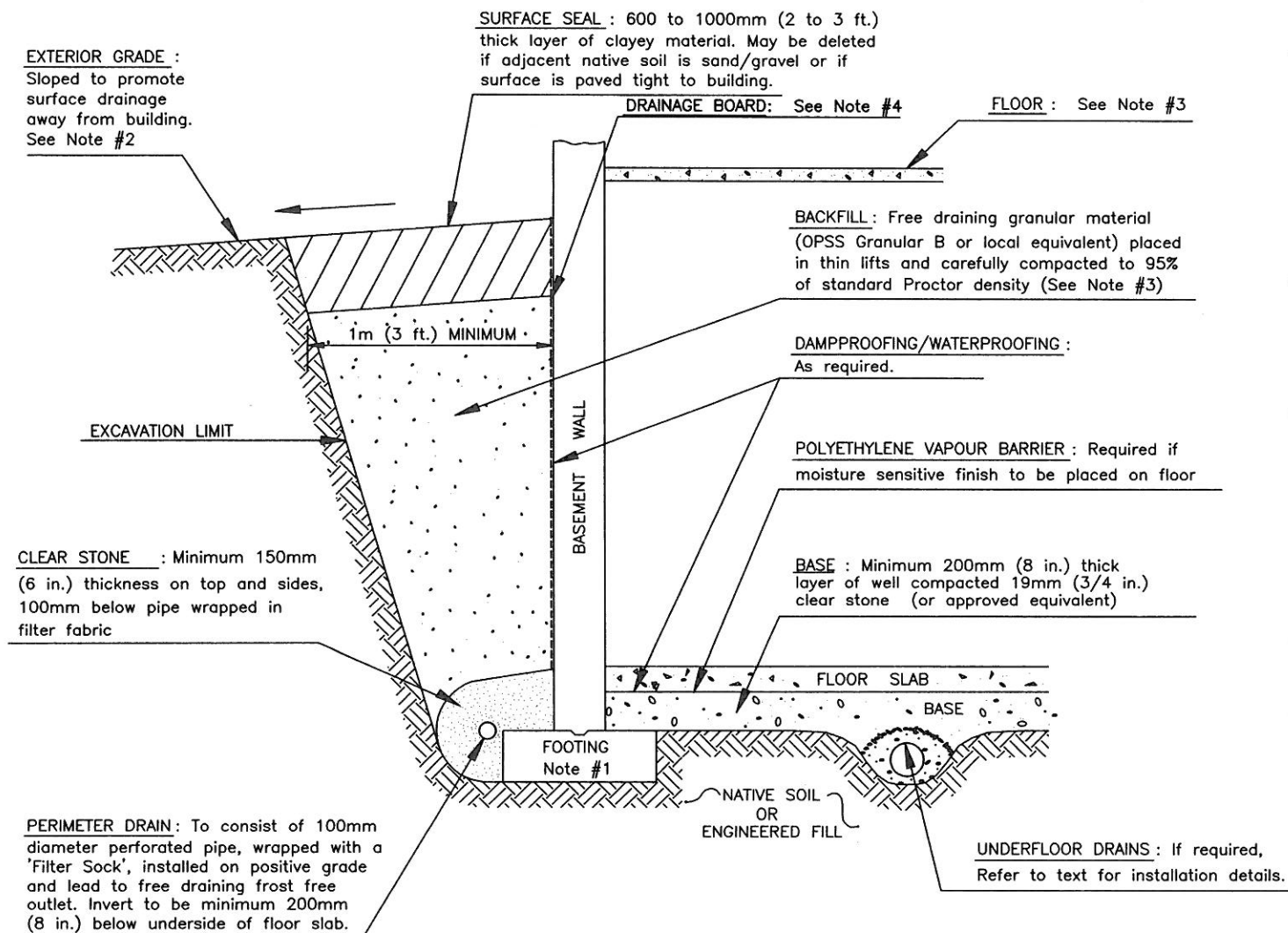


Turney Lee-Bun, P.Eng.
Vice President

GRW/TLB:jlb

Enclosure(s):

Figure 1-1 – General Recommendations Regarding Drainage and
Backfill Requirements for Basement Wall and Floor Slab Construction
List of Abbreviations
Log of Borehole Nos. 1 to 6
Drawing No. 1-1 – Borehole Location Plan
Figure 1-2 – Survey Control Points



NOTES

1. Footing may be constructed by placement of structural concrete neat against natural soil. Drain to be installed in a similar manner immediately above footing maintaining 200mm (8 in.) distance between top of drain and underside of floor slab.
2. Exterior grade to be minimum 300mm (12 in.) below interior floor slab, or other means established to prevent entry of surface water into building through building openings.
3. Basement wall to be supported by floor system or interior bracing prior to commencement of backfill placement. Heavy construction equipment should not be permitted within a distance from the foundation wall equivalent to half the wall height. Overcompaction of backfill to be avoided as excessive lateral earth pressure may result.
4. A proprietary drainage board product may be used with compacted native soil as backfill against the wall.
5. Refer to text for details regarding founding levels, competent bearing material and construction details specific to particular site.

STANDARD DRAWING

GENERAL RECOMMENDATIONS REGARDING DRAINAGE AND BACKFILL REQUIREMENTS
FOR BASEMENT WALL AND FLOOR SLAB CONSTRUCTION

Peto MacCallum Ltd.
CONSULTING ENGINEERS

DRAWN:	N/A	DATE	SCALE	JOB NO.	FIGURE NO.
CHECKED:	GW	JULY 2017	N.T.S.	17CF012	1-1
APPROVED:	GW				

LIST OF ABBREVIATIONS



PENETRATION RESISTANCE

Standard Penetration Resistance N: - The number of blows required to advance a standard split spoon sampler 0.3 m into the subsoil. Driven by means of a 63.5 kg hammer falling freely a distance of 0.76 m.

Dynamic Penetration Resistance: - The number of blows required to advance a 51 mm, 60 degree cone, fitted to the end of drill rods, 0.3 m into the subsoil. The driving energy being 475 J per blow.

DESCRIPTION OF SOIL

The consistency of cohesive soils and the relative density or denseness of cohesionless soils are described in the following terms:

<u>CONSISTENCY</u>	<u>N (blows/0.3 m)</u>	<u>c (kPa)</u>	<u>DENSENESS</u>	<u>N (blows/0.3 m)</u>
Very Soft	0 - 2	0 - 12	Very Loose	0 - 4
Soft	2 - 4	12 - 25	Loose	4 - 10
Firm	4 - 8	25 - 50	Compact	10 - 30
Stiff	8 - 15	50 - 100	Dense	30 - 50
Very Stiff	15 - 30	100 - 200	Very Dense	> 50
Hard	> 30	> 200		
WTPL	Wetter Than Plastic Limit			
APL	About Plastic Limit			
DTPL	Drier Than Plastic Limit			

TYPE OF SAMPLE

SS	Split Spoon	ST	Slotted Tube Sample
WS	Washed Sample	TW	Thinwall Open
SB	Scraper Bucket Sample	TP	Thinwall Piston
AS	Auger Sample	OS	Oesterberg Sample
CS	Chunk Sample	FS	Foil Sample
GS	Grab Sample	RC	Rock Core
	PH	Sample Advanced Hydraulically	
	PM	Sample Advanced Manually	

SOIL TESTS

Qu	Unconfined Compression	LV	Laboratory Vane
Q	Undrained Triaxial	FV	Field Vane
Qcu	Consolidated Undrained Triaxial	C	Consolidation
Qd	Drained Triaxial		

LOG OF BOREHOLE NO. 1

1 of 1

177 561821E 4925358N

PROJECT Proposed Residential Subdivision - 50 Saunders Street

LOCATION Collingwood, Ontario

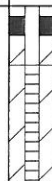
BORING METHOD Continuous Flight Solid Stem Augers

BORING DATE July 10, 2017

PML REF. 17CF012

ENGINEER GW

TECHNICIAN RB

SOIL PROFILE			SAMPLES			ELEVATION SCALE	SHEAR STRENGTH (kPa)			PLASTIC LIMIT w _p	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w _L	UNIT WEIGHT kN/m ³	GROUND WATER OBSERVATIONS AND REMARKS				
DEPTH ELEV (metres)	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES		+ FIELD VANE Δ TORVANE ○ Qu ▲ POCKET PENETROMETER ○ Q											
							50 100 150 200											
DYNAMIC CONE PENETRATION TEST × STANDARD PENETRATION TEST ●							WATER CONTENT (%)			GRAIN SIZE DISTRIBUTION (%) GR SA SI&CL								
20 40 60 80							10 20 30 40											
0.0	SURFACE ELEVATION 196.35													 Stick-up pipe Bentonite seal First water strike at 0.8 m/EL. 195.6 19 mm slotted pipe Native backfill				
0.25 196.10	TOPSOIL: Dark brown, sand, some silt, moist		1	SS	5	196												
	SAND: Loose, brown, sand, some silt to silty, moist to wet		2	SS	5													
1.0						195												
1.4 195.0	LAYERED CLAYS AND SILTS: Firm/loose, grey, layered silty clay, clayey silt and silt, wet		3	SS	8													
2.0			4	SS	5	194												
3.0	Becoming predominantly layered clay		5	SS	5	193												
4.0			6	SS	4	192												
5.0 191.4	BOREHOLE TERMINATED AT 5.0 m		7	SS	4									Upon completion of augering No water No cave Water Level Readings: Date Depth Elev. 2017-07-17 1.1 195.3				
6.0																		
7.0																		
8.0																		
9.0																		
10.0																		
11.0																		
12.0																		
13.0																		
14.0																		
15.0																		

NOTES

M3

LOG OF BOREHOLE NO. 2

17T 561870E 4925374N

1 of 1

PROJECT Proposed Residential Subdivision - 50 Saunders Street

LOCATION Collingwood, Ontario

BORING METHOD Continuous Flight Solid Stem Augers

BORING DATE July 10, 2017

PML REF. 17CF012

ENGINEER GW

TECHNICIAN RB

SOIL PROFILE			SAMPLES			SHEAR STRENGTH (kPa)		PLASTIC LIMIT w _p	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w _L	UNIT WEIGHT kN/m ³	GROUND WATER OBSERVATIONS AND REMARKS
DEPTH ELEV (metres)	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES	+ FIELD VANE Δ TORVANE ○ Qu ▲ POCKET PENETROMETER ○ Q	DYNAMIC CONE PENETRATION STANDARD PENETRATION TEST ×					
						50 100 150 200	20 40 60 80					
								WATER CONTENT (%)				
0.0	SURFACE ELEVATION 196.50											
0.30 196.20	TOPSOIL: Dark brown, sand, some silt, moist		1	SS	4							Stick-up pipe Bentonite seal
	SAND: Loose, brown, sand, some silt to silty, moist to wet		2	SS	5							
1.0												
1.4 195.1	LAYERED CLAYS AND SILTS: Firm/loose, grey, layered silty clay, clayey silt and silt, wet		3	SS	5							First water strike at 0.9 m/EL. 195.6 19 mm slotted pipe Native backfill
2.0												
			4	SS	5							
3.0												
			5	SS	4							
4.0	Becoming stiff		6	SS	10							
5.0 191.5	BOREHOLE TERMINATED AT 5.0 m		7	SS	8							Upon completion of augering No water No cave Water Level Readings: Date Depth Elev. 2017-07-17 1.2 195.3

NOTES

LOG OF BOREHOLE NO. 3

1 of 1

17T 561825E 4925293N

PROJECT Proposed Residential Subdivision - 50 Saunders Street

LOCATION Collingwood, Ontario

BORING METHOD Continuous Flight Solid Stem Augers

BORING DATE July 10, 2017

PML REF. 17CF012

ENGINEER GW

TECHNICIAN RB

SOIL PROFILE			SAMPLES			ELEVATION SCALE	SHEAR STRENGTH (kPa)		PLASTIC LIMIT W _P	NATURAL MOISTURE CONTENT w	LIQUID LIMIT W _L	UNIT WEIGHT kN/m ³	GROUND WATER OBSERVATIONS AND REMARKS
DEPTH ELEV (metres)	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES		+ FIELD VANE Δ TORVANE ○ Q _u ▲ POCKET PENETROMETER ○ Q						
							50 100 150 200						
							DYNAMIC CONE PENETRATION STANDARD PENETRATION TEST ×						
						WATER CONTENT (%)							
						20 40 60 80		10 20 30 40					
0.0	SURFACE ELEVATION 196.70												
0.30 196.40	TOPSOIL: Dark brown, sand, some silt, moist			1	SS	4				○			First water strike at 0.8 m/EL. 195.9
	SAND: Loose, brown, sand, some silt to silty moist to wet			2	SS	5				○			
1.0													
1.4 195.3	LAYERED CLAYS AND SILTS: Firm/loose, grey, layered silty clay, clayey silt and silt, wet			3	SS	6				○			
2.0													
3.0	Becoming predominantly silty clay			4	SS	4				○			
4.0				5	SS	4				○			
				6	SS	4				○			
5.0 191.7	BOREHOLE TERMINATED AT 5.0 m			7	SS	6				○			Upon completion of augering No water No cave
6.0													
7.0													
8.0													
9.0													
10.0													
11.0													
12.0													
13.0													
14.0													
15.0													

NOTES

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LOG OF BOREHOLE NO. 4

1 of 1

177 561889E 4925303N

PROJECT Proposed Residential Subdivision - 50 Saunders Street

LOCATION Collingwood, Ontario

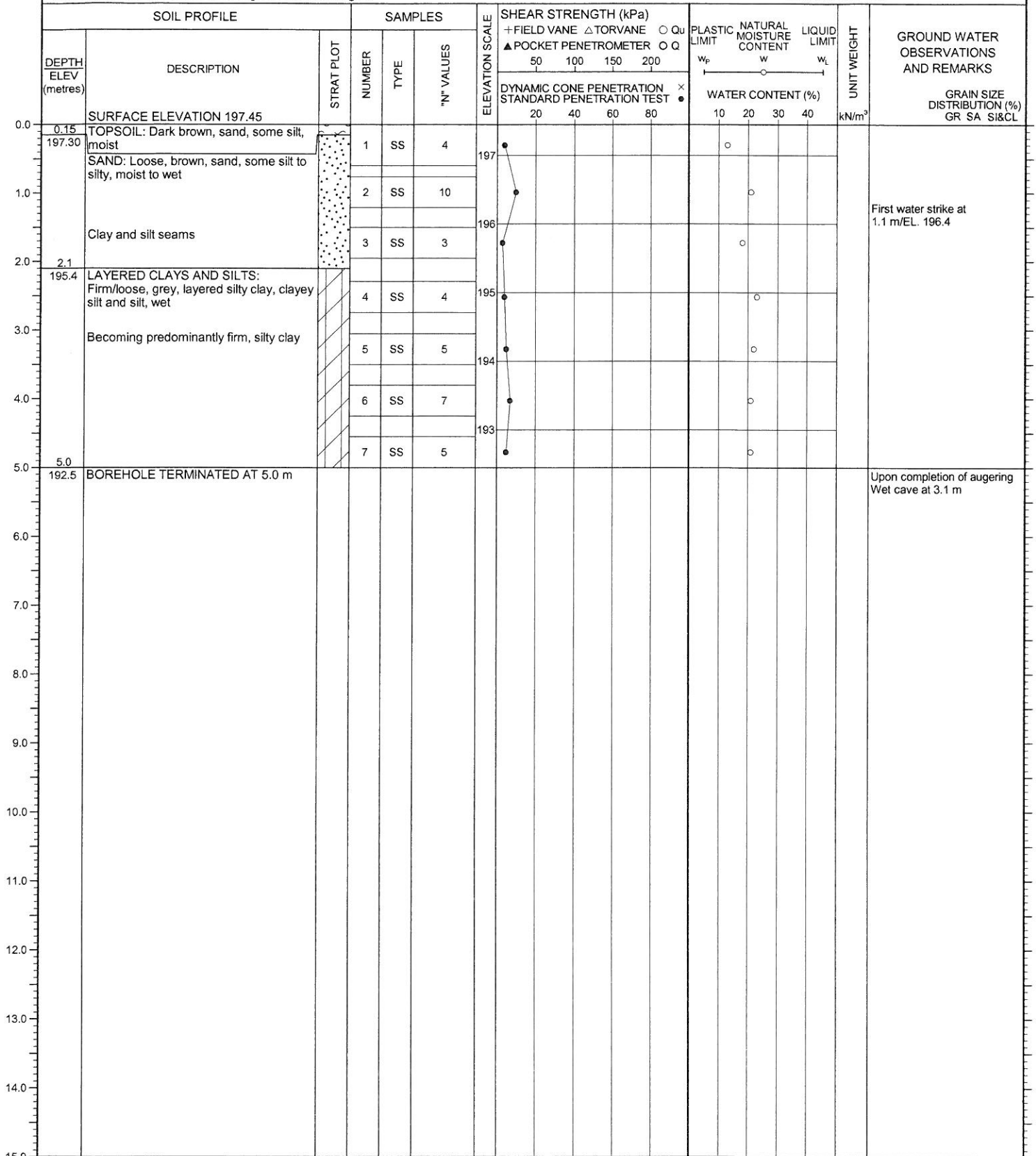
BORING METHOD Continuous Flight Solid Stem Augers

BORING DATE July 10, 2017

PML REF. 17CF012

ENGINEER GW

TECHNICIAN RB



NOTES

[Handwritten Signature]

LOG OF BOREHOLE NO. 5

1 of 1

17T 561827E 4925207N

PROJECT Proposed Residential Subdivision - 50 Saunders Street

LOCATION Collingwood, Ontario

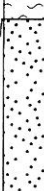
BORING METHOD Continuous Flight Solid Stem Augers

BORING DATE July 10, 2017

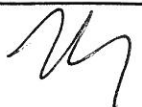
PML REF. 17CF012

ENGINEER GW

TECHNICIAN RB

SOIL PROFILE			SAMPLES			ELEVATION SCALE	SHEAR STRENGTH (kPa)		PLASTIC LIMIT w _p	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w _L	UNIT WEIGHT kN/m ³	GROUND WATER OBSERVATIONS AND REMARKS	
DEPTH ELEV (metres)	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	*N* VALUES		+ FIELD VANE Δ TORVANE ○ Qu ▲ POCKET PENETROMETER ○ Q							
							50 100 150 200							
						DYNAMIC CONE PENETRATION STANDARD PENETRATION TEST × ●		WATER CONTENT (%)					GRAIN SIZE DISTRIBUTION (%) GR SA SI&CL	
0.0	SURFACE ELEVATION 197.90					20	40	60	80	10	20	30	40	
0.25 197.65	TOPSOIL: Dark brown, sand, some silt, moist		1	SS	6									 Stick-up pipe Bentonite seal First water strike at 0.9 m/EL. 197.0 19 mm slotted pipe Native backfill
1.0	SAND: Loose to compact, brown to grey, sand, trace silt to silty, moist to wet		2	SS	11									
			3	SS	10									
2.0														
2.1 195.8	LAYERED CLAYS AND SILTS: Firm/loose, grey, layered silty clay, clayey silt and silt, wet		4	SS	7									
3.0			5	SS	6									
4.0	Becoming predominantly stiff to very stiff silty clay		6	SS	18									
5.0 192.9	BOREHOLE TERMINATED AT 5.0 m		7	SS	15									
6.0														Upon completion of augering No water No cave Water Level Readings: Date Depth Elev. 2017-07-17 1.1 196.8
7.0														
8.0														
9.0														
10.0														
11.0														
12.0														
13.0														
14.0														
15.0														

NOTES



LOG OF BOREHOLE NO. 6

1 of 1

17T 561909E 4925225N

PROJECT Proposed Residential Subdivision - 50 Saunders Street

LOCATION Collingwood, Ontario

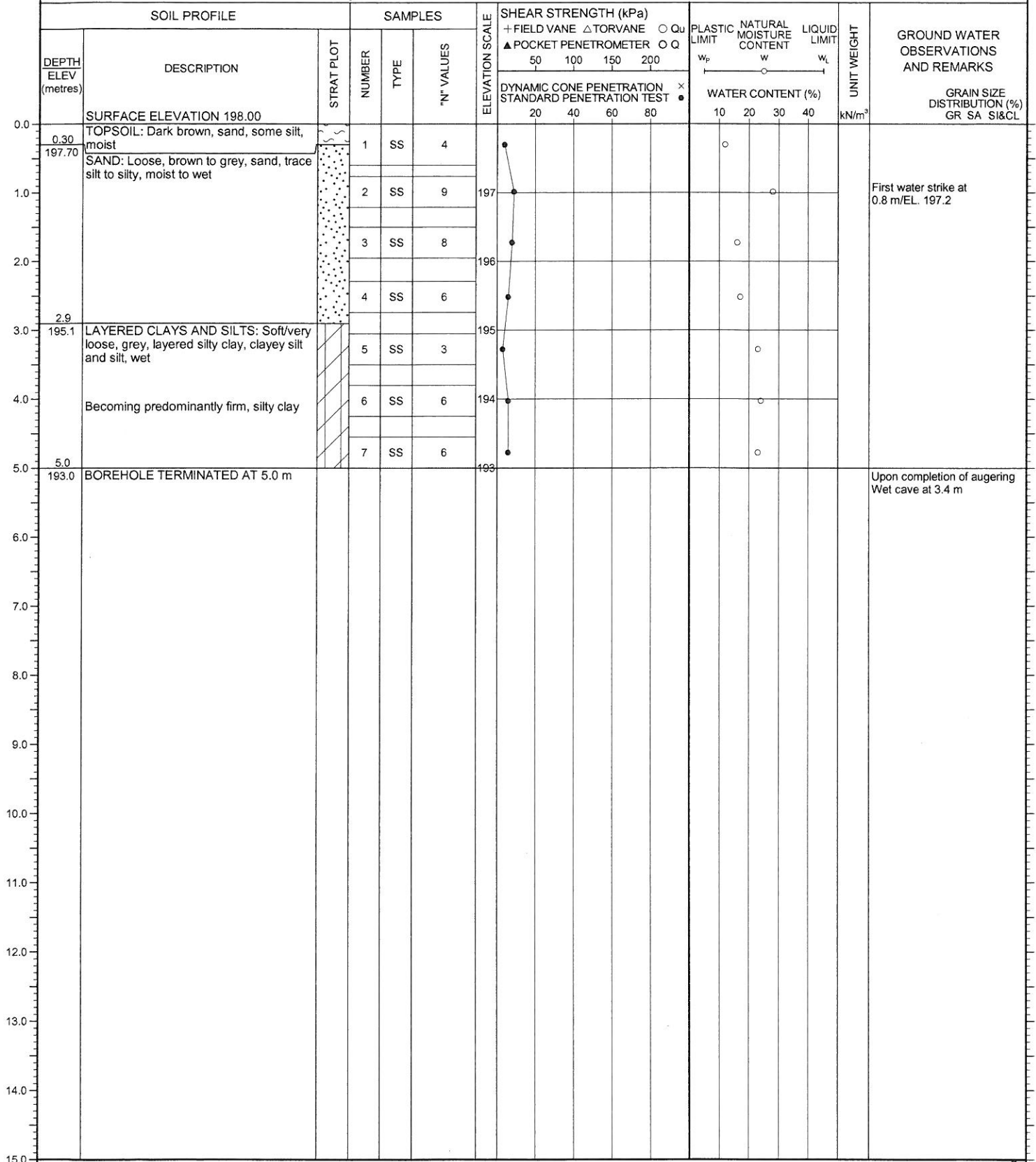
BORING METHOD Continuous Flight Solid Stem Augers

BORING DATE July 10, 2017

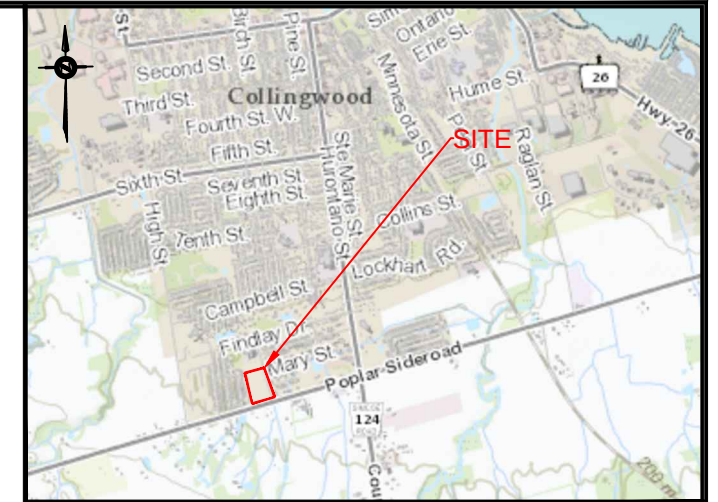
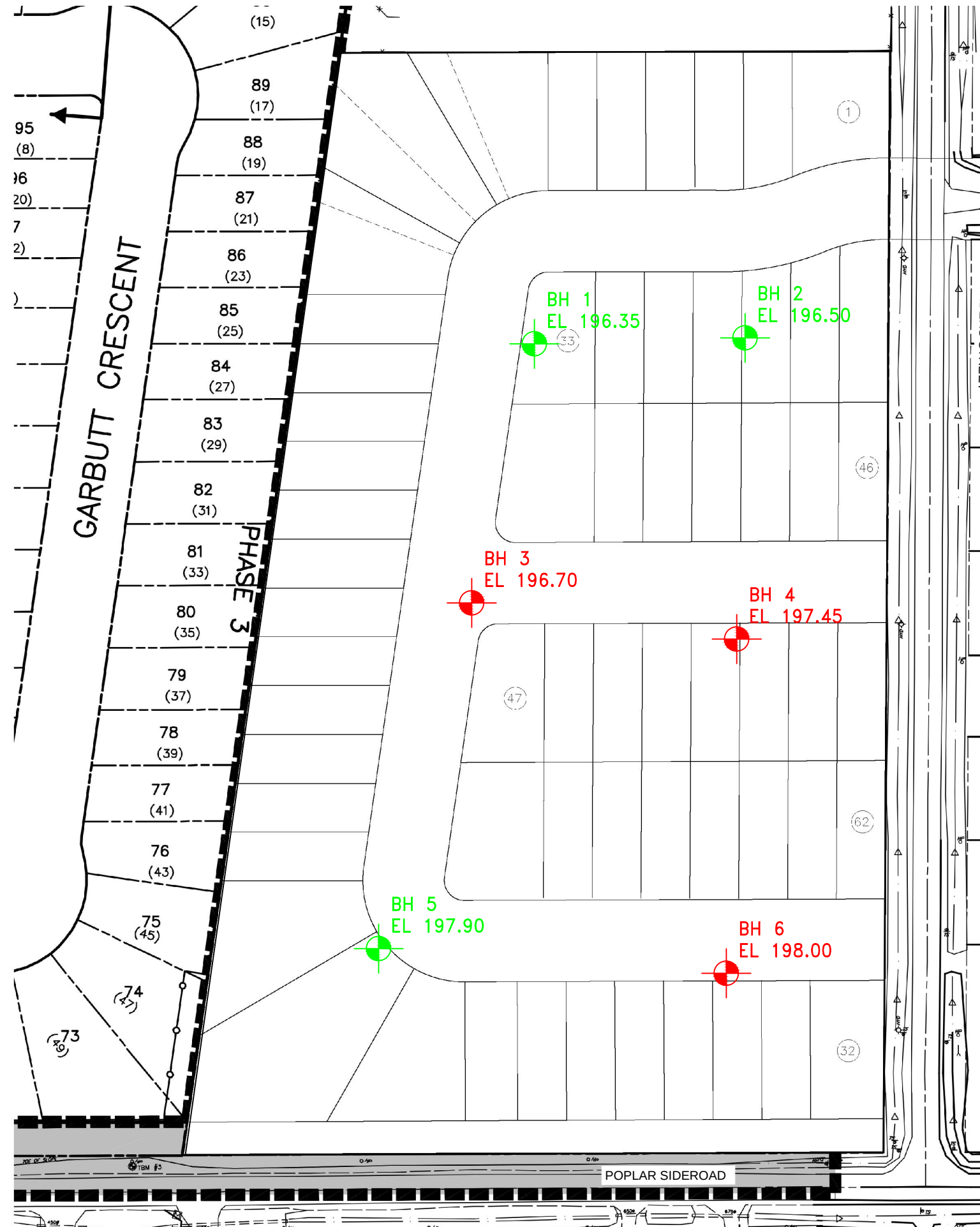
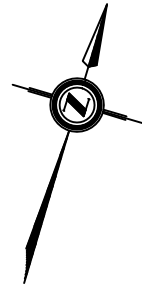
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ENGINEER GW

TECHNICIAN RB



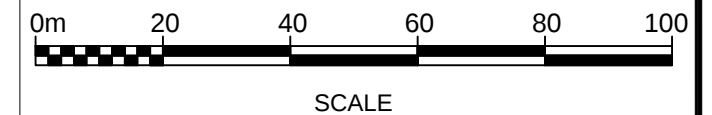
NOTES



KEY PLAN
COLLINGWOOD, ONTARIO

LEGEND:

-  **BH 1**
EL 196.35 BOREHOLE 1 (WITH STANDPIPE)
SURFACE ELEVATION
-  **BH 3**
EL 196.70 BOREHOLE 3
SURFACE ELEVATION

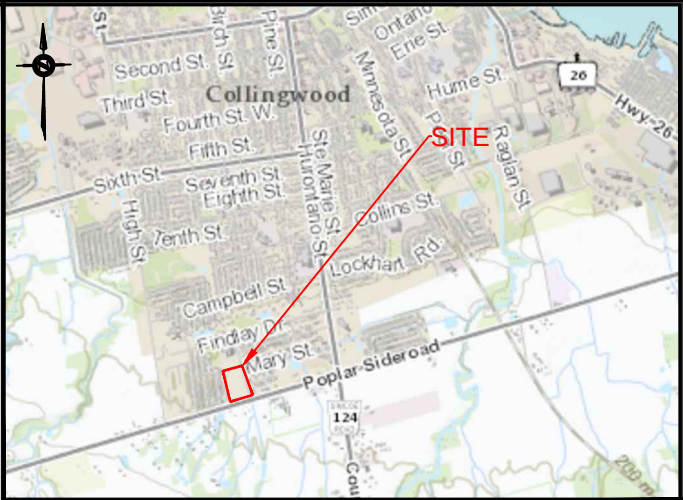
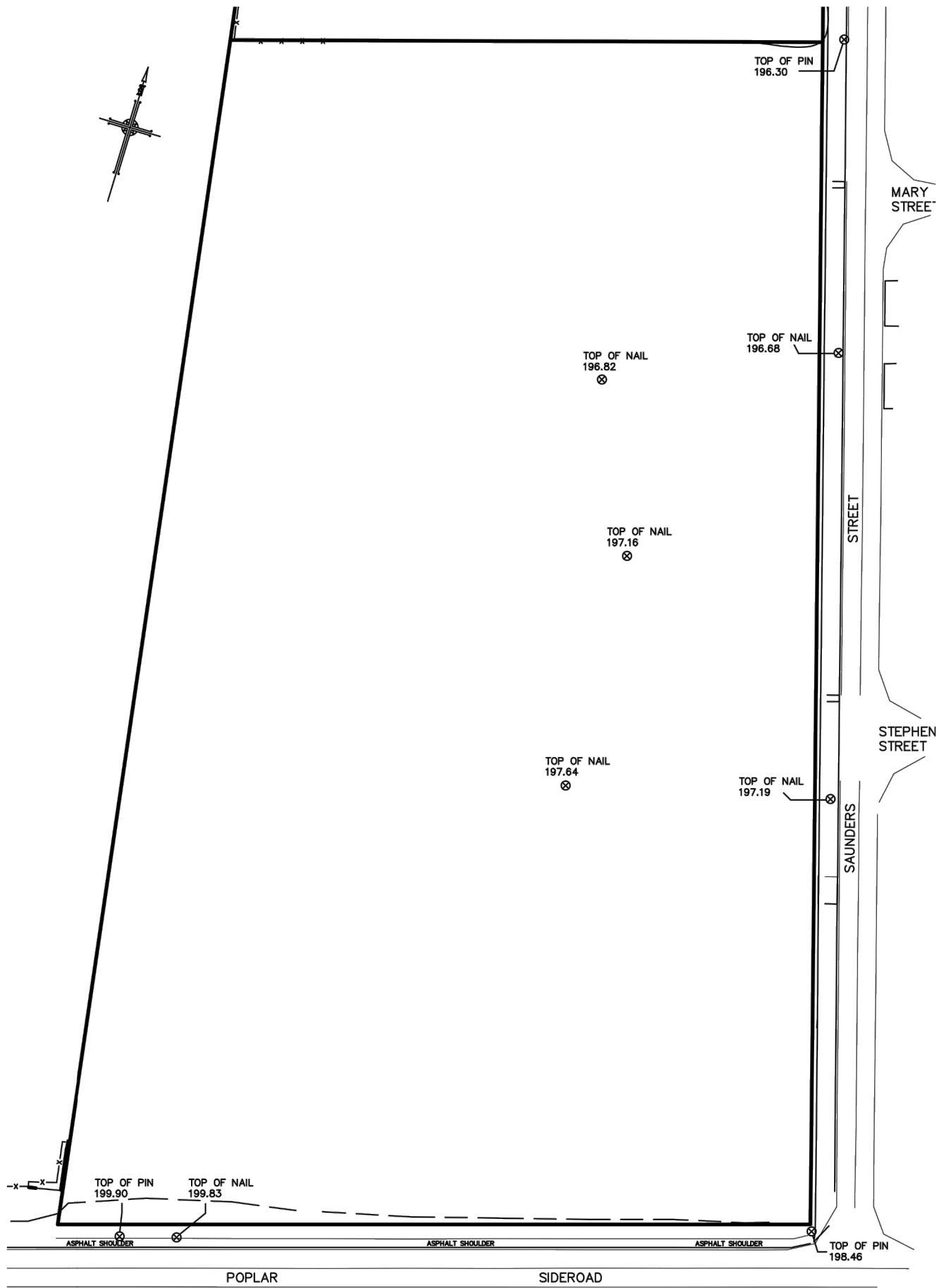


BOREHOLE LOCATION PLAN

PROPOSED RESIDENTIAL SUBDIVISION
50 SAUNDERS STREET
COLLINGWOOD, ONTARIO



DRAWN	RB	DATE	SCALE	PML REF.	DRAWING NO.
CHECKED	GW	JUL. 2017	AS SHOWN	17CF012	1-1
APPROVED	GW				



KEY PLAN
COLLINGWOOD, ONTARIO

SURVEY CONTROL POINTS
Provided by Rudy Mak Survey Ltd. (July 2017)

PROPOSED RESIDENTIAL SUBDIVISION
50 SAUNDERS STREET
COLLINGWOOD, ONTARIO



DRAWN	RB	DATE	SCALE	PML REF.	DRAWING NO.
CHECKED	GW	JUL. 2017	NTS	17CF012	1-2
APPROVED	GW				