Toronto Inspection LTD.
GEO-ENVIRONMENTAL CONSULTANTS

REPORT ON
GEOTECHNICAL INVESTIGATION
0 & 12245 TORBRAM ROAD
CALEDON, ONTARIO

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PREPARED FOR
TULLAMORE INDUSTRIAL GP LIMITED
75 TIVERTON COURT
MARKHAM, ONTARIO
L3R 4M8

110 KONRAD CRESCENT, UNIT 16, MARKHAM, ONTARIO L3R 9X2
TEL.: 905-940-8509 FAX: 905-940-8192

Toronto Inspection Ltd.

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1.0 INTRODUCTION

Toronto Inspection Ltd. (TIL) carried out a geotechnical Investigation in May and June, 2021, for the proposed development at a property, located at 0 & 12245 Torbram Road, Caledon, Ontario (hereinafter referred to as "the Site"). The field work for the geotechnical investigation, at the middle and south portions of the Site, was carried out in conjunction with a Phase II Environmental Site Assessment (ESA) and a Hydrogeological Study. A report of our findings and recommendations for the design and construction of the proposed development was presented in the Geotechnical Investigation Report No.: 5552-21-GB, dated June 24, 2021.

Toronto Inspection Ltd. was retained by Tullamore Industrial GP Limited to conduct an additional geotechnical investigation for the proposed development at the north portion of the Site. The field work for the additional geotechnical investigation was carried out in conjunction with a Phase II Environmental Site Assessment (ESA) and a Hydrogeological Study. The reports of findings, relating to Phase II ESA and the hydrogeological study, will be issued under separate covers.

The purpose of the investigations was to determine the subsoil and groundwater conditions at the Site, affecting the design and construction of an industrial subdivision, consisting of a number of building blocks. In particular, geotechnical data was to be provided for:

- General founding conditions
- Foundation design for foundations
- Pavement Design and Construction
- Other Recommendations of Construction

This report is provided on the basis of the above terms of reference and on the assumption that the design of the project will be in accordance with the applicable building codes and standards. If there are any changes in the design features relevant to the geotechnical analyses, our office should be consulted to review the design and to confirm the recommendations and comments provided in the report.

This report supersedes the previous geotechnical investigation report and any verbal or written recommendations provided for the Site.

2.0 SITE CONDITION

The Site, approximately 480 acres in area, is located on the east side of Torbram Road, on the west side of Airport Road and on the north side of Mayfield Road, in Caledon, A property at the northwest corner of Airport Road and Mayfield Road was not included in the investigation.

At the time of investigations, the Site was a farmland with farmhouses, including barns and silos at the south and west portions of the Site.

The existing site gradient was undulating, generally dropping to the south, southeast and east, with grade differences of more than 27m from north to south and 10m from west to east across the Site.

3.0 INVESTIGATION PROCEDURE

Previous Investigation

The field work for the previous investigation was carried out during the period of May 21 to June 3, 2021, at the middle and south portions of the Site, which included drilling thirty eight sampled boreholes (21BH-1 to 21BH-38), extending to depths of 2.4m to 6.6m from grade, at the locations shown on he appended Borehole Location Plan (Drawing No. 1). Groundwater observations were made in the open boreholes during and upon the completion of drilling. Sixteen of the boreholes, 21BH-1, 21BH-3, 21BH-7, 21BH-10, 21BH-13, 21BH-16, 21BH-18, 21BH-20, 21BH-22, 21BH-23, 21BH-25, 21BH-29, 21BH-30, 21BH-33, 21BH-36 and 21BH-37, were completed as monitoring wells for the determination of the static groundwater conditions.

Current Investigation

The field work for the current investigation was carried out during the period of May 29 to June 6, 2023, which included drilling twelve sampled boreholes (23BH-1 to 23BH-12), extending to depths of 4.8m to 11.5m from grade, at the locations shown on he appended Borehole Location Plan (Drawing No. 1).

Refusal to augering was encountered in the shale bedrock, at Boreholes 23BH-3 and 23BH-4 locations at depths of 11.5m and 9.6m from grade, respectively. Below the auger refusal depths of 11.5m and 9.6m from grade at Boreholes 23BH-3 and 23BH-4 locations, 8.3m (27.17ft) and 1.0m (3.17ft) long rock cores were obtained, respectively, to confirm that the refusal was in the shale bedrock and to determine the rock quality. The rock cores at Boreholes 23BH-3 and 23BH-4 locations were terminated at depths of 19.8m and 10.6m from grade, respectively.

The boreholes were advanced using a track mounted drill rig, equipped with continuous flight solid stem augers and sampling rods, supplied by a specialist drilling contractor. Soil samples were retrieved from the boreholes at 0.76m intervals to depths of 3m or 4.5m below the existing ground level. Below the depths, the sampling frequency was increased to 1.5m. The samples were obtained using a split spoon sampler in conjunction with Standard Penetration Tests (SPT) using a driving energy of 475 joules (350 ft-lbs). The soil samples were identified and logged in the field and were carefully bagged for later visual identification and laboratory testing, including moisture content determination.

Groundwater observations were made in the open boreholes during and upon the completion of drilling. Six of the current boreholes, 23BH-1 to 23BH-5 and 23BH-10, were completed as monitoring wells for the determination of the static groundwater conditions.

The symbol (MW), besides the borehole identification on the Borehole Location Plan, indicates a monitoring well. The groundwater records are presented in the borehole logs.

The borehole locations were established with stakes in the field by the survey company, at the locations shown on the appended Borehole Location Plan (Drawing No.1). The ground elevations at the previous borehole locations were surveyed and plotted on a plan of Topographic Survey, Caldon Tullamore Lands Boreholes, prepared by CSS Inc., dated June 1, 2021, provided by the client. The ground elevations at the current borehole locations were surveyed and provided by the client on October 12, 2023.

4.0 SUMMARIZED SITE AND SUBSURFACE CONDITIONS

Reference is made to the Borehole Location Plan (Drawing No. 1) and the appended Logs of Borehole sheets (Drawing Nos. 2 to 51) for details of field work, including soil classification, inferred stratigraphy and groundwater observations carried out during and on completion of drilling of the boreholes.

The subsoil below the surficial topsoil and fill, at the borehole locations, consisted of native deposits of clayey silt and glacial silt till with occasional embedded silty sand / sand/ silt layers, overlying a shale bedrock.

Brief descriptions of the subsoils encountered at the borehole locations are as follows:

4.1 Surface Course

Topsoil, 50mm to 950mm in thickness, was contacted at the ground surface at all borehole locations, including a 175mm compost layer at Borehole 21BH-1 location.

4.2 Fill

A layer of fill was contacted below the topsoil at all borehole locations. It is our opinion that the fill probably represent the material from the previous regrading of the Site or the native soils reworked during the farming process. For identification purpose, this material has been identified as fill in the borehole logs.

The fill consisted of a mixture of clayey silt, sandy silt, occasional trace gravel, with trace to some rootlets and topsoil, or pockets of organics. Borehole 21BH-8 was located at the top of a soil berm and a probable ¾ inch irrigation pipe was hit at a depth of 2.3m from grade.

Borehole 21BH-8 was terminated in the fill at a depth of 6.6m from top of the soil berm. Borehole 21BH-22 was terminated in the fill at a depth of 2.4m from grade, due to auger refusal on a probable boulder. With the exception of two of the boreholes, 21BH-28 and 21BH-37, the fill at the remaining boreholes extended to depths of 0.3m to 1.1m from grade. The fill in Boreholes 21BH-28 and 21BH-37 extended to depths of 2.1m and 3.2m from grade, respectively.

4.3 Silty Sand / Sand / Silt

A silty sand deposit was contacted below the fill at Borehole 21BH-6 location, at a depth of 0.5m from grade. The silty sand deposit contained some gravel, some sandy silt, gravelly at 2.3m in depth, and with possible cobbles and boulders. Borehole 21BH-6 was terminated in the silty sand deposit at a depth of 3.3m from grade, due to auger refusal on probable cobbles or boulders.

Based on the Standard Penetration N-values of 29 to more than 100 blows per 0.3m penetration, the relative density of the silty sand deposit was compact to very dense. The in-situ moisture content of the soil samples retrieved from this deposit ranged from 7% to 10%, indicating moist to very moist conditions.

A sand deposit was contacted below a clayey silt till deposit at Boreholes 23BH-3, 23BH-5 and 23BH-6 locations, at depths of 7.8m, 6.4m and 5.8m from grade, respectively. The sand deposit was fine to medium grained and contained trace to some gravel or silt, and gravelly at 23BH-3. Boreholes 23BH-5 and 23BH-6 were terminated in the sand deposit at depths of 9.5m and 6.6m from grade, respectively. The sand deposit extended to a depth of 10.4m from grade.

Based on the Standard Penetration N-values of 27 to 94 blows per 0.3m penetration, the relative density of the sand deposit was compact to very dense. The in-situ moisture content of the soil samples retrieved from this deposit ranged from 8% to 28%, indicating very moist to wet conditions.

A silt deposit was contacted below a clayey silt till deposit at Borehole 23BH-4 location, at a depth of 5.8m from grade. The silt deposit contained fine sand, some gravel and trace clay. The silt deposit extended to a depth of 8.8m from grade.

Based on the Standard Penetration N-values of 32 to 33 blows per 0.3m penetration, the relative density of the silt deposit was dense. The in-situ moisture content of the soil samples retrieved from this deposit ranged from 14% to 18%, indicating a wet condition.

4.4 Clayey Silt, Clayey / Sandy Silt Till

Native deposits of clayey silt and glacial silt till were contacted below the fill, at the borehole locations, except Boreholes 21BH-6, 21BH-8 and 21BH-22, at depths of 0.3m to 3.2m from grade. The deposits generally consisted of a heterogeneous mixture of silt and clay and sand, trace to some gravel, with occasional cobbles or boulders. The deposits also contained thin layers or seams of fine sand or occasional gravel layers.

Depending on the combination of silt, clay, sand and gravel, the deposits were classified as either clayey silt, clayey silt till or sandy silt till in the borehole logs.

Boreholes 21BH-15, 23BH-2 and 23BH-10 were terminated in the clayey / sandy silt till deposit, at depths of 4.3m, 4.8m and 9.9m from grade, respectively, due to auger refusal on probable cobble or boulder. Boreholes 21BH-1 to 21BH-5, 21BH-7, 21BH-9 to 21BH-14, 21BH-16 to 21BH-21, 21BH-23 to 21BH-25, 21BH-27 to 21BH-38, 23BH-1 and 23BH-7 to 23BH-12, were terminated in the deposits of clayey silt, clayey silt till or sandy silt till, at depths of 6.1m to 6.6m from grade.

The clayey silt till deposit at Boreholes 21BH-26 and 23BH-3 to 23BH-6 locations extended to depths of 4.7m and 5.8m to 7.8m from grade, respectively.

A lower glacial silt till deposit was contacted below the sand deposit and the silt deposit at Boreholes 23BH-3 and 23BH-4 locations, at depths of 10.4m and 8.8m from grade, respectively, and extended to depths of 11.5m and 9.6m from grade, where refusal of augering was encountered.

Based on the Standard Penetration N-values of 8 to more than 100 blows per 0.3m penetration, the consistency of the clayey silt and clayey silt till deposits was stiff to hard, and the relative density of the sandy silt till deposit was compact to very dense.

The in-situ moisture content of the soil samples retrieved from these deposits ranged from 6% to 30%, indicating moist to very moist conditions, with wet pockets or layers.

Grain size analyses were carried out on four soil samples from these deposits, obtained from Boreholes 21BH-1 (SS3 – at a depth of 1.5m), 21BH-15 (SS3 – at a depth of 1.5m), 23BH-1 (SS3 – at a depth of 1.5m) and 23BH-2 (SS3 – at a depth of 1.5m), using both of mechanical sieves and hydrometer methods. The results of the grain side distribution are shown on the appended Figure No. 1.

4.5 Sand and Gravel

A sand and gravel deposit was contacted below the clayey silt till deposit at Borehole 21BH-26 location, at a depth of 4.7m from grade. The sand and gravel deposit contained trace silt to clayey silt. Borehole 21BH-26 was terminated in the sand and gravel deposit at a depth of 6.4m from grade.

Based on the Standard Penetration N-values of 46 to more than 100 blows per 0.3m penetration, the relative density of the sand and gravel deposit was dense to very dense. The in-situ moisture content of the soil samples retrieved from this deposit ranged from 7% to 8%, indicating wet conditions.

4.6 Shale Bedrock

Shale bedrock was contacted below the clayey / sandy silt till deposit at depths of 11.5m and 9.6m from grade at Boreholes 23BH-3 and 23BH-4 locations, respectively, where refusal of augering was encountered.

Below the auger refusal depths of 11.5m and 9.6m from grade at Boreholes 23BH-3 and 23BH-4 locations, 8.3m (27.17ft) and 1.0m (3.17ft) long rock cores were obtained, respectively, to determine the quality of the bedrock. An inspection of the rock cores, indicated that the shale bedrock quality, within the cored depths, was very poor to good, generally poor to fair, based on RQD values, varying from 15% to 89%, and Recovery of 98% to 100%. Occasional layers of limestone were also observed within the shale bedrock. Boreholes 23BH-3 and 23BH-4 were terminated in the rock coring at depths of 19.8m and 10.6m from grade, respectively.

4.7 Ground Water

Upon the completion of borehole drilling, free water was recorded in the open boreholes at 21BH-6, 21BH-14 to 21BH-17, 21BH-19 to 21BH-24, 21BH-26, 23BH-4 to 23BH-6 and 23BH-10, at depths of 0.8m to 9.4m from grade; with wet cave-in in the open boreholes at 21BH-19 to 21BH-21, 21BH-26, 23BH-4, 23BH-6 to 23BH-9 and 23BH-12, at depths of 4.6m to 6.1m from grade. Water flowing out in the open borehole 21BH-8 was due to hitting a probable underground irrigation pipe. No free water was contacted in the remaining boreholes throughout the investigation.

Based on the field records and the moisture content profiles of soil samples, as shown on the appended borehole logs, it is our opinion that the depths of free water or cave-in represent local water in sand / silty sand / silt layers or seams within the clayey silt and clayey / sandy silt till deposits, and water in the sand and gravel deposit at Borehole 21BH-26 location. It is our opinion that there is no continuous groundwater table within the depth of investigation.

Additional groundwater monitoring will be conducted as part of the Hydrogeological Study, to determine the seasonal fluctuations. Reference should, therefore, be made to the Hydrogeological Report for further details regarding the groundwater table / groundwater quality at the Site.

5.0 RECOMMENDATIONS

We understand that the proposed development at the Site will consist of an industrial subdivision, with a number of building blocks, streets and the associated facilities, designated as Tullamore Lands.

A review of Preliminary Grading Plan – North & South, Drawing Nos.: C102 & C102A, prepared by Crozier Consulting Engineers, dated October 27, 2023 (Revision 2A), provided to our office by the client, indicated that the development at the Site will consist of seven building blocks (1 to 5, 7 & 8) without basements and three streets (A, B & C). The finished floor elevations (FFE) of the building blocks, the finished grade (FG) of the street and their relevant boreholes data were listed below:

Building Block

Block ID	FFE (m)	BH ID	BH Ele. (m)	Cut - / Fill (m)	Block ID	FFE (m)	BH ID	BH Ele. (m)	Cut - / Fill (m)
1	246.05	21BH-12	246.22	-0.17	5	243.60	21BH-17	240.60	3.00
		21BH-14	246.16	-0.11			21BH-33	238.48	5.12
		21BH-15	242.04	4.02			21BH-34	240.59	3.01
		21BH-16	239.92	6.13			21BH-35	238.65	4.95
		21BH-22	242.39	3.66	7	253.00	23BH-1	252.00	1.00
		21BH-21	246.75	-0.70			23BH-3	252.34	0.66
		21BH-23	247.76	-1.71			23BH-8	250.81	2.19
2	242.50	21BH-11	240.78	1.72			23BH-9	254.65	-1.65
		21BH-10	243.38	-0.88			23BH-10	253.10	-0.10
3	250.00	21BH-20	245.32	4.68	8	251.50	23BH-2	246.13	5.37
		21BH-24	245.18	4.82			23BH-4	252.79	-1.29
		21BH-26	246.49	3.51			23BH-6	247.39	4.11
		21BH-7	249.10	0.90			23BH-11	249.63	1.87
4	245.10	21BH-19	242.70	2.40			23BH-12	249.13	2.37
		21BH-27	243.66	1.44	---	---	---	---	---
		21BH-28	243.82	1.28	---	---	---	---	---
		21BH-29	243.27	1.83	---	---	---	---	---

Street

Street ID	FG (m)	BH ID	BH Ele (m)	Cut - / Fill (m)	Street ID	FFE (m)	BH ID	BH Ele (m)	Cut - / Fill (m)
A	242.50	21BH-18	240.63	1.87	B	234.98	21BH-5	237.16	-2.18
	242.40	21BH-32	242.16	0.24		235.99	21BH-4	238.67	-2.68
	242.25	21BH-31	241.93	0.32		238.53	21BH-7	240.17	-1.64
	240.65	21BH-30	240.55	0.10		242.40	21BH-17	240.60	1.80
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---	---	---	---	---		244.60	21BH-19	242.70	1.90
---	---	---	---	---		245.74	21BH-20	245.32	0.42

Based on the above data, a cut and fill operation is anticipated at the Site in the range of cut 2.7m to fill 6.1m from the existing grade at the borehole locations. The cut and fill range could be more between and beyond the borehole locations, and depends on the details of the development and the final gradient of the Site.

Additional boreholes will be required when the details of the development are finalized, particularly in the building blocks.

Based on the subsoil data obtained at the borehole locations, our recommendations are as follows:

5.1 Site Preparation

The soil description and depth of fill shown on the Borehole Logs are specific depths at the borehole locations only. The thickness of topsoil and the depth of fill at locations beyond the boreholes may be thicker or deeper, especially in the location of previous excavations. We recommend that the contractor bidding for the job should determine the depths of deleterious material by test pits and allow for removal of any deleterious fill and material, with high moisture and/or organic content, during the site preparation for site grading.

Depending on the final grades, the Site may have to be regraded with a cut and fill operation. The on-site excavated fill and/or native soils, to be used for site grading, should be organic free and maintained at or close to its optimum moisture content during placement and compaction. The new fill should be compacted in lifts of 200mm to at least 98% of its Standard Proctor maximum dry density (SPMDD).

At locations deep depths of fill were encountered during the investigation and might be revealed during the site grading, the building pad preparation should include removal of the existing fill and any compressible topsoil and deleterious material, where encountered, and backfilling within the building pad areas with selected on-site material, free of organics, or pre-approved material, to the subgrade level. The backfill within the building pad areas should be placed and compacted in 200mm lifts to at least 100% of its Standard Proctor maximum dry density, according to the Guidelines of Engineered Fill, as attached in Appendix A.

Compressible topsoil and fill material containing relatively high organic content will not be suitable for reuse in areas where future settlement cannot be tolerated. This material will have to be disposed off-site or reused in landscaped areas, subject to approval by the landscape architect.

Any new fill at the site should consist of organic free material, placed in lifts of 200 to 300mm and compacted to at least 98% of its Standard Proctor maximum dry density (SPMDD).

5.2 Pipe Bedding

Based on the borehole information, the subsoil at service trench inverts may consist of fill, clayey silt, silt till, or silty sand / sand / silt deposits. Any unstable fill material at the trench invert should be sub-excavated and replaced with a granular material, compacted in lifts to the invert level to 98% of its SPMDD.

The pipe bedding for underground services, including catch basins and manholes, should consist of OPSS Granular A, 20mm crusher run limestone, or equivalent, compacted to 98% of its Standard Proctor maximum dry density (SPMDD). If free water is encountered in the trenches, from saturated silty sand / sand / silt layers, the bedding in the service trenches may consist of HL6 stone or equivalent, provided that a geotextile filter fabric (Terrafix 270R or equivalent) is used to separate the stone bedding from the base and the sides of the excavation. The geotextile filter fabric must surround the clear stone bedding completely.

5.3 Foundation Design

The existing fill is not competent to support building foundations. The proposed building foundations will have to extend through the fill and founded in the underlying native soil deposits. Conventional spread/strip footings founded in the native clayey silt and clayey /sandy silt till deposits below the fill, at a minimum depth of 1.2m from finished outside grade, can be designed for the bearing pressures:

- Factored Ultimate Limit State: 240 kPa
- Serviceability Limit State: 150 kPa

The total and differential settlement of footings, founded in the native undisturbed soil with the designed bearing pressures at the Serviceability Limit State, as recommended above, will not exceed 25 mm and 20mm respectively.

The existing fill in the proposed building areas should be removed and replaced with selected on-site organic free material, compacted in lifts not exceeding 200mm, in accordance with the engineered fill requirement. Conventional spread/strip footings founded in the engineered fill can be designed for the bearing pressures:

- Factored Ultimate Limit State: 240 kPa
- Serviceability Limit State: 150 kPa

Based on a review of the site regrading plan, it appears that major portions of Block 1 (Boreholes 21BH-15, 21BH-16 and 21BH-22), Block 3 (Boreholes 21BH-20, 21BH-24 and 21BH-26), Block 5 (Boreholes 21BH-33, 21BH-34 and 21BH-35) and Block 8 (Boreholes 23BH-2 and 23BH-6), will be uplifted by more than 3m of engineered fill. We recommend that building construction on these blocks be deferred for a period of at least one year, after completion of engineered fill operation, to let the fill and the underlying stiff soil deposits to consolidate under the imposed load of the engineered fill.

Footings founded in engineered fill should be reinforced with at least 2 x 15M bars continuously. Consequently, the foundation walls on engineered fill should be reinforced with 2 x 15M bars at the top of the walls.

It should be noted that the recommendations for footings have been analysed by ***Toronto Inspection Ltd.*** from the information obtained at the borehole location. Further borehole investigation is necessary after the locations of the proposed

buildings are finalised. In addition, the bearing material, the interpretation between the boreholes and the recommendations of this report must be checked through field inspection provided by ***Toronto Inspection Ltd***. to validate the information for use during the construction stage.

5.4 Lateral Earth Pressure

Where subsurface walls, or retaining walls, will retain unbalanced earth loads, the lateral soil pressure may be computed using the following expression:

$$p = K (\gamma H + q)$$

where	p = lateral earth pressure	(kPa)
	K = lateral earth pressure coefficient	0.4
	γ = bulk unit weight of backfill	21.0 kN/m^3
	H= depth of wall below the finished grade	(m)
	q = surcharge loads adjacent to the walls	(kPa)

This expression assumes that a permanent free drainage system is provided to prevent a build up of hydrostatic pressure next to the wall.

The drainage system should include a free-draining granular backfill or a drainage membrane placed against the concrete wall, together with an effective perimeter weeping tile drainage system at the wall base. The weeping tile should consist of a minimum 100mm diameter perforated pipe, surrounded by a geotextile filter fabric (OPSS 405) and installed on a positive grade leading to a frost free sump or outlet.

5.5 Slab Construction

If the existing fill will be left in place for supporting a slab-on-grade, long term settlement will occur. We, therefore, recommend that all fill, within the building areas, should be completely removed. Selected on-site material, free of organics, may be reused and re-compacted in place for supporting the slab-on-grade. The selected fill should be compacted in 200mm lifts to at least 100% of its Standard Proctor maximum dry density, to the standard of the engineered fill.

A minimum of 150 mm thick layer of 19mm OPSS Granular A, or equivalent, is recommended as a moisture barrier below the floor slab.

A modulus of subgrade reaction of 20 MN/m3 is recommended for the design of the slab-on-grade on the native deposits and engineered fill.

5.6 Earthquake Consideration

The 2006 Ontario Building Code requires that all buildings be designed to resist earthquake forces. In accordance with Table 4.1.8.4.A of the Ontario Building Code, the site classification for the Seismic Site Response is Class D (stiff soils).

The acceleration and velocity based site coefficients, Fa and Fv, should conform to Tables 4.1.8.4.B and 4.1.8.4.C. of the Ontario Building Code. These values should be reviewed by the Structural Engineer.

5.7 Excavation and Backfilling

All excavations should comply with the Ontario Occupational Health and Safety Act. Any excavation deeper than 1.2m should be sloped back to a safe angle of around 45°. A flatter slope will be required for excavation in silty and / sand / silt and saturated soils.

No groundwater problems are anticipated for excavation of foundations and sewers. Groundwater seepage from wet sand layers or seams will be minor which can be handled by pumping from filtered sumps, as necessary. However, if the excavation is into the sand and gravel deposit, at a depth of 4.7m from grade, at Borehole 21BH-26 location, temporary de-watering may be required for the sewer installation, which can be decided during construction.

The on site excavated material, separated from topsoil and organics, can be reused for site grading and trench backfill. In order to achieve the specified degree of compaction, drying of the on-site material may be required prior to placement and compaction. Therefore, it is recommended that the excavation and backfilling process should be conducted in the dry and frost free seasons.

Any unsuitable fill, such as topsoil and other compressible fill, may be reused in landscape areas, subject to the approval of the landscape architect.

Backfill around catch basins, manholes and narrow trenches should consist of imported granular material, and should be compacted using a medium or light vibratory equipment.

5.8 Pavement Construction

The existing on-site material contains a mixture of clay and silt with sand, and is frost susceptible. The following pavement design is recommended based on the assumption that perforated sub-drains will be installed to prevent buildup of water in the granular bases of the pavement:

		Light Duty Parking Lot	Heavy Duty Fire Route
Asphaltic Concrete	OPSS HL3 or equivalent	65mm	40mm
	OPSS HL8 or equivalent	-	60mm
Base:	OPSS Granular A or 20mm crusher-run	150mm	150mm
Sub-base:	OPSS Granular B or 50mm crusher-run	300mm	450mm

Roads and driveways to be assumed by the local municipality should be constructed to the municipal standards.

The granular base and sub-base should be compacted to a minimum of 100% SPMDD. Asphaltic concrete should be compacted to at least 96% Marshall density.

The above pavement thicknesses are based on favourable site conditions and the construction being carried out during the drier time of the year, that the subgrade is stable, not heaving under construction traffic. If the subgrade is wet and unstable, additional thickness of sub-base material will be required.

Following site grading, the subgrade of the entire pavement should be proof-rolled using a heavy vibratory roller. Any soft spots revealed by the proof-rolling should be sub-excavated and replaced with approved dry material and compacted to at least 98% of the Standard Proctor maximum dry density (SPMDD) to the subgrade level.

Continuous perforated, OPSS 405, longitudinal drains, minimum diameter of 100mm, should be used as sub-drains, on both sides of the roadways. The sub-drains should be installed on a positive gradient towards the outlets (collecting into catch basins), at a minimum depth of 800mm below the pavement level, to allow for a free flow of water. The backfill above the drains should comprise of free draining Granular B or its equivalent and should be continuous with the granular sub-base of the pavement. This will help in draining the pavement structure and minimize the differential heave of the pavement.

6.0 GENERAL STATEMENT OF LIMITATION

The comments and recommendations presented in this report are based on the subsoil and ground water conditions encountered at the borehole locations, indicated in the borehole location plan, and are intended for the guidance of the design engineer. Although we consider this report to be representative of the subsurface conditions at the subject property, the soil and the ground water conditions between and beyond the borehole locations may differ from those encountered at the time of our investigation and may become apparent during construction. Any contractor bidding on, or undertaking the works, should decide on their own investigation and interpretations of the groundwater and the soil conditions between the borehole locations.

Any use and/or the interpretation of the data presented in this report, and any decisions made on it by the third party are responsibility of the third parties. The responsibility of ***Toronto Inspection Ltd.*** is limited to the accurate interpretation of the soil and ground water conditions prevailing in the locations investigated and accepts no responsibility for the loss of time and damages, if any, suffered by the third party as a result of decisions or actions based on this report.

Any legal actions arising directly or indirectly from this work and/or ***Toronto Inspection Ltd.'s*** performance of the services shall be filed no longer than two years from the date of ***Toronto Inspection Ltd.'s*** substantial completion of the services. ***Toronto Inspection Ltd.*** shall not be responsible to the client for lost revenues, loss of profits, cost of content, claims of customers, or other special indirect, consequential or punitive damages.

To the fullest extent permitted by law, the client's maximum aggregate recovery against ***Toronto Inspection Ltd.***, its directors, employees, sub-contractors and representatives, for any and all claims by clients for all causes including, but not limited to, claims of breach of contract, breach of warranty and /or negligence, shall be the amount of the fee paid to ***Toronto Inspection Ltd.*** for its professional services rendered under the agreement with respect to the particular site which is the subject of the claim by the client.

Yours very truly,
TORONTO INSPECTION LTD.

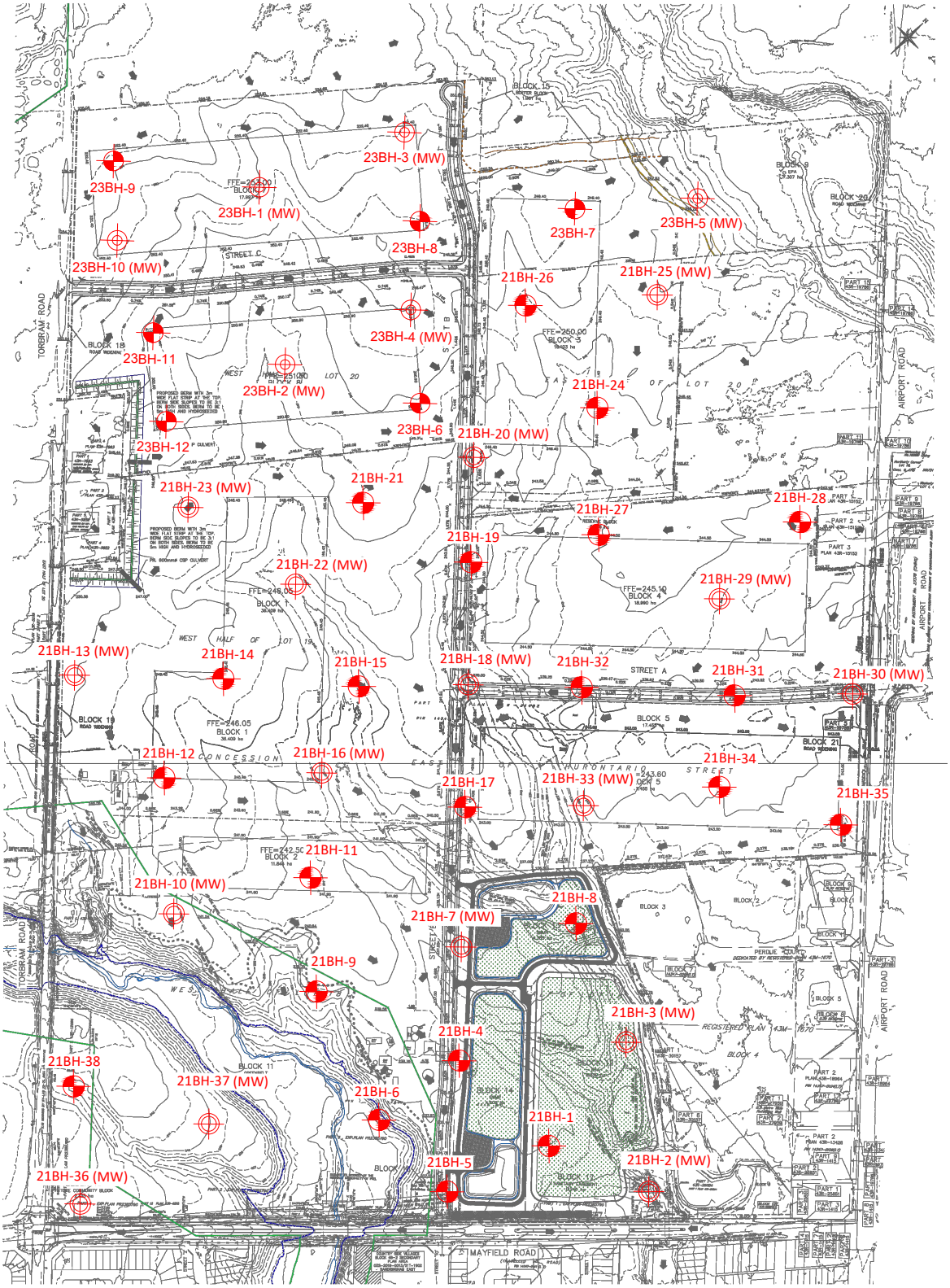
David S. Wang, P.Eng.
Senior Engineer

Upkar S. Sappal, P. Eng.
Principal Engineer

Toronto Inspection Ltd.

Drawings

Borehole Location Plan
Borehole Logs



LEGEND:

Borehole and Monitoring Well Location
(21BH-1 to 21BH-38, Drilled in May and June 2021)
(23BH-1 to 23BH-12, Drilled in May and June 2023)

NOT TO SCALE

TorontoInspection LTD.
GEO-ENVIRONMENTAL CONSULTANTS
110 Konrad Crescent, Unit 16, Markham, Ontario L3R 9X2
Tel: 905-940 8509 Fax: 905-940 8192
Email : TIL@torontoinspection.com

TITLE:	Borehole and Monitoring Well Location Plan (Tullamore Lands)
LOCATION:	Airport Road and Mayfield Road, Caledon, Ontario
PROJECT NO.: 5552-21-GB	DATE : October 2023
DRAWING NO. 1	

Project No. 5552-21-GB

Log of Borehole 21BH-01

Dwg No. 2

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

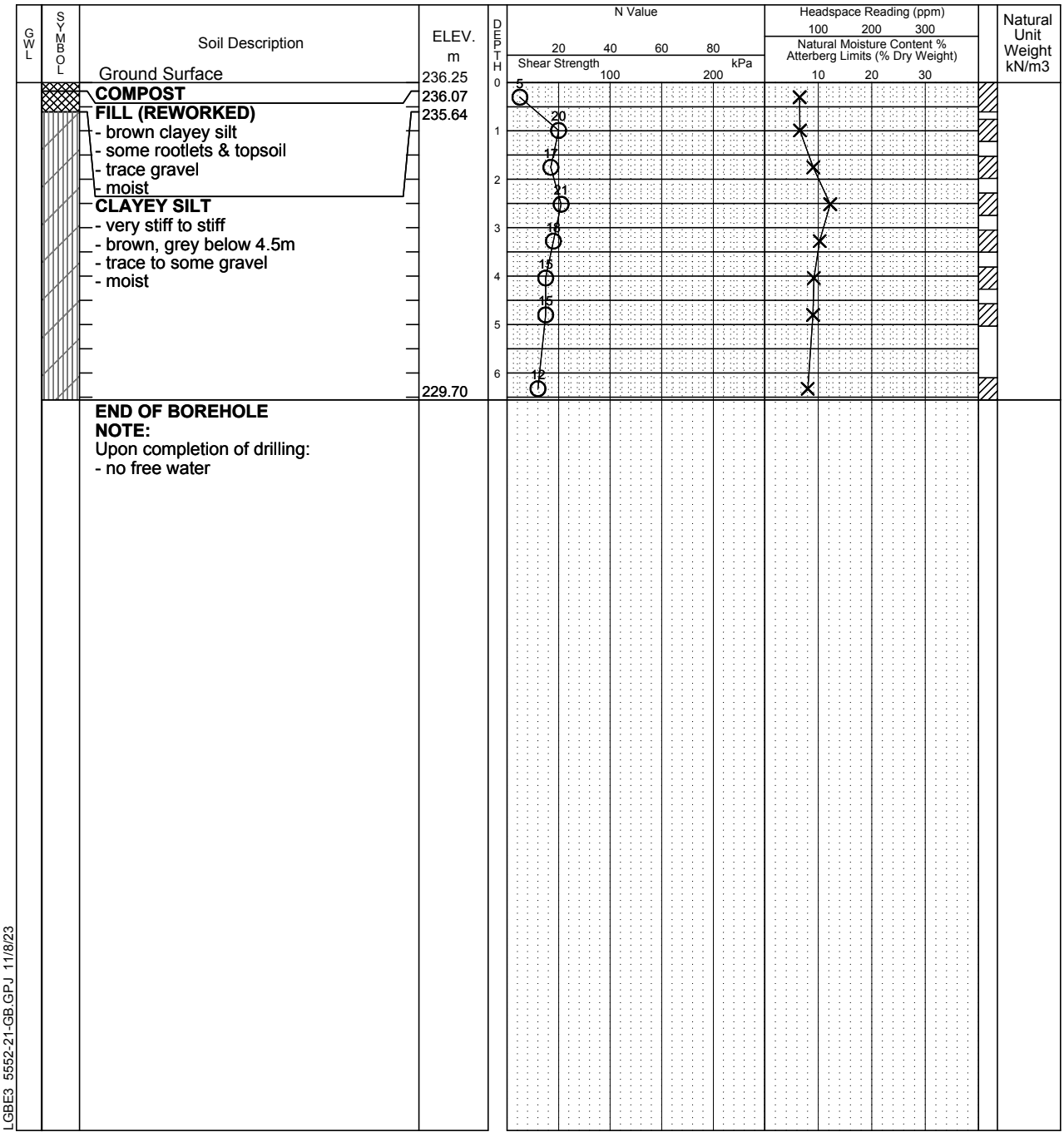
Date Drilled: 5/21/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-02 (MW)

Dwg No. 3

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

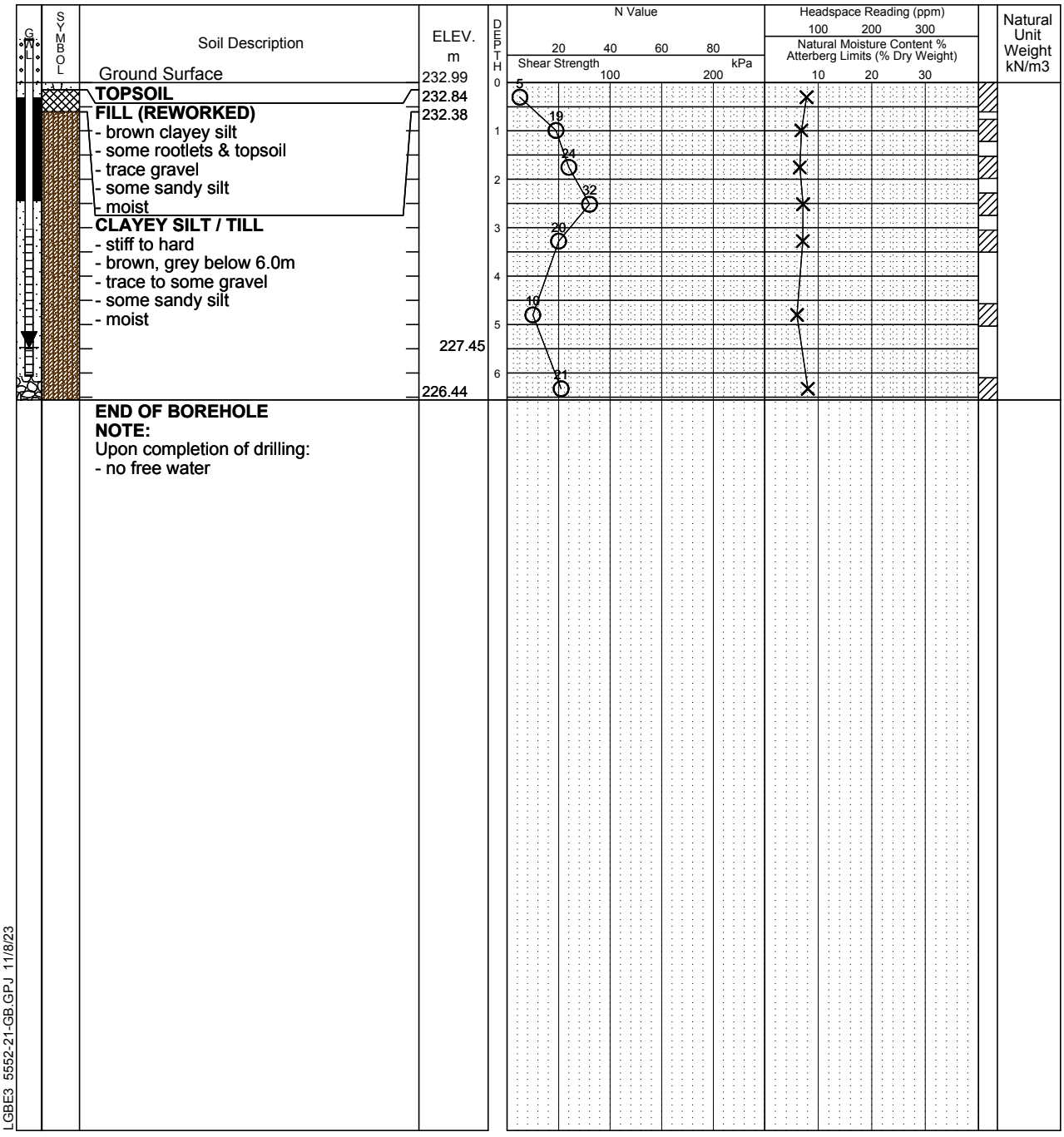
Date Drilled: 5/21/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 3, 2021	5.54m	

Project No. 5552-21-GB

Log of Borehole 21BH-03 (MW)

Dwg No. 4

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

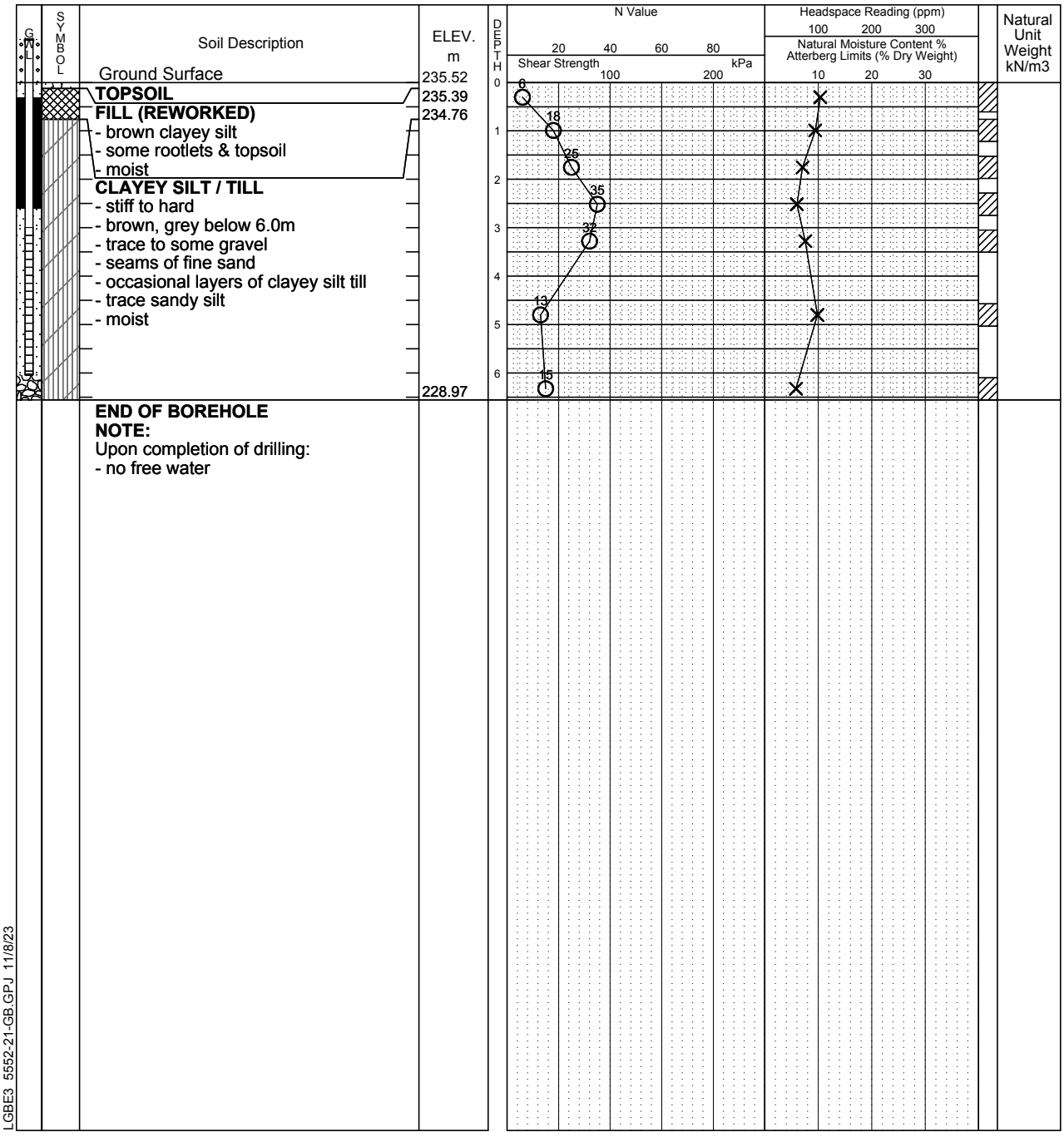
Date Drilled: 5/21/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 3, 2021	Dry	

Project No. 5552-21-GB

Log of Borehole 21BH-04

Dwg No. 5

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

Date Drilled: 5/21/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer

GWL	SYMBOL	Soil Description	ELEV. m	DEPTH
		Ground Surface	238.67	0
		TOPSOIL	238.62	
		FILL (REWORKED)	238.06	
		- brown clayey silt		
		- trace to some rootlets & topsoil		
		- moist to very moist		
		CLAYEY SILT / TILL		
		- stiff to very stiff		
		- brown, grey below 6.0m		
		- trace gravel, trace sand		
		- seams of fine sand		
		- moist		
			232.11	6
		END OF BOREHOLE		
		NOTE:		
		Upon completion of drilling:		
		- no free water		

N Value: 4, 12, 22, 22, 11, 12, 16

Shear Strength: 20 40 60 80 kPa; 100 200

Headspace Reading (ppm): 100 200 300

Natural Moisture Content % / Atterberg Limits (% Dry Weight): 10 20 30

Natural Unit Weight kN/m3

LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-05

Dwg No. 6

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

Date Drilled: 5/25/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer

GWL	SYMBOL	Soil Description	ELEV. m	DEPTH
		Ground Surface	237.16	0
		TOPSOIL	236.96	
		FILL (REWORKED)	236.56	
		- dark brown to brown clayey silt		
		- some rootlets & topsoil		
		- some sandy silt		
		- moist		
		CLAYEY SILT		
		- stiff to hard		
		- brown, grey below 6.0m		
		- trace to some gravel		
		- trace sand, trace silty clay		
		- moist		
			230.61	6
		END OF BOREHOLE		
		NOTE:		
		Upon completion of drilling:		
		- no free water		

N Value (20 40 60 80)
Shear Strength (100 200 kPa)
Headspace Reading (ppm) (100 200 300)
Natural Moisture Content % Atterberg Limits (% Dry Weight) (10 20 30)
Natural Unit Weight kN/m3

N Value: 5, 27, 34, 29, 11, 13, 15

LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-06

Dwg No. 7

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

Date Drilled: 5/25/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer

GWL	SYMBOL	Soil Description	ELEV. m	DEPTH
		Ground Surface	277.78	0
		TOPSOIL	277.53	
		FILL (REWORKED)	277.32	
▼		- brown sandy silt - some rootlets & topsoil - trace clayey silt - moist	276.38	1
		SILTY SAND - dense to very dense - brown, grey below 1.5m - some gravel, some sandy silt - gravelly at 2.3m - possible cobbles or boulders at 3.2m - moist to very moist	274.45	2
		END OF BOREHOLE **NOTE:** Upon completion of drilling: - refusal to augering on probable cobbles or boulders - water level at 1.4m		3

N Value: 3, 29, 41, 50/50mm, 50/75mm

Shear Strength (kPa): 20, 40, 60, 80; 100, 200

Headspace Reading (ppm): 100, 200, 300

Natural Moisture Content % / Atterberg Limits (% Dry Weight): 10, 20, 30

Natural Unit Weight kN/m3

LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-07 (MW)

Dwg No. 8

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

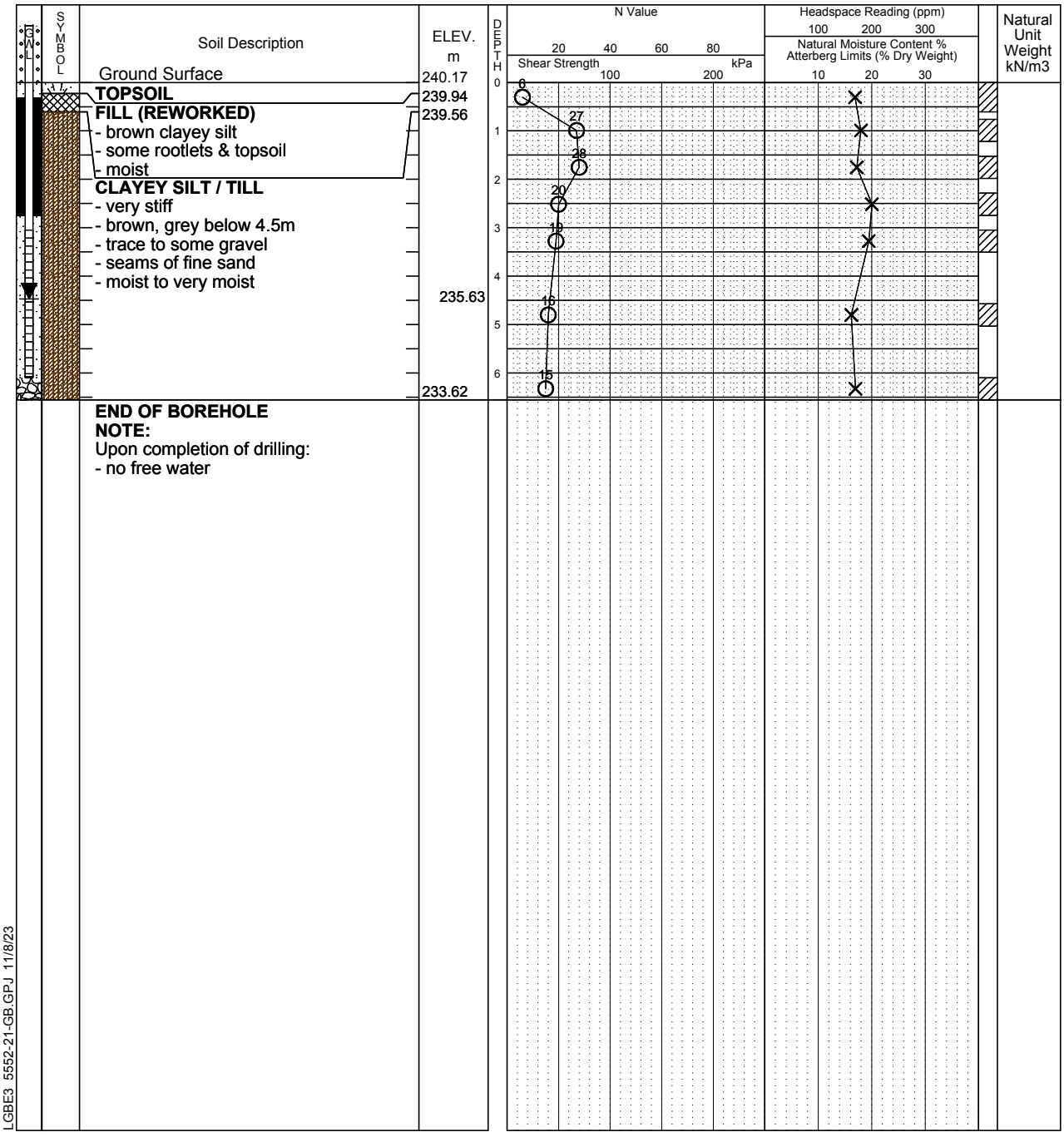
Date Drilled: 5/25/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 3, 2021	4.54m	

Project No. 5552-21-GB

Log of Borehole 21BH-08

Dwg No. 9

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

Date Drilled: 5/25/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer

GWL	SYMBOL	Soil Description	ELEV. m	DEPTH	N Value / Shear Strength kPa	Headspace Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	Natural Unit Weight kN/m3
		Ground Surface	238.39	0			
		TOPSOIL	238.39				
		FILL (REWORKED) - brown clayey silt - trace rootlets & topsoil - some sandy silt - trace gravel - pockets of organics at 4.5m & 6.0m - moist to very moist, wet layers		1 2 3 4 5 6	7 7 7 29 13 7 10		
			231.84				
		END OF BOREHOLE **NOTE:** Upon completion of drilling: - hit a 3/4" pipe at 2.3m from top of the berm - water level at 0.0m (flowing out)					

N Value: 20 40 60 80
Shear Strength: 100 200 kPa
Headspace Reading (ppm): 100 200 300
Natural Moisture Content % Atterberg Limits (% Dry Weight): 10 20 30

LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-09

Dwg No. 10

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

Date Drilled: 5/25/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer

GWL	SYMBOL	Soil Description	ELEV. m	DEPTH
		Ground Surface	239.51	0
		TOPSOIL	239.28	
		FILL (REWORKED)	238.74	
		- brown sandy silt to clayey silt		
		- some rootlets & topsoil		
		- moist		
		CLAYEY / SANDY SILT TILL		
		- soft to very stiff / compact		
		- brown, grey below 6.0m		
		- some gravel		
		- seams of fine sand		
		- moist to very moist		
			232.95	6
		END OF BOREHOLE		
		NOTE:		
		Upon completion of drilling:		
		- no free water		

N Value: 20 40 60 80
Shear Strength: 100 200 kPa
Headspace Reading (ppm): 100 200 300
Natural Moisture Content % Atterberg Limits (% Dry Weight): 10 20 30
Natural Unit Weight kN/m3

8 15 24 27 24 20 12

LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-10 (MW)

Dwg No. 11

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

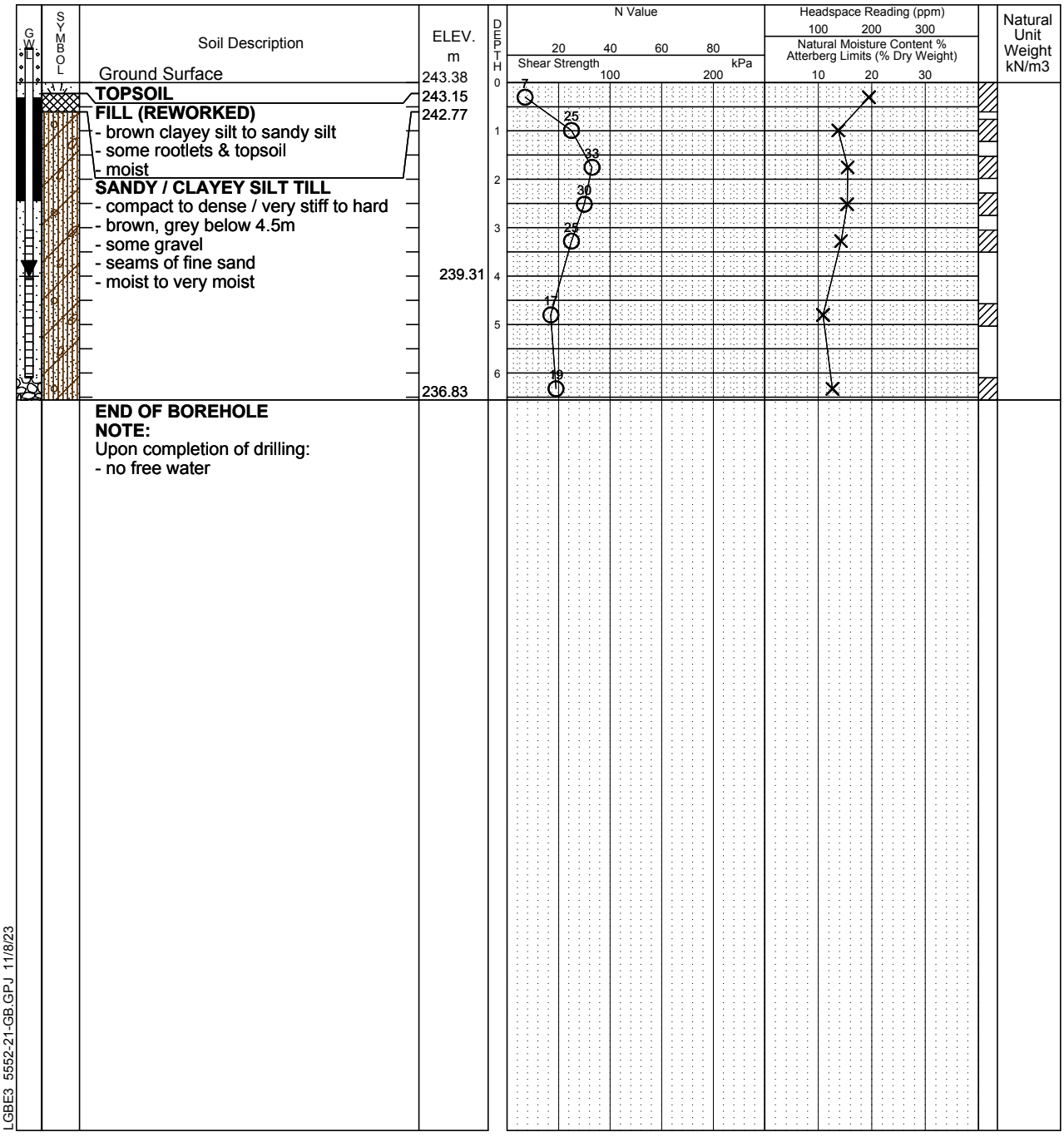
Date Drilled: 5/26/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer



END OF BOREHOLE

NOTE:
Upon completion of drilling:
- no free water

LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 3, 2021	4.07m	

Project No. 5552-21-GB

Log of Borehole 21BH-11

Dwg No. 12

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

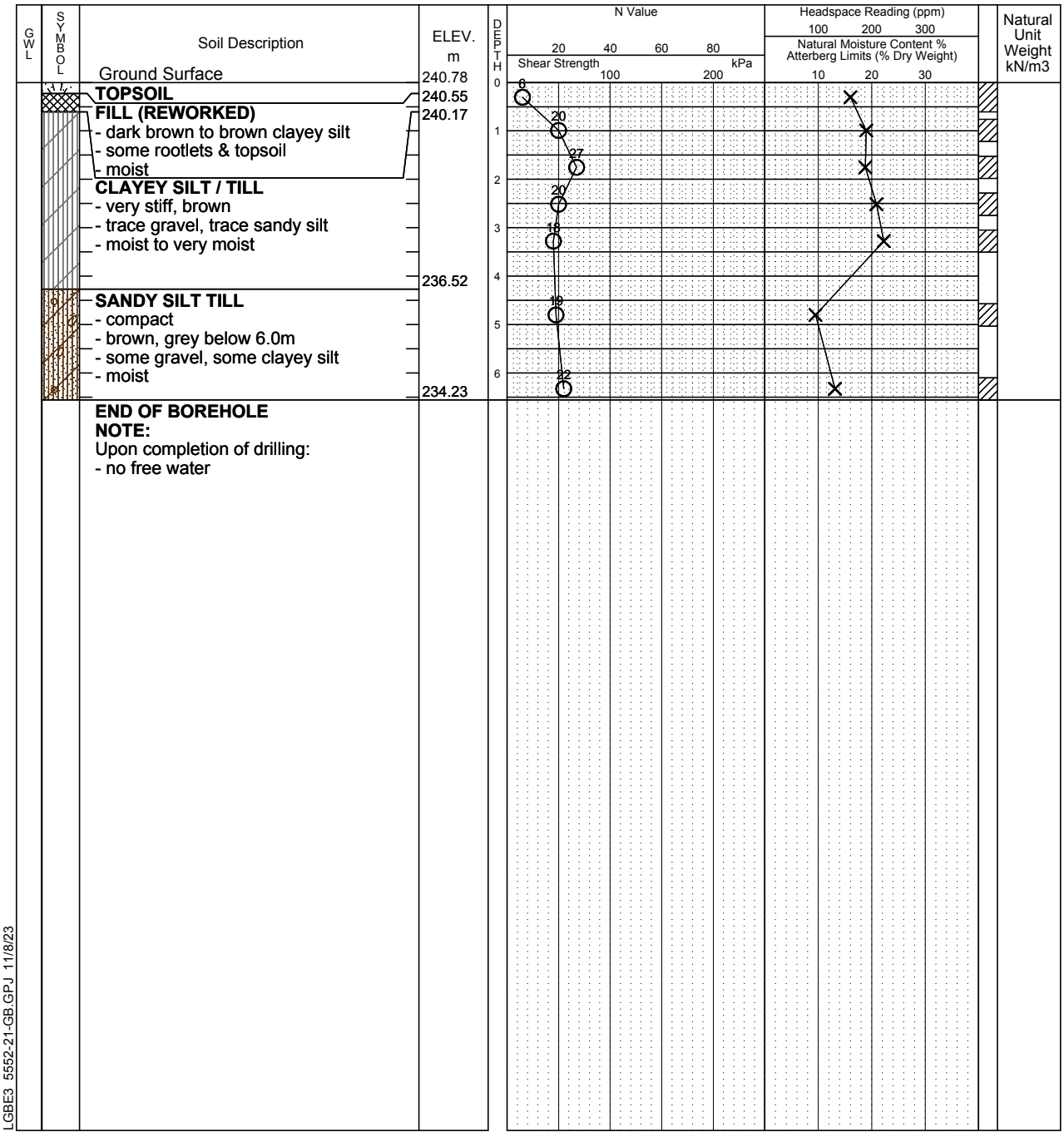
Date Drilled: 5/26/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-12

Dwg No. 13

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

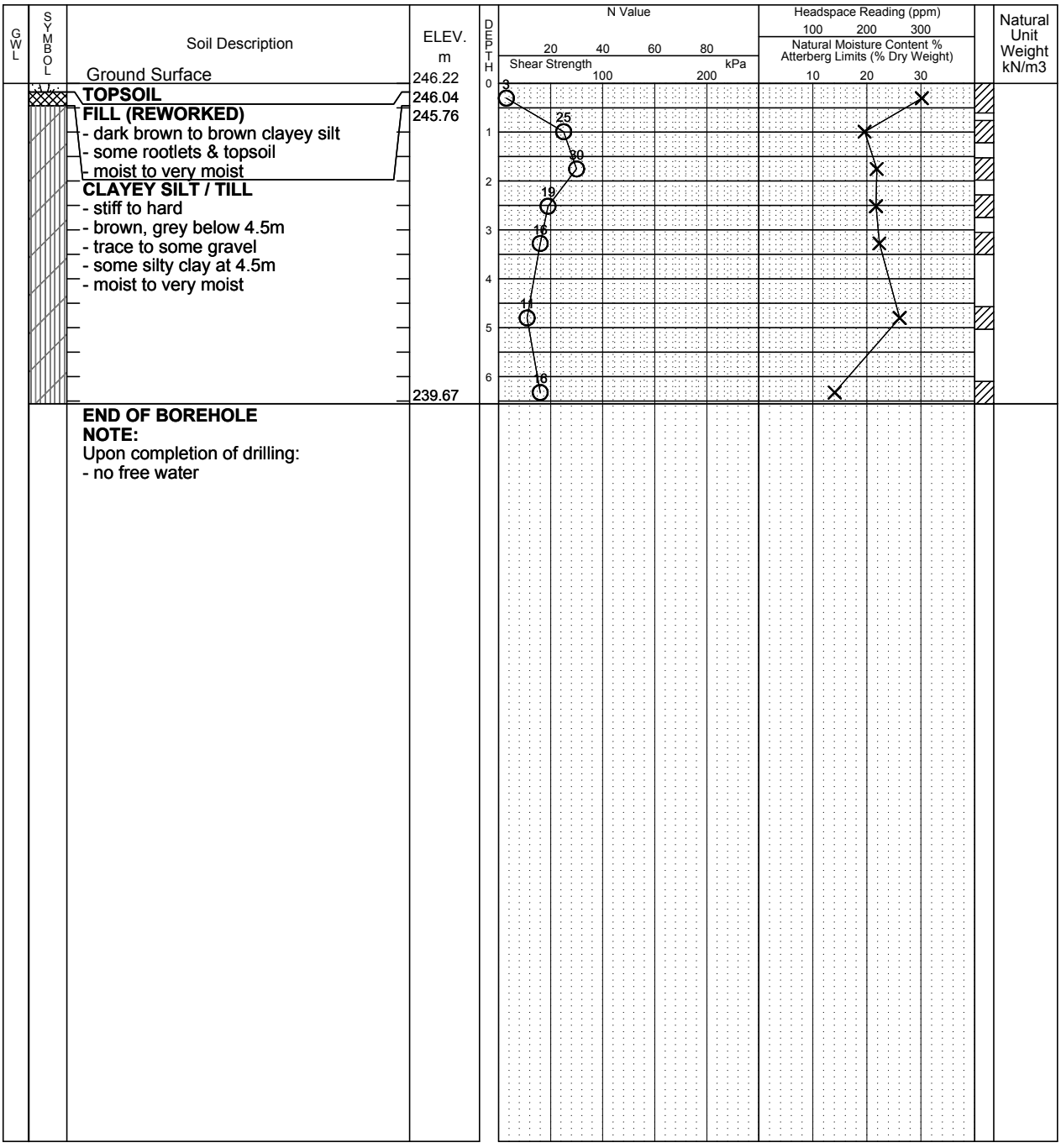
Date Drilled: 5/26/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-13 (MW)

Dwg No. 14

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

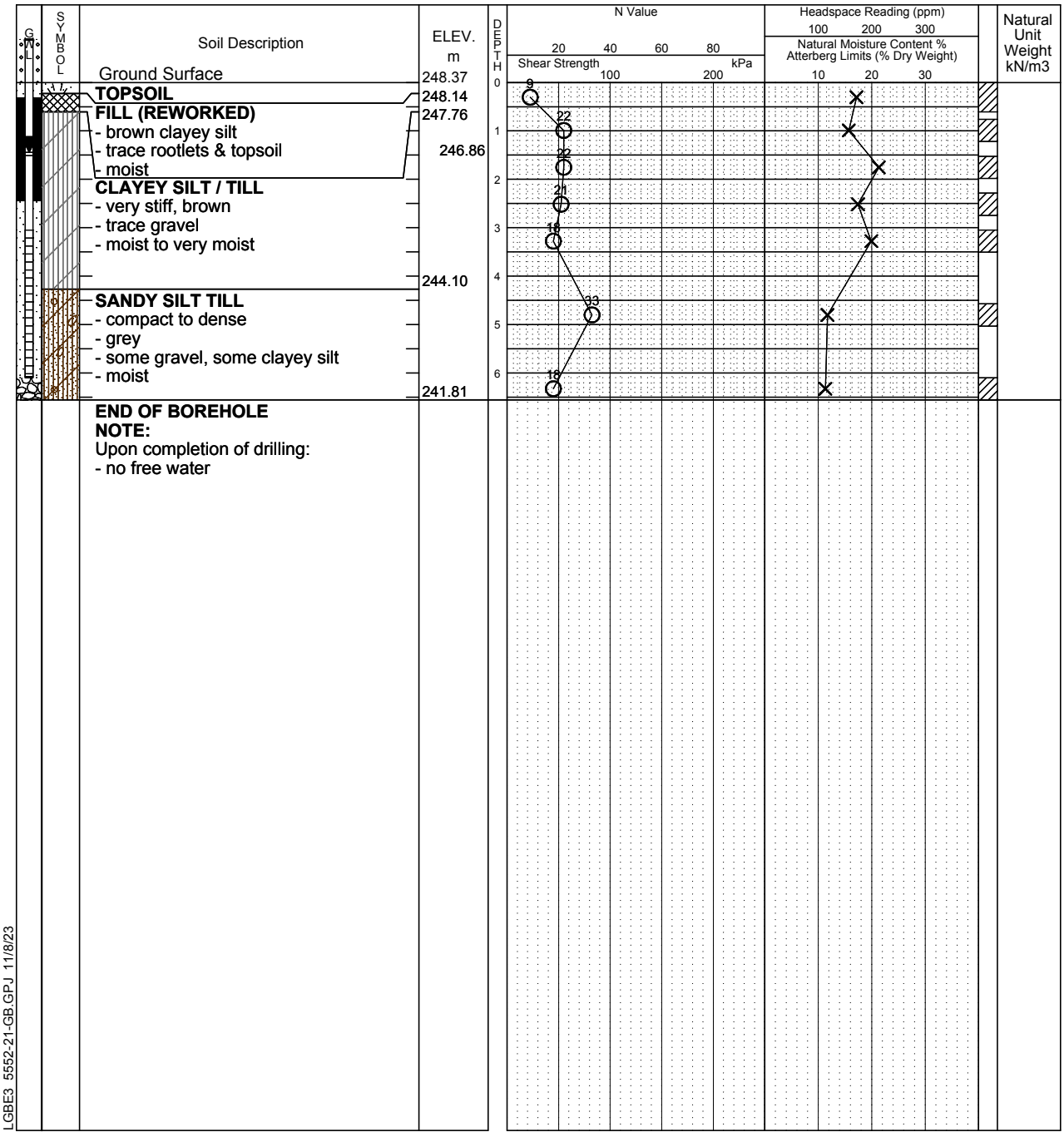
Date Drilled: 5/26/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 3, 2021	1.51m	

Project No. 5552-21-GB

Log of Borehole 21BH-14

Dwg No. 15

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

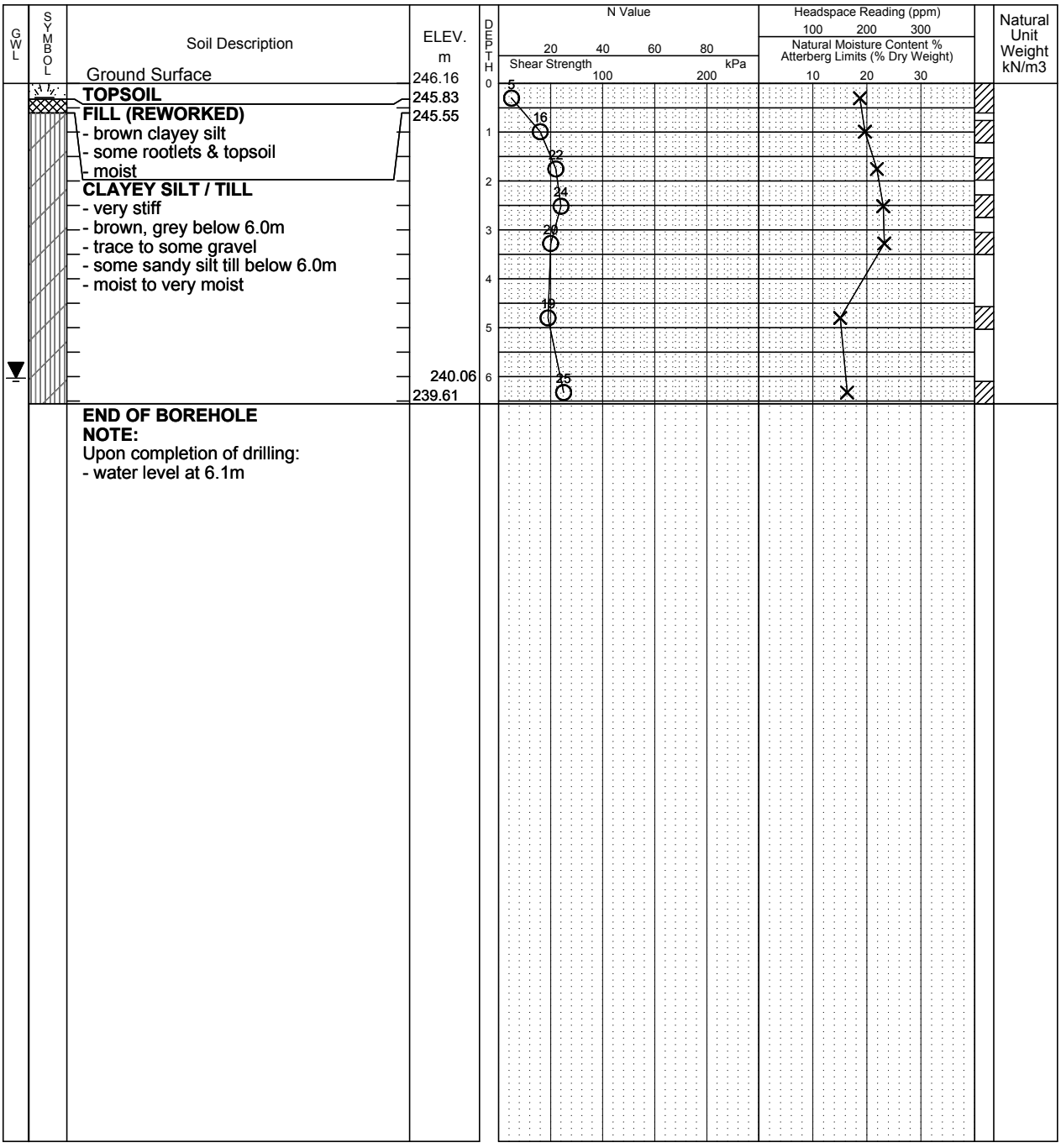
Date Drilled: 5/26/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-15

Dwg No. 16

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

Date Drilled: 5/26/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer

GWL	SYMBOL	Soil Description	ELEV. m	DEPTH
		Ground Surface	242.04	0
		TOPSOIL	241.99	
		FILL (REWORKED)	241.58	
		- brown clayey silt		
		- some rootlets & topsoil		
		- moist		
▼		**CLAYEY / SANDY SILT TILL**		1
		- very stiff to hard / compact to very dense		
		- brown, grey below 4.5m		2
		- some gravel	238.24	
		- seams of fine sand	237.72	3
		- moist to very moist		
		END OF BOREHOLE		4
		NOTE:		
		Upon completion of drilling:		
		- refusal to augering on probable cobble or boulder		
		- water level at 3.8m		

N Value: 20 40 60 80
Shear Strength: 100 200 kPa
Headspace Reading (ppm): 100 200 300
Natural Moisture Content % Atterberg Limits (% Dry Weight): 10 20 30

3
17
22
50/250mm
50/125mm
50/25mm

Natural Unit Weight kN/m3

LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-16 (MW)

Dwg No. 17

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

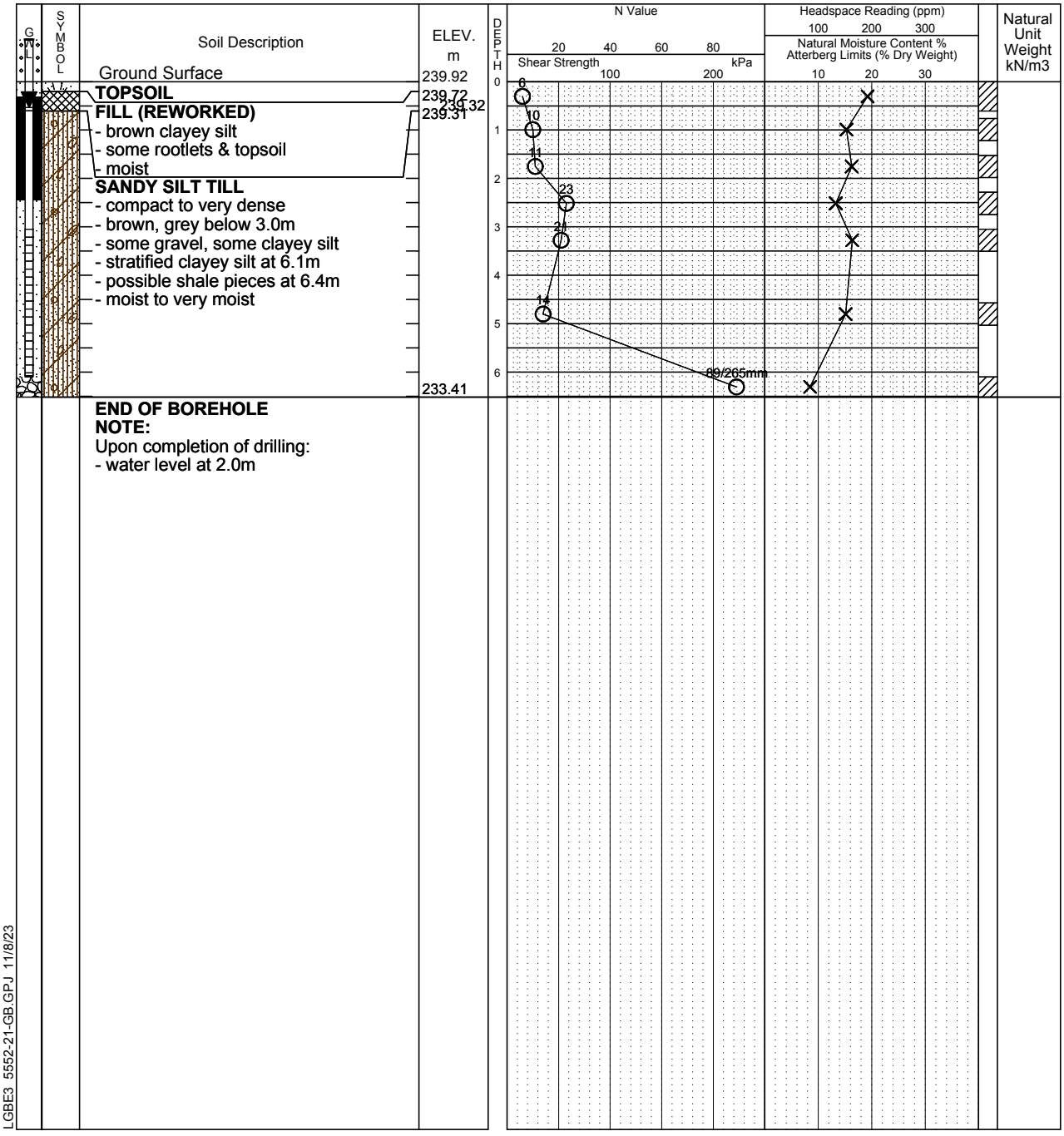
Date Drilled: 5/27/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 3, 2021	0.6m	

Project No. 5552-21-GB

Log of Borehole 21BH-17

Dwg No. 18

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

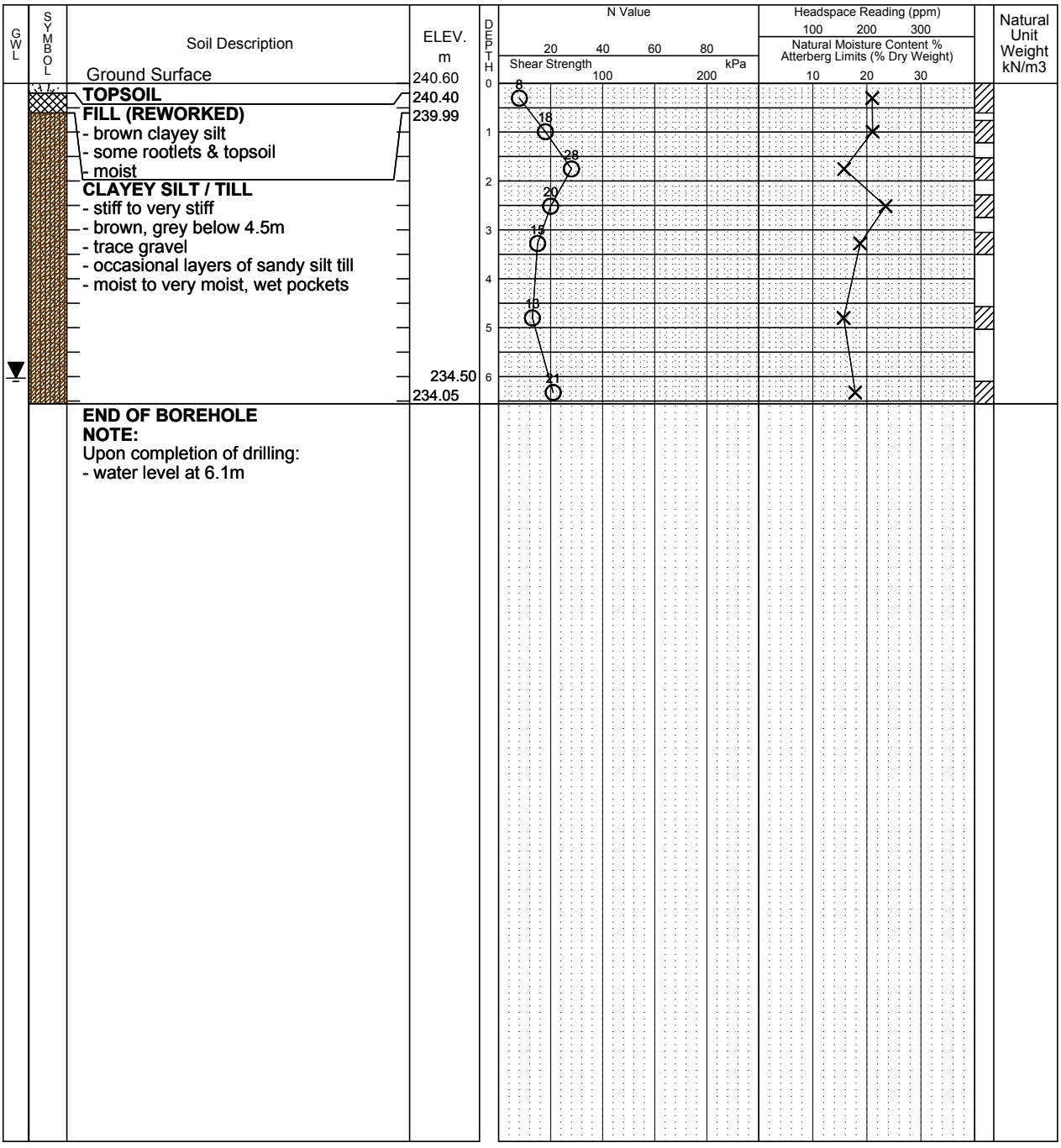
Date Drilled: 5/27/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-18 (MW)

Dwg No. 19

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

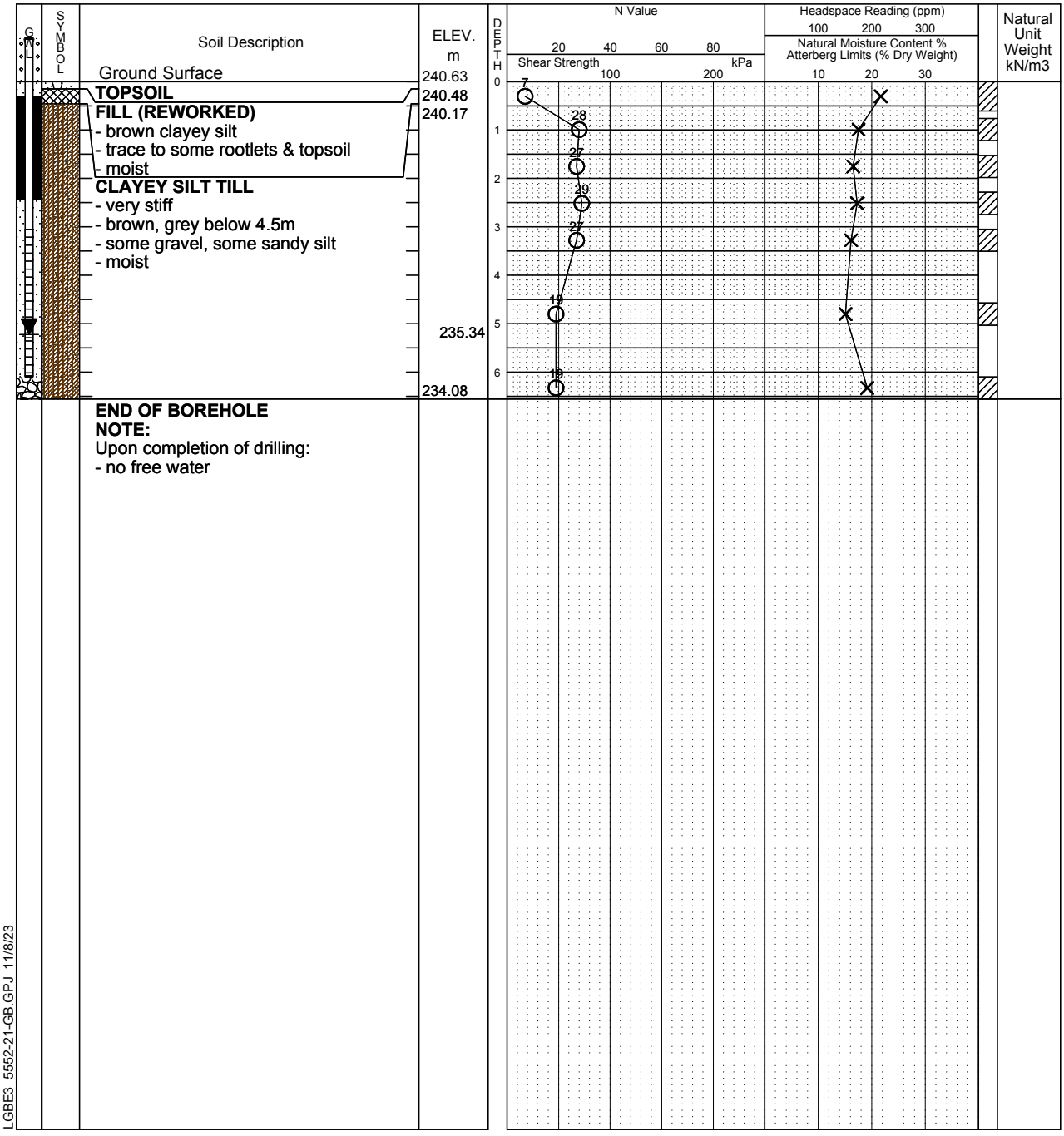
Date Drilled: 5/27/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 3, 2021	5.29m	

Project No. 5552-21-GB

Log of Borehole 21BH-19

Dwg No. 20

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

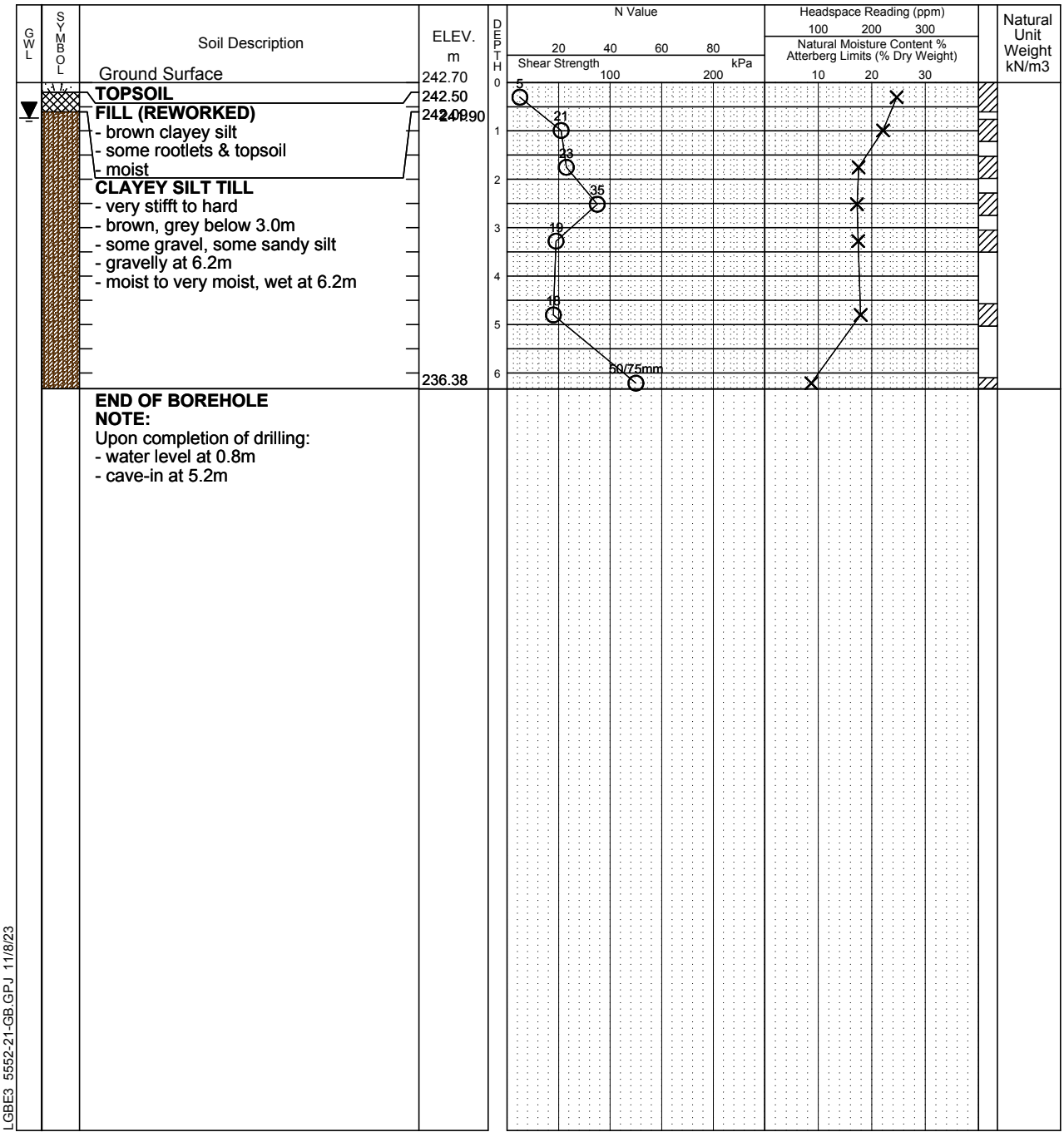
Date Drilled: 5/27/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-20 (MW)

Dwg No. 21

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

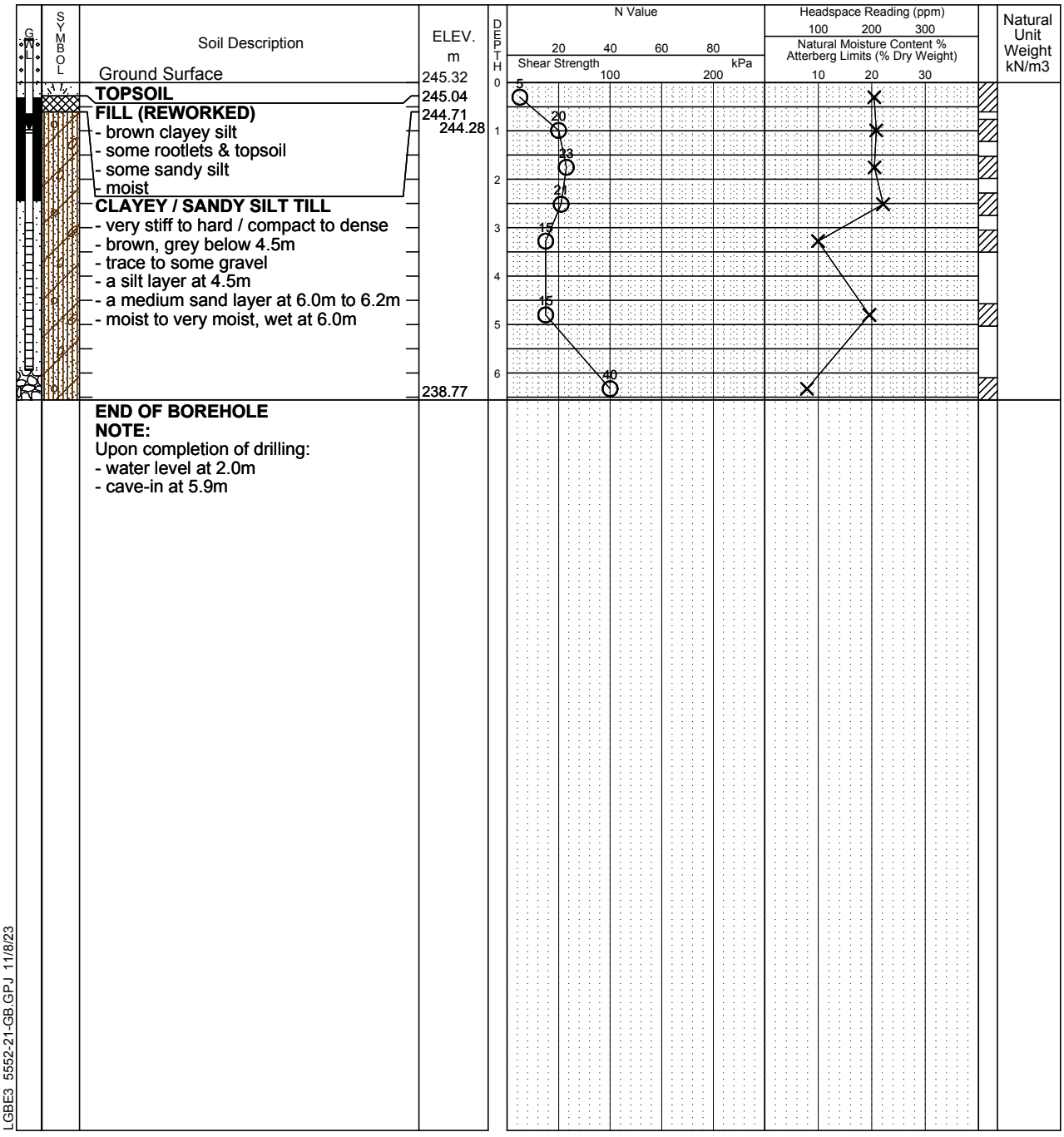
Date Drilled: 5/27/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 3, 2021	1.04m	

Project No. 5552-21-GB

Log of Borehole 21BH-21

Dwg No. 22

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

Date Drilled: 5/31/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer

GWL	SYMBOL	Soil Description	ELEV. m	DEPTH
		Ground Surface	246.75	0
		TOPSOIL	246.65	
		FILL (REWORKED)	246.14	
		- brown clayey silt		
		- some rootlets & topsoil		
		- moist		
		CLAYEY SILT TILL		
		- very stiff to hard		
		- brown, grey below 4.5m		
		- some gravel, some sandy silt		
		- a silt layer at 4.5m		
▼		- seams of fine sand		
		- some sand with gravel at 6.0m	242.35	
		- moist to very moist, wet at 6.0m		
			240.51	6
		END OF BOREHOLE		
		NOTE:		
		Upon completion of drilling:		
		- water level at 4.4m		
		- cave-in at 5.5m		

N Value: 20 40 60 80
Shear Strength: 100 200 kPa
Headspace Reading (ppm): 100 200 300
Natural Moisture Content % / Atterberg Limits (% Dry Weight): 10 20 30

7
15
21
30
39
29
50/140mm

Natural Unit Weight kN/m3

LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-22 (MW)

Dwg No. 23

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

Date Drilled: 5/31/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer

SOIL SYMBOL	Soil Description	ELEV. m	DEPTH
	Ground Surface	242.39	0
	TOPSOIL	241.42	
	FILL (REWORKED) - brown sandy silt to clayey silt - some rootlets & topsoil to 1.2m - brown clayey silt with gravel below 1.2m - gravelly at 2.3m - possible cobble or boulder at 2.3m - moist to very moist, wet pockets	241.21	1
	END OF BOREHOLE **NOTE:** Upon completion of drilling: - refusal to augering at 2.4m on probable boulders - water level at 2.3m	239.95	2

N Value: 3, 6, 27, 50/75mm

Shear Strength (kPa): 20, 40, 60, 80; 100, 200

Headspace Reading (ppm): 100, 200, 300

Natural Moisture Content % / Atterberg Limits (% Dry Weight): 10, 20, 30; 44

Natural Unit Weight kN/m3

LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 3, 2021	1.18m	

Project No. 5552-21-GB

Log of Borehole 21BH-23 (MW)

Dwg No. 24

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

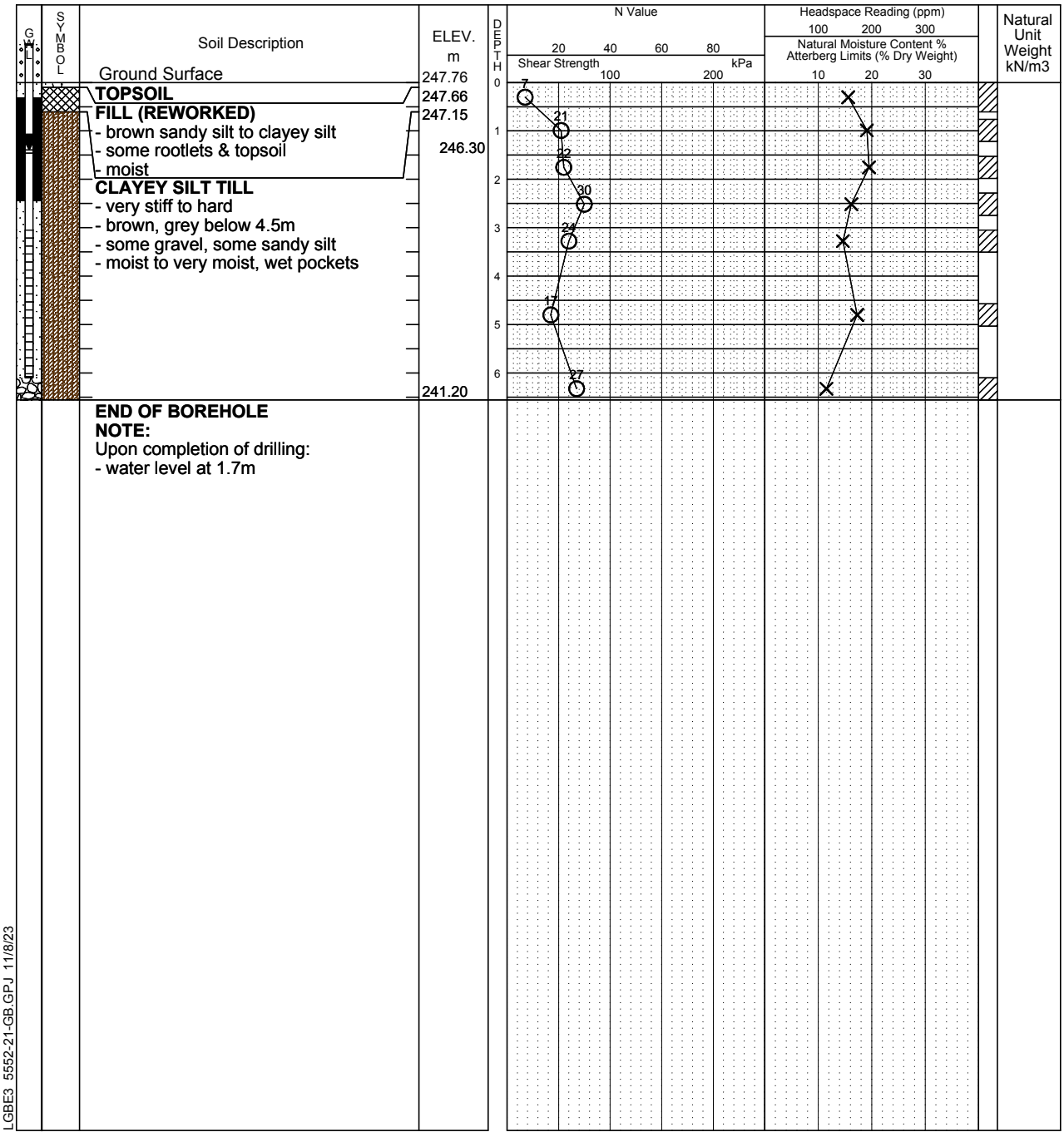
Date Drilled: 5/31/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 3, 2021	1.46m	

Project No. 5552-21-GB

Log of Borehole 21BH-24

Dwg No. 25

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

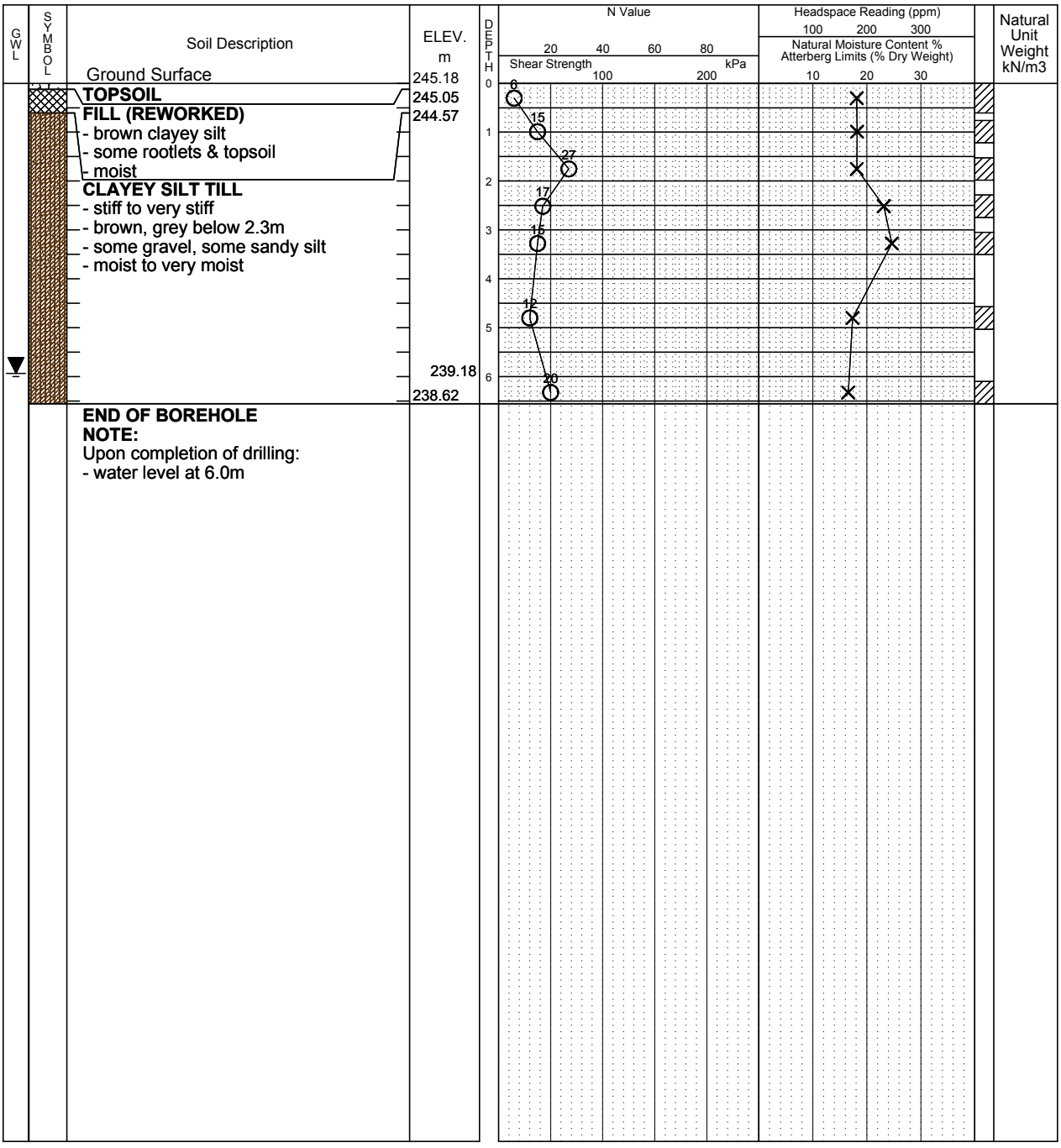
Date Drilled: 5/31/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-25 (MW)

Dwg No. 26

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

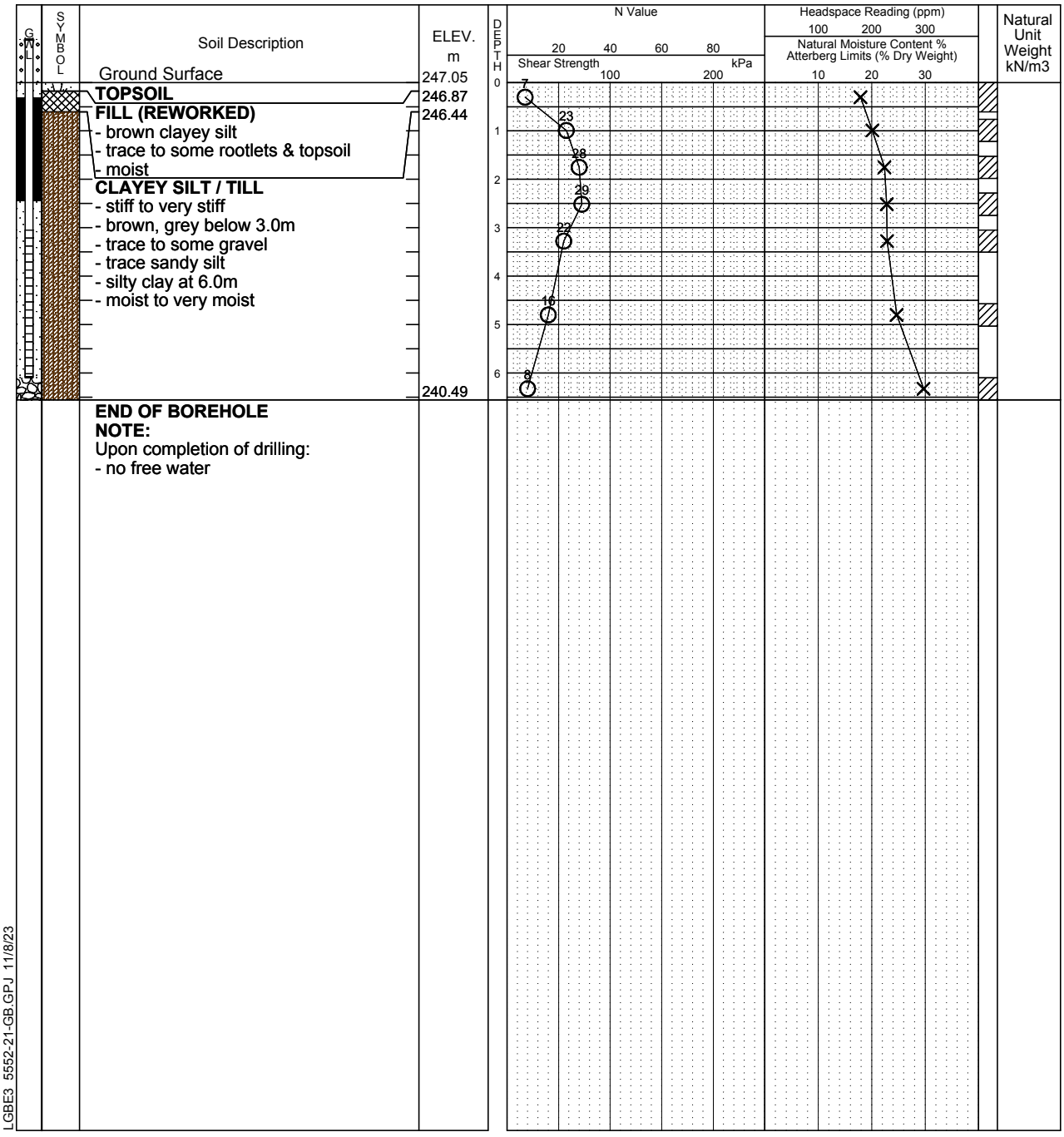
Date Drilled: 5/31/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 3, 2021	Dry	

Project No. 5552-21-GB

Log of Borehole 21BH-26

Dwg No. 27

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

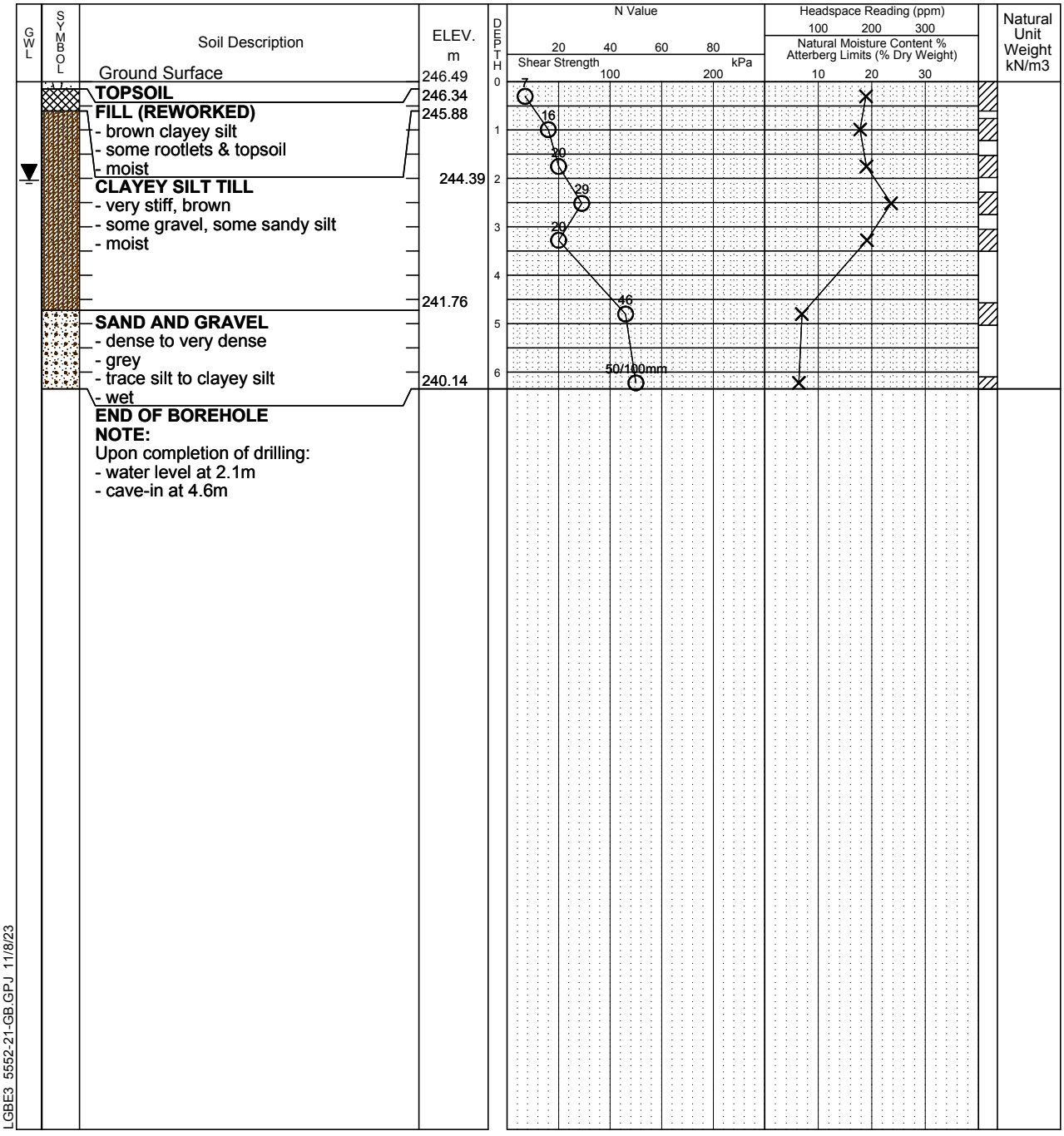
Date Drilled: 5/31/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-27

Dwg No. 28

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

Date Drilled: 6/1/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer

GWL	SYMBOL	Soil Description	ELEV. m	DEPTH
		Ground Surface	243.65	0
		TOPSOIL	243.48	
		FILL (REWORKED)	243.04	
		- brown clayey silt		
		- some rootlets & topsoil		
		- moist		
		CLAYEY SILT TILL		
		- stiff to very stiff		
		- brown, grey below 6.0m		
		- trace to some gravel		
		- trace sandy silt		
		- seams of fine sand		
		- moist to very moist		
			237.10	6
		END OF BOREHOLE		
		NOTE:		
		Upon completion of drilling:		
		- no free water		

N Value: 6, 20, 23, 22, 18, 19, 12

Shear Strength (kPa): 20 40 60 80 | 100 | 200

Headspace Reading (ppm): 100 200 300

Natural Moisture Content % / Atterberg Limits (% Dry Weight): 10 20 30

Natural Unit Weight kN/m3

LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-28

Dwg No. 29

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

Date Drilled: 6/1/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer

GWL	SYMBOL	Soil Description	ELEV. m	DEPTH
		Ground Surface	243.82	0
		TOPSOIL	243.51	
		FILL (REWORKED) - dark brown to brown clayey silt - some rootlets & topsoil - some organics - moist to very moist	241.69	1
		CLAYEY SILT - stiff to very stiff - brown, grey below 3.0m - trace gravel, trace sandy silt - some silty clay at 6.0m - moist to very moist		2
				3
				4
				5
			237.27	6
		END OF BOREHOLE **NOTE:** Upon completion of drilling: - no free water		

N Value: 20 40 60 80
Shear Strength: 100 200 kPa
Headspace Reading (ppm): 100 200 300
Natural Moisture Content % Atterberg Limits (% Dry Weight): 10 20 30

N Value: 8, 7, 6, 20, 17, 8, 18

Natural Unit Weight kN/m3

LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-29 (MW)

Dwg No. 30

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

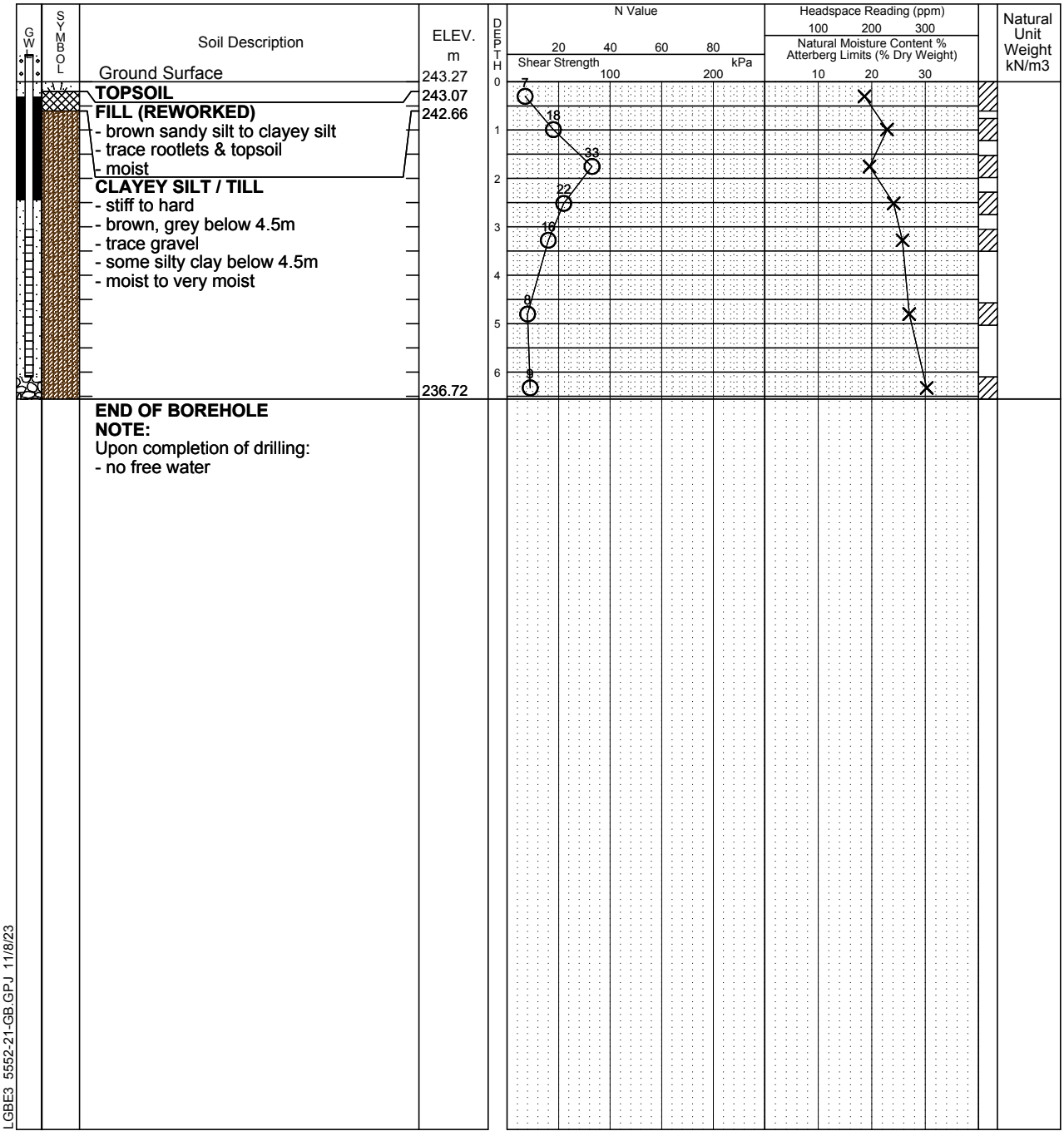
Date Drilled: 6/2/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 3, 2021	Dry	

Project No. 5552-21-GB

Log of Borehole 21BH-30 (MW)

Dwg No. 31

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

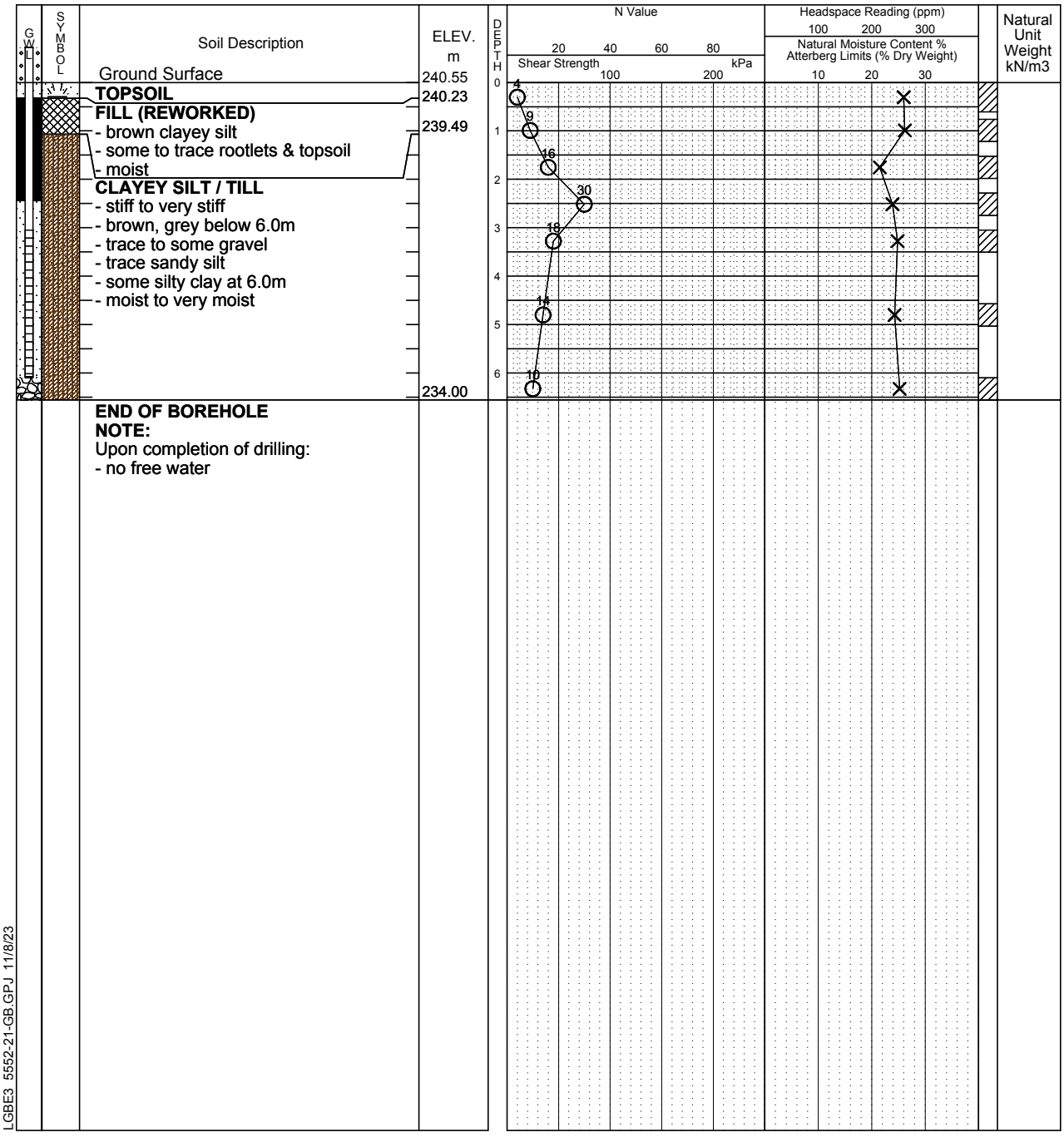
Date Drilled: 6/2/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 3, 2021	Dry	

Project No. 5552-21-GB

Log of Borehole 21BH-31

Dwg No. 32

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

Date Drilled: 6/2/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer

GWL	SYMBOL	Soil Description	ELEV. m	DEPTH
		Ground Surface	241.93	0
		TOPSOIL	241.75	
		FILL (REWORKED)	241.32	
		- brown clayey silt		
		- some rootlets & topsoil		
		- moist		
		CLAYEY SILT		
		- stiff to very stiff		
		- brown, grey fissures, grey below 6.0m		
		- trace gravel		
		- moist to very moist		
			235.37	6
		END OF BOREHOLE		
		NOTE:		
		Upon completion of drilling:		
		- no free water		

N Value: 20 40 60 80
Shear Strength: 100 200 kPa
Headspace Reading (ppm): 100 200 300
Natural Moisture Content % Atterberg Limits (% Dry Weight): 10 20 30

N Value: 0, 19, 12, 17, 17, 10, 11

Natural Unit Weight kN/m3

LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-32

Dwg No. 33

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

Date Drilled: 6/2/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer

GWL	SYMBOL	Soil Description	ELEV. m	DEPTH
		Ground Surface	242.16	0
		TOPSOIL	242.01	
		FILL (REWORKED)	241.86	
		- brown clayey silt		
		- trace rootlets & topsoil		
		- moist		
		CLAYEY SILT		
		- stiff to very stiff		
		- brown, grey below 2.3m		
		- trace gravel		
		- moist		
			235.61	6
		END OF BOREHOLE		
		NOTE:		
		Upon completion of drilling:		
		- no free water		

N Value: 20 40 60 80
Shear Strength: 100 200 kPa
N values: 8, 26, 28, 29, 14, 12, 16

Headspace Reading (ppm): 100 200 300
Natural Moisture Content % / Atterberg Limits (% Dry Weight): 10 20 30

Natural Unit Weight kN/m3

LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-33 (MW)

Dwg No. 34

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

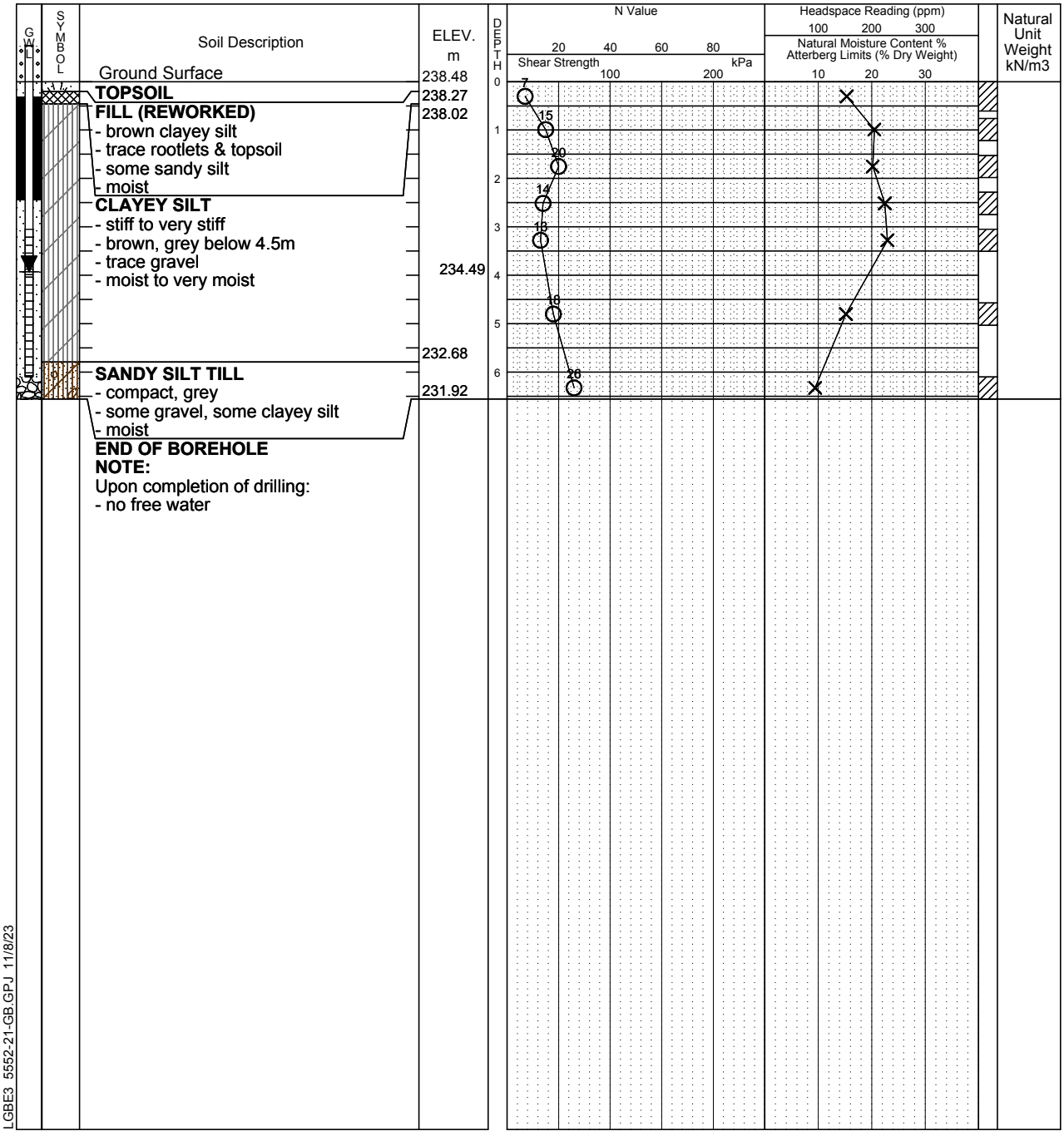
Date Drilled: 6/2/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 3, 2021	3.99m	

Project No. 5552-21-GB

Log of Borehole 21BH-34

Dwg No. 35

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

Date Drilled: 6/2/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer

GWL	SYMBOL	Soil Description	ELEV. m
		Ground Surface	240.59
		TOPSOIL	240.34
		FILL (REWORKED)	239.98
		- brown clayey silt to sandy silt	
		- trace rootlets & topsoil	
		- moist	
		CLAYEY SILT / TILL	
		- stiff to very stiff	
		- brown	
		- trace to some gravel	
		- moist	
			234.80
		SANDY SILT TILL	
		- compact, brown	234.04
		- some gravel, some silty sand	
		- trace clay	
		- moist	
		END OF BOREHOLE	
		NOTE:	
		Upon completion of drilling:	
		- no free water	

DEPTH 0 1 2 3 4 5 6

N Value: 20 40 60 80
Shear Strength: 100 200 kPa

Data points: 6, 22, 17, 15, 13, 19, 18

Headspace Reading (ppm): 100 200 300
Natural Moisture Content % / Atterberg Limits (% Dry Weight): 10 20 30

Natural Unit Weight kN/m3

LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-35

Dwg No. 36

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

Date Drilled: 6/2/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer

GWL	SYMBOL	Soil Description	ELEV. m	DEPTH
		Ground Surface	238.65	0
		TOPSOIL	238.45	
		FILL (REWORKED)	238.19	
		- brown clayey silt		
		- trace rootlets & topsoil		
		- moist		
		CLAYEY SILT		
		- stiff to very stiff		
		- brown, grey below 4.5m		
		- trace gravel		
		- trace silty clay		
		- moist to very moist		
		- clayey silt till at 6.0m		
		- moist to very moist		
			232.09	6
		END OF BOREHOLE		
		NOTE:		
		Upon completion of drilling:		
		- water level at 6.0m		

N Value: 20 40 60 80
Shear Strength: 100 200 kPa
N values: 7, 15, 19, 14, 18, 8, 11

Headspace Reading (ppm): 100 200 300
Natural Moisture Content % Atterberg Limits (% Dry Weight): 10 20 30

Natural Unit Weight kN/m3

LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-36 (MW)

Dwg No. 37

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

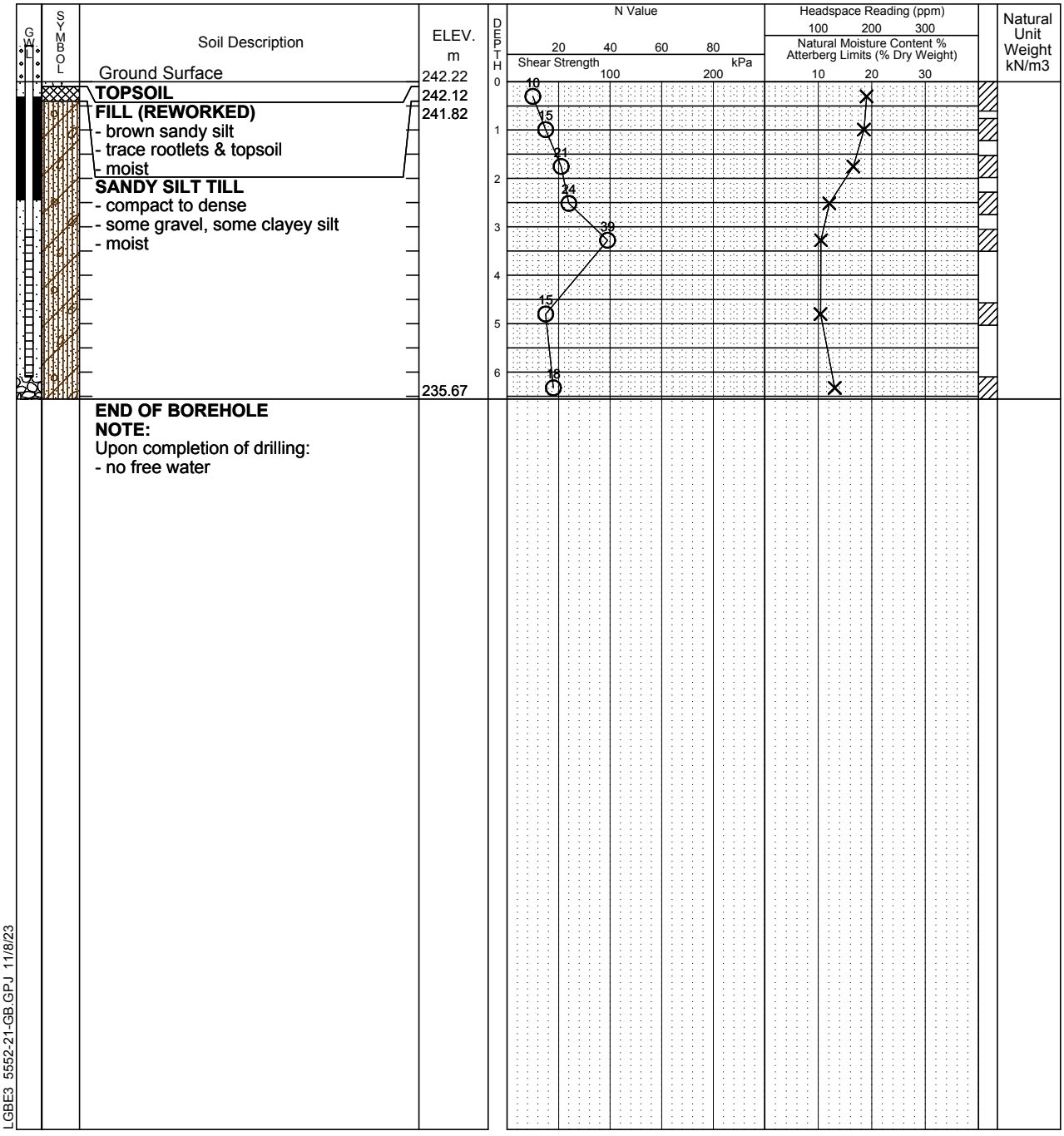
Date Drilled: 6/3/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 7, 2021	Dry	

Project No. 5552-21-GB

Log of Borehole 21BH-37 (MW)

Dwg No. 38

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

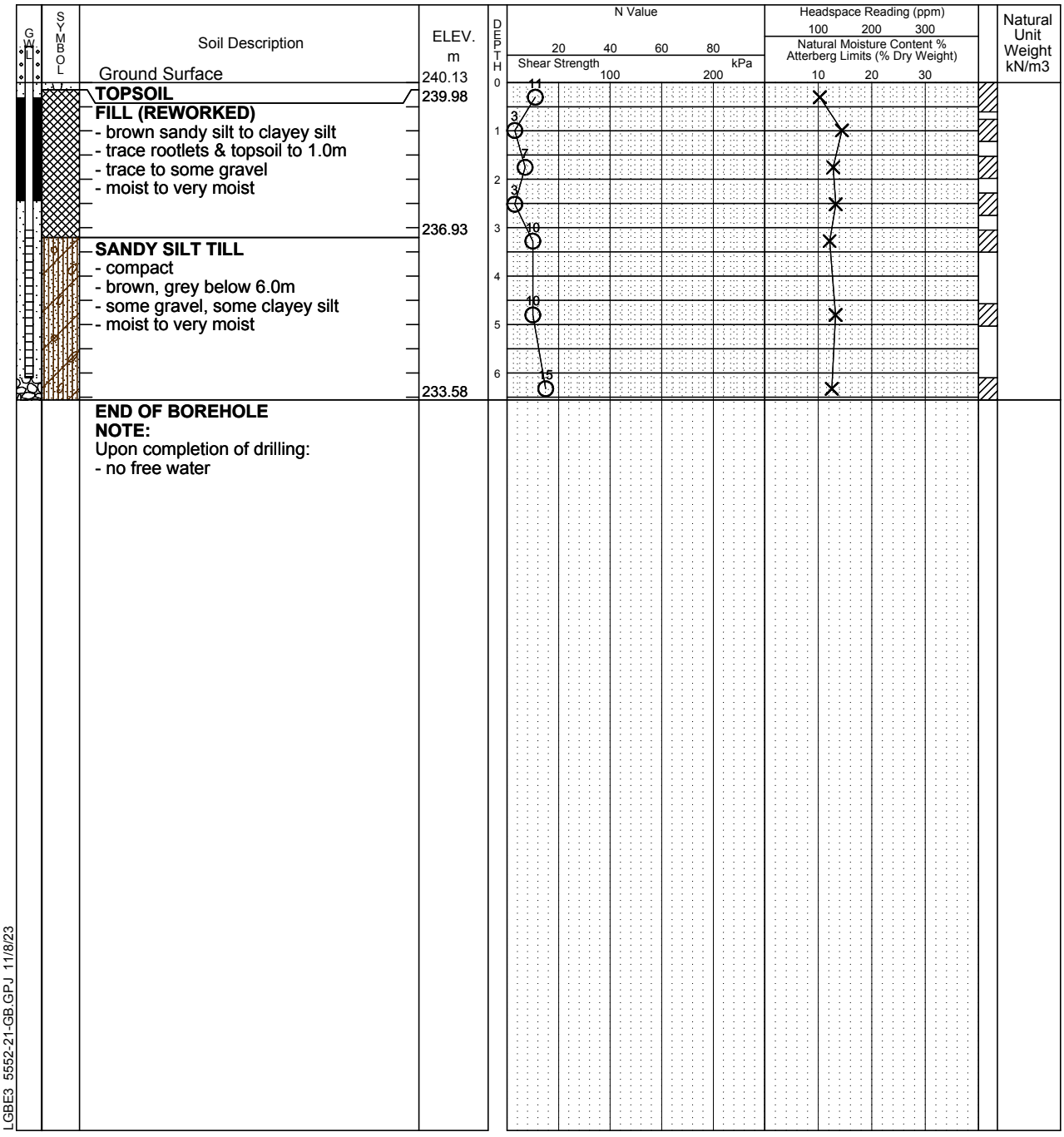
Date Drilled: 6/3/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 7, 2021	Dry	

Project No. 5552-21-GB

Log of Borehole 21BH-38

Dwg No. 39

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

Date Drilled: 6/3/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer

GWL	SYMBOL	Soil Description	ELEV. m	DEPTH
		Ground Surface	240.72	0
		TOPSOIL	240.57	
		FILL (REWORKED)	239.81	
		- brown clayey silt to sandy silt		
		- trace rootlets & topsoil		
		- moist		
		SANDY SILT TILL		
		- compact		
		- brown, grey below 4.5m		
		- some gravel, some clayey silt		
		- possible cobbles at 6.0m		
		- moist		
			234.58	6
		END OF BOREHOLE		
		NOTE:		
		Upon completion of drilling:		
		- no free water		

N Value: 20 40 60 80
Shear Strength: 100 200 kPa
Headspace Reading (ppm): 100 200 300
Natural Moisture Content % Atterberg Limits (% Dry Weight): 10 20 30
Natural Unit Weight kN/m3

N Value: 7, 11, 21, 21, 27, 17, 50/50mm

LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 23BH-01 (MW)

Dwg No. 40

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

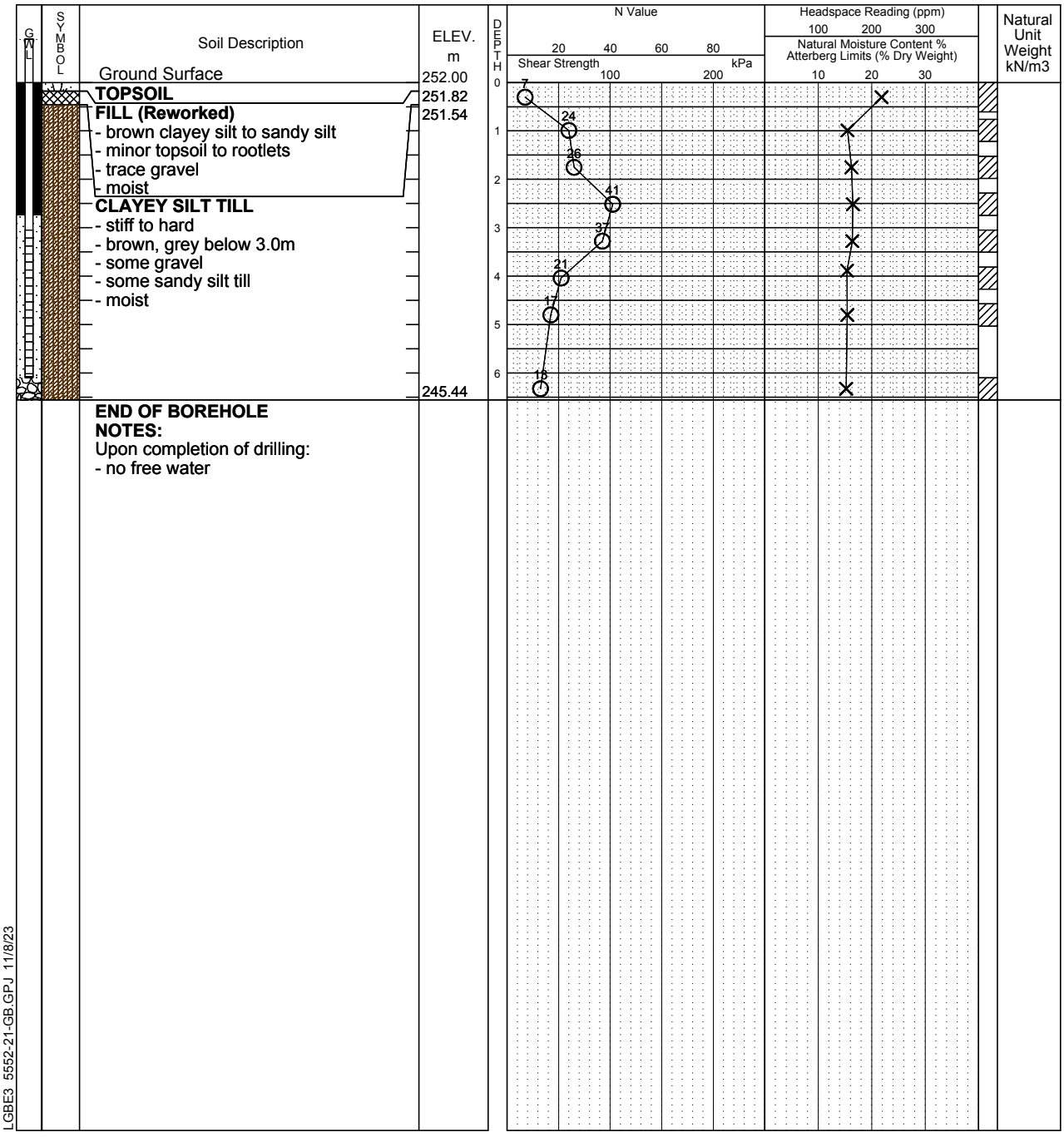
Date Drilled: 5/29/23

Drill Type: Track Mounted

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 8, 2023	Dry	

Project No. 5552-21-GB

Log of Borehole 23BH-02 (MW)

Dwg No. 41

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

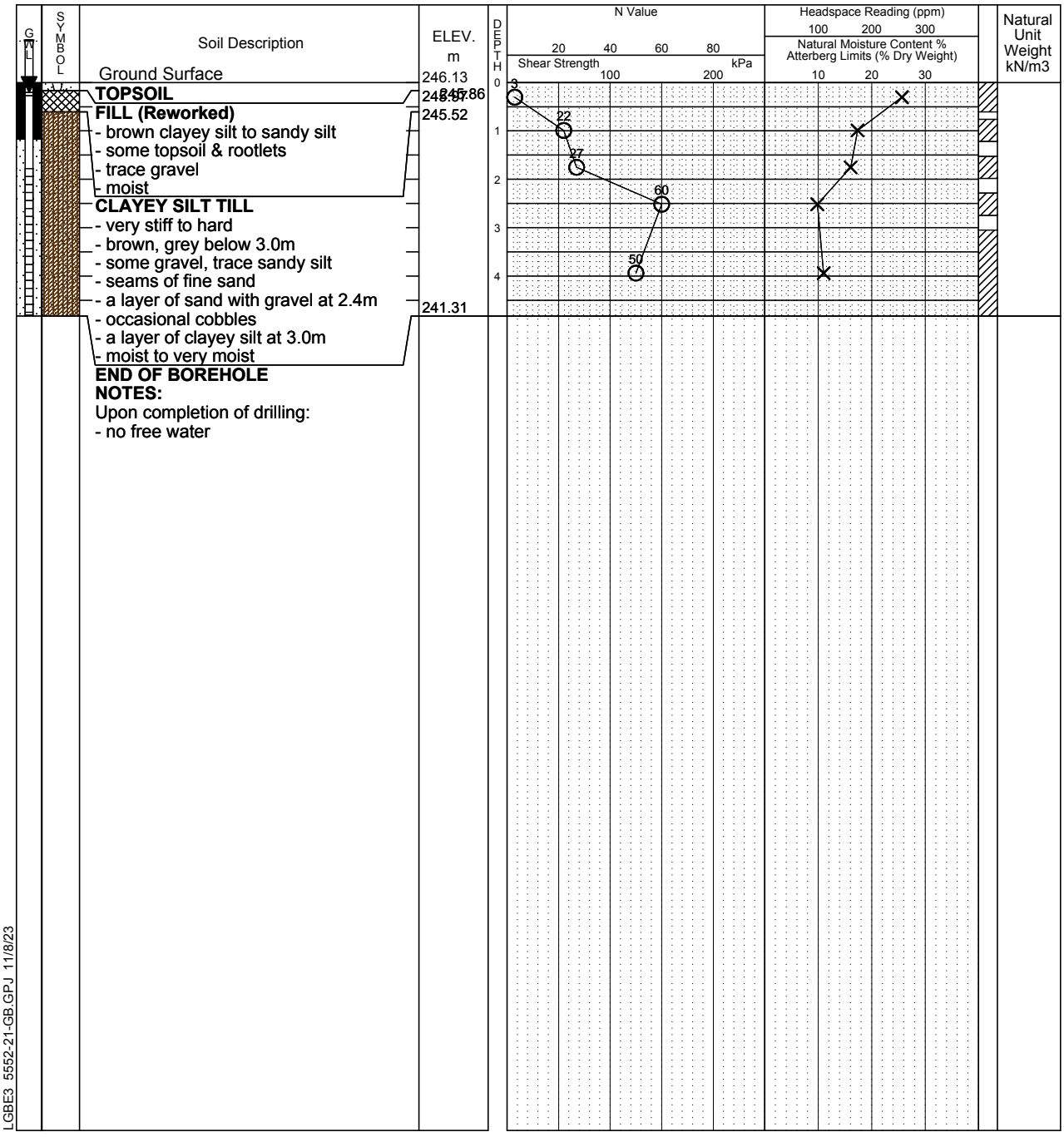
Date Drilled: 5/31/23

Drill Type: Track Mounted

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 8, 2023	0.27m	

Project No. 5552-21-GB

Log of Borehole 23BH-03 (MW)

Dwg No. 42

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

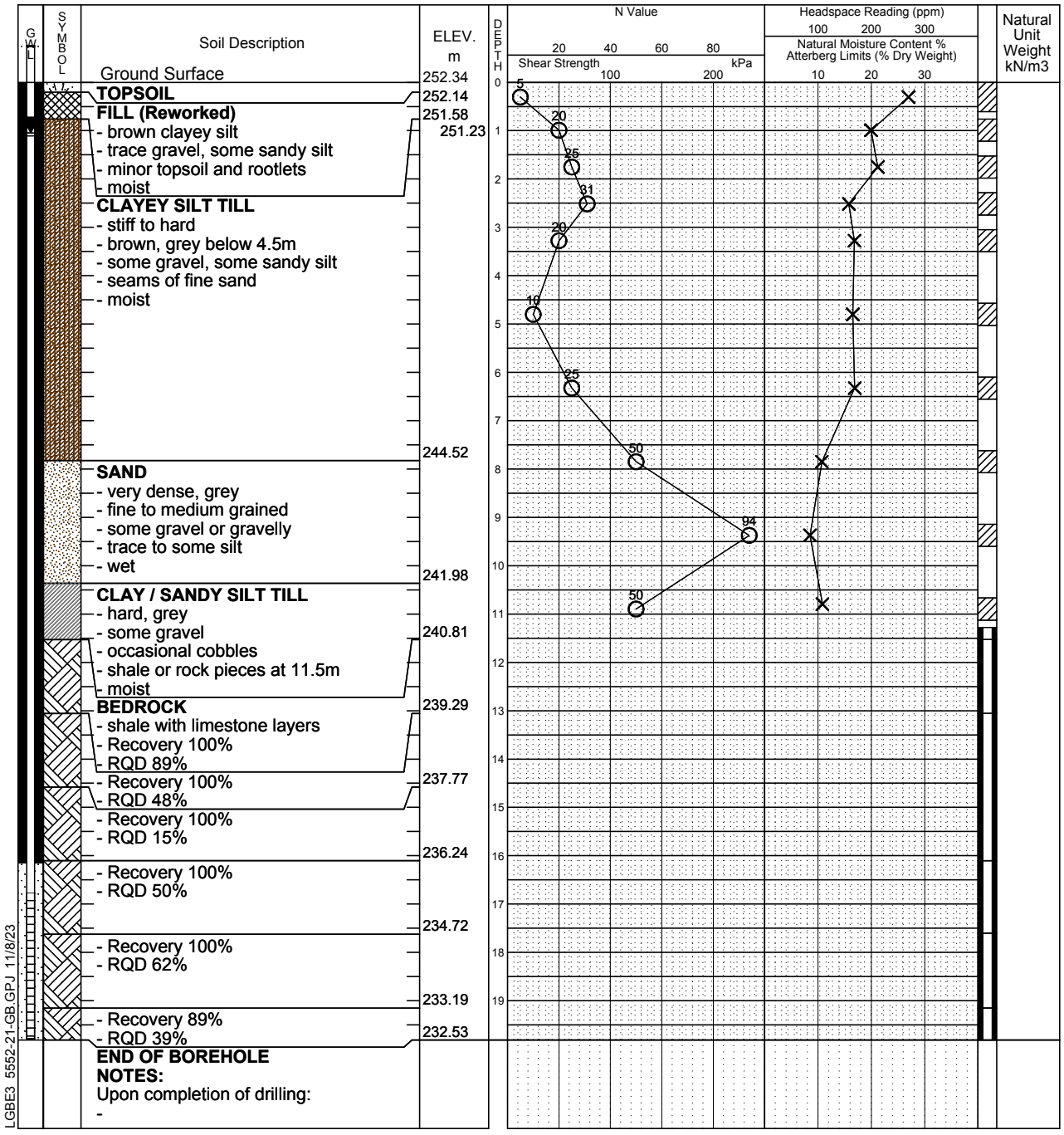
Date Drilled: 6/1/23

Drill Type: Track Mounted

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 8, 2023	1.11m	

Project No. 5552-21-GB

Log of Borehole 23BH-04 (MW)

Dwg No. 43

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

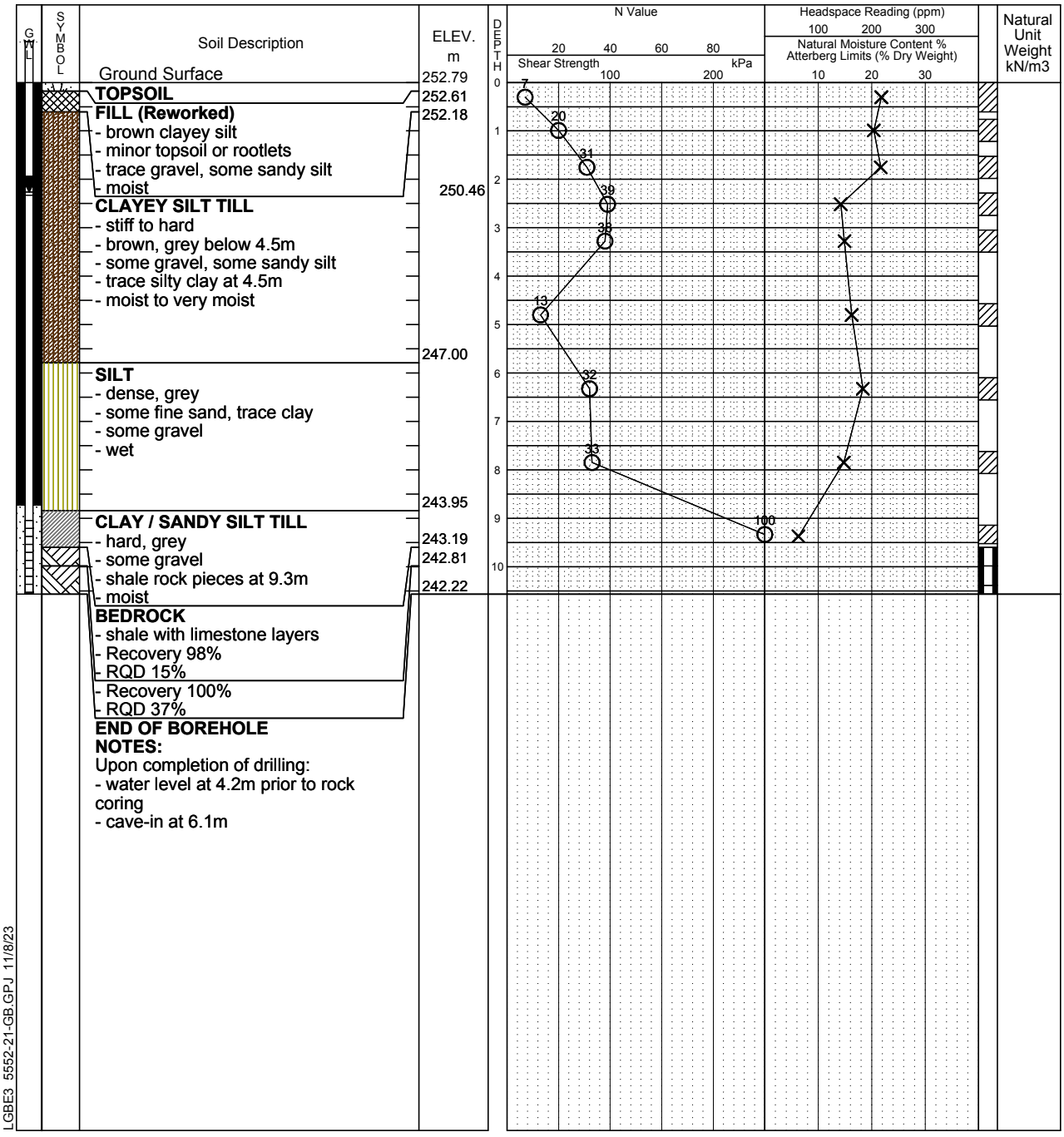
Date Drilled: 5/30/23

Drill Type: Track Mounted

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 8, 2023	2.33m	

Project No. 5552-21-GB

Log of Borehole 23BH-05 (MW)

Dwg No. 44

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

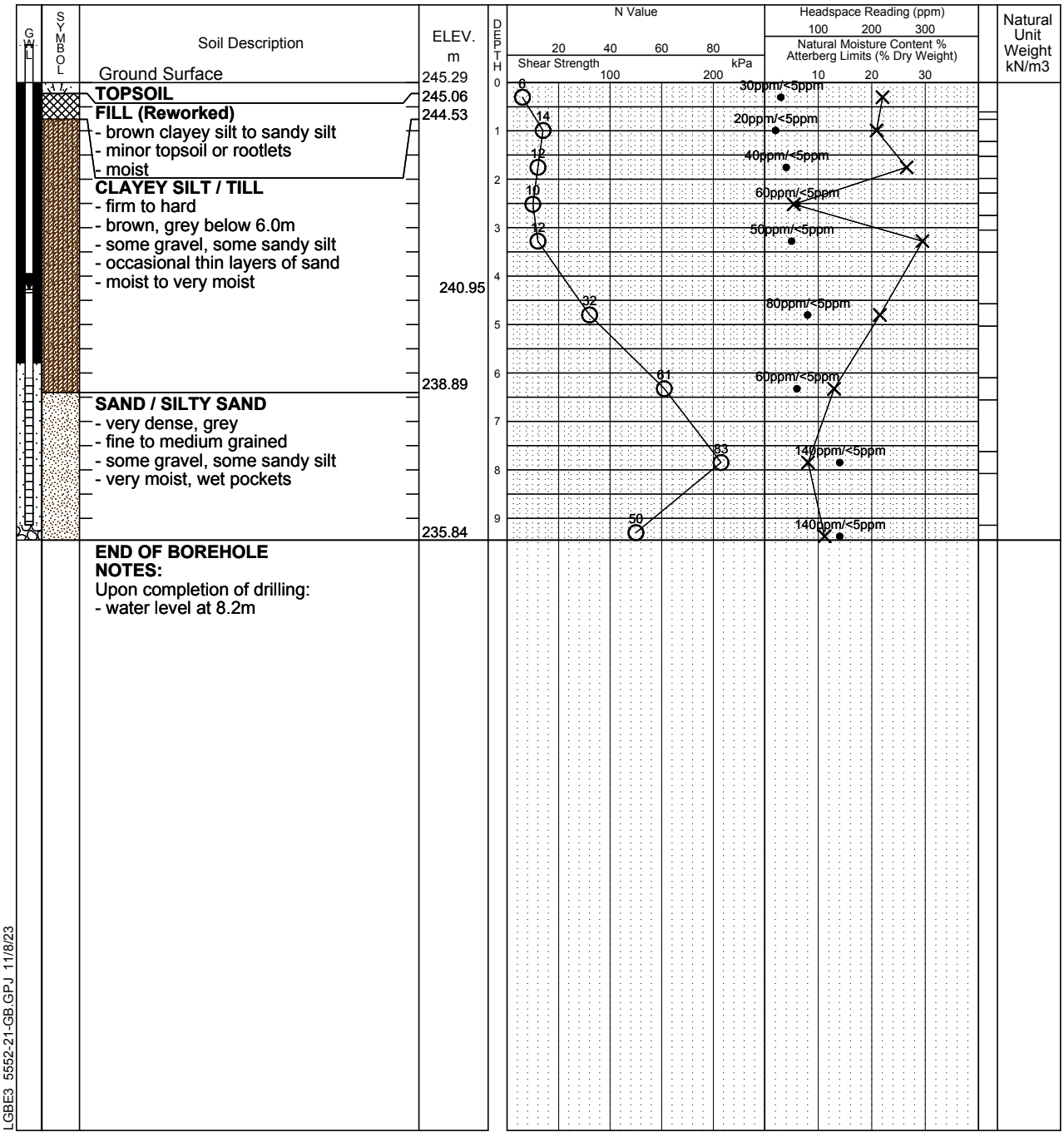
Date Drilled: 6/5/23

Drill Type: Track Mounted

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 8, 2023	4.34m	

Project No. 5552-21-GB

Log of Borehole 23BH-06

Dwg No. 45

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

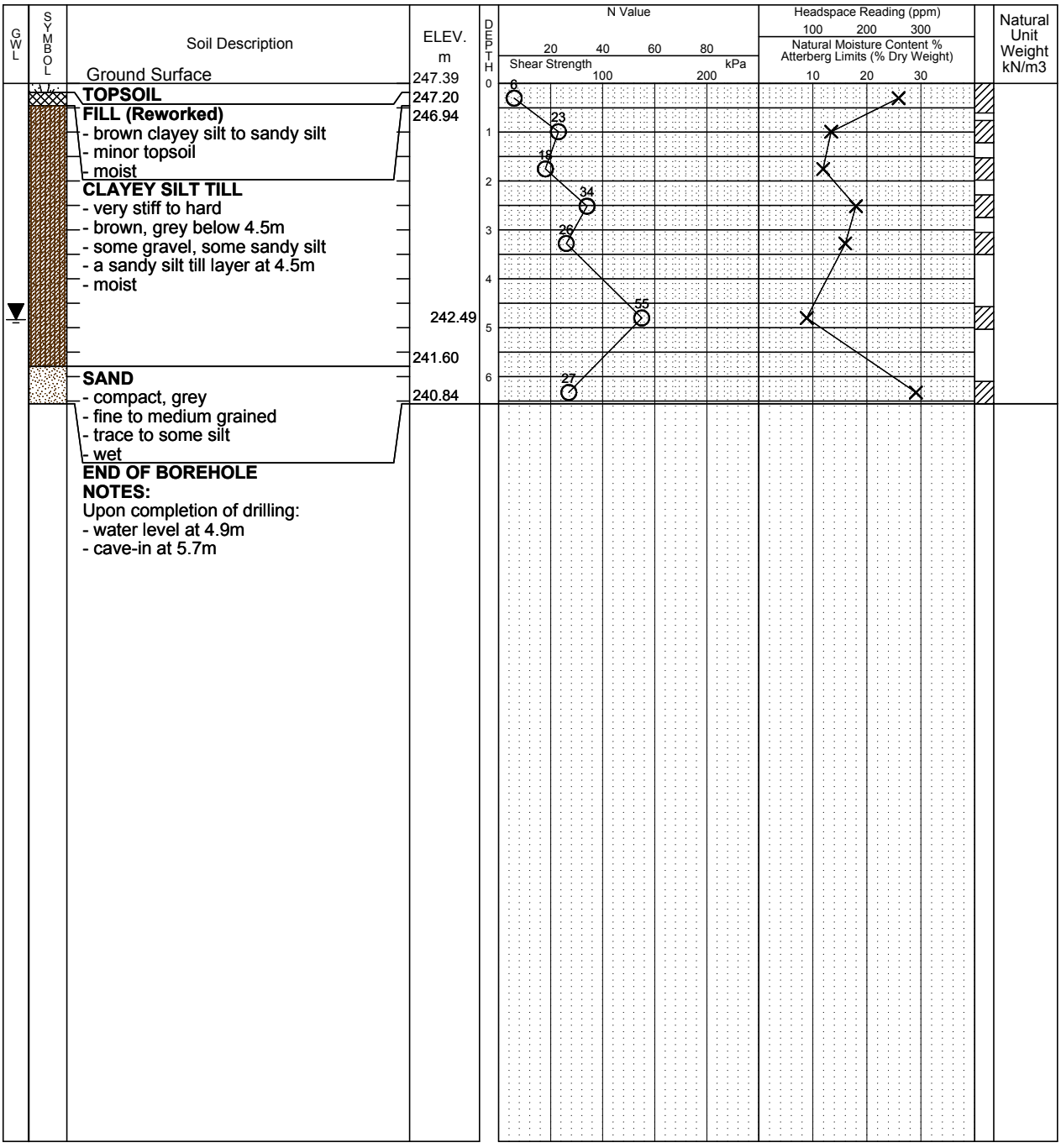
Date Drilled: 5/31/23

Drill Type: Track Mounted

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 23BH-07

Dwg No. 46

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

Date Drilled: 6/5/23

Drill Type: Track Mounted

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer

GWL	SYMBOL	Soil Description	ELEV. m	DEPTH
		Ground Surface	249.10	0
		TOPSOIL	248.97	
		FILL (Reworked)	248.19	
		- brown clayey silt		1
		- some topsoil or rootlets		
		- trace sandy silt		2
		- moist		
		CLAYEY SILT TILL		3
		- stiff to hard		
		- brown, grey below 6.0m		4
		- some gravel, trace sandy silt		
		- trace silty clay		5
		- moist to very moist		
				6
			242.55	
		END OF BOREHOLE		
		NOTES:		
		Upon completion of drilling:		
		- cave-in at 5.4m		

N Value: 20 40 60 80
Shear Strength: 100 200 kPa

Headspace Reading (ppm): 100 200 300
Natural Moisture Content % / Atterberg Limits (% Dry Weight): 10 20 30

Natural Unit Weight kN/m3

LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 23BH-08

Dwg No. 47

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

Date Drilled: 6/5/23

Drill Type: Track Mounted

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer

GWL	SYMBOL	Soil Description	ELEV. m	DEPTH
		Ground Surface	250.81	0
		TOPSOIL	250.62	
		FILL (Reworked)	250.05	
		- brown clayey silt to sand silt		
		- minor to some topsoil		
		- moist		
		CLAYEY SILT TILL		
		- stiff to hard		
		- trace to some gravel		
		- trace sandy silt, trace silty clay		
		- moist to very moist		
			244.25	6
		END OF BOREHOLE		
		NOTES:		
		Upon completion of drilling:		
		- cave-in at 5.6m		

N Value: 20 40 60 80
Shear Strength: 100 200 kPa

N Value: 5, 19, 32, 17, 20, 14, 12

Headspace Reading (ppm): 100 200 300
Natural Moisture Content % / Atterberg Limits (% Dry Weight): 10 20 30

Natural Unit Weight kN/m3

LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 23BH-09

Dwg No. 48

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

Date Drilled: 6/6/23

Drill Type: Track Mounted

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer

GWL	SYMBOL	Soil Description	ELEV. m	DEPTH
		Ground Surface	254.65	0
		TOPSOIL	254.52	
		FILL (Reworked)	254.04	
		- brown clayey silt		
		- minor topsoil or rootlets		
		- trace gravel, trace sandy silt		
		- moist		
		CLAYEY SILT TILL		
		- stiff to hard		
		- brown, grey below 4.5m		
		- trace to some gravel		
		- trace to some sandy silt		
		- some silty clay at 6.0m		
		- moist to very moist, wet pockets		
			248.10	6
		END OF BOREHOLE		
		NOTES:		
		Upon completion of drilling:		
		- cave-in at 5.8m		

N Value: 20 40 60 80
Shear Strength: 100 200 kPa
Headspace Reading (ppm): 100 200 300
Natural Moisture Content % Atterberg Limits (% Dry Weight): 10 20 30

N Value: 6, 24, 80, 86, 25, 19, 13

Natural Unit Weight kN/m3

LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 23BH-10 (MW)

Dwg No. 49

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

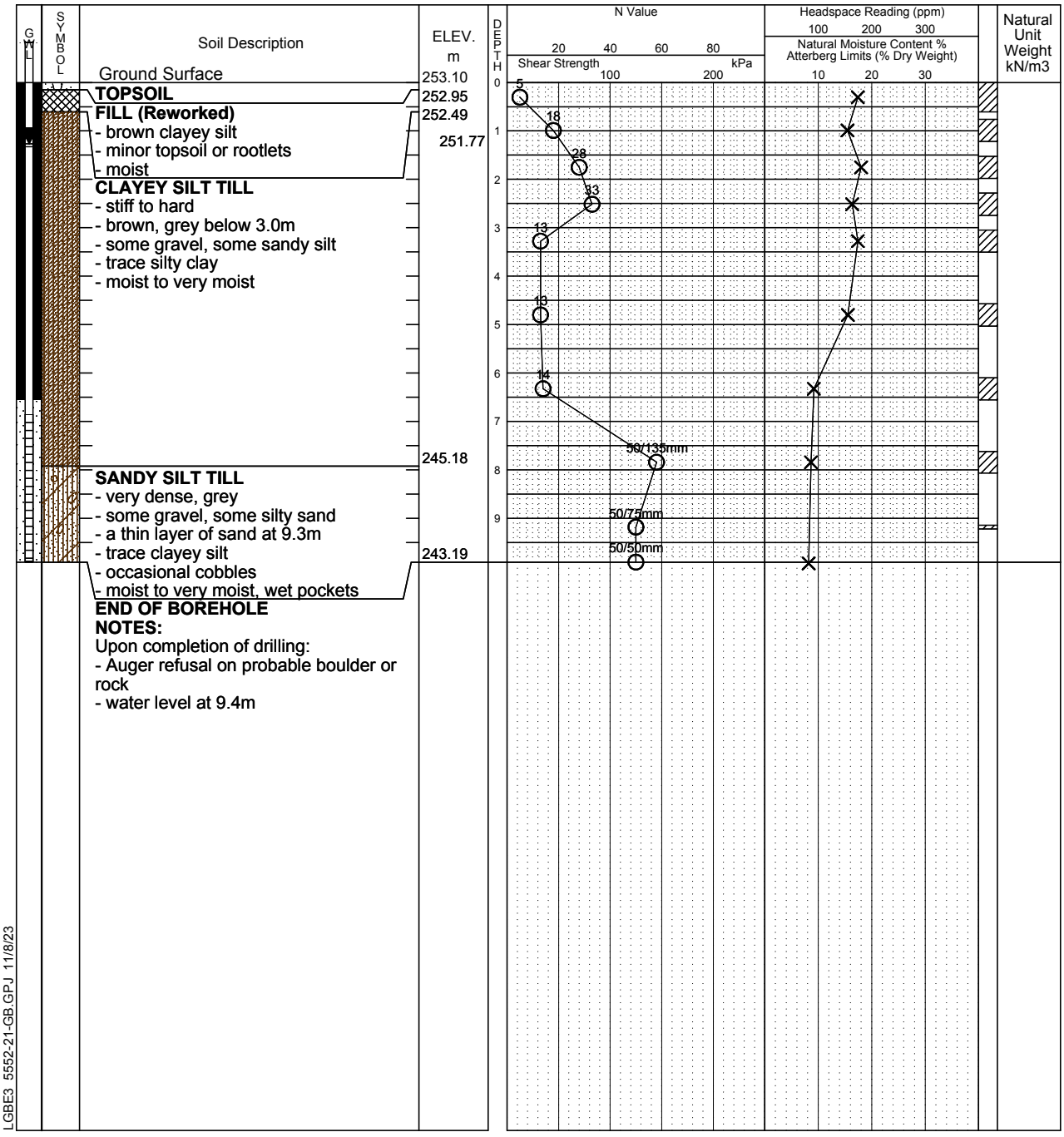
Date Drilled: 6/6/23

Drill Type: Track Mounted

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 8, 2023	1.33m	

Project No. 5552-21-GB

Log of Borehole 23BH-11

Dwg No. 50

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

Date Drilled: 6/6/23

Drill Type: Track Mounted

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer

GWL	SYMBOL	Soil Description	ELEV. m	DEPTH
		Ground Surface	249.63	0
		TOPSOIL	249.45	
		FILL (Reworked)	248.87	
		- dark brown to brown sandy silt to clayey silt		
		- some topsoil & rootlets		
		- moist		
		CLAYEY SILT TILL		
		- very stiff to hard		
		- brown, grey below 3.0m		
		- some gravel, some sandy silt		
		- moist to very moist		
			243.08	6
		END OF BOREHOLE		
		NOTES:		
		Upon completion of drilling:		
		- cave-in at 5.9m		

N Value: 20 40 60 80
Shear Strength: 100 200 kPa
Headspace Reading (ppm): 100 200 300
Natural Moisture Content % Atterberg Limits (% Dry Weight): 10 20 30

Natural Unit Weight kN/m3

LGBE3 5552-21-GB.GPJ 11/8/23

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 23BH-12

Dwg No. 51

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Airport Road and Mayfield Road, Caledon, Ontario

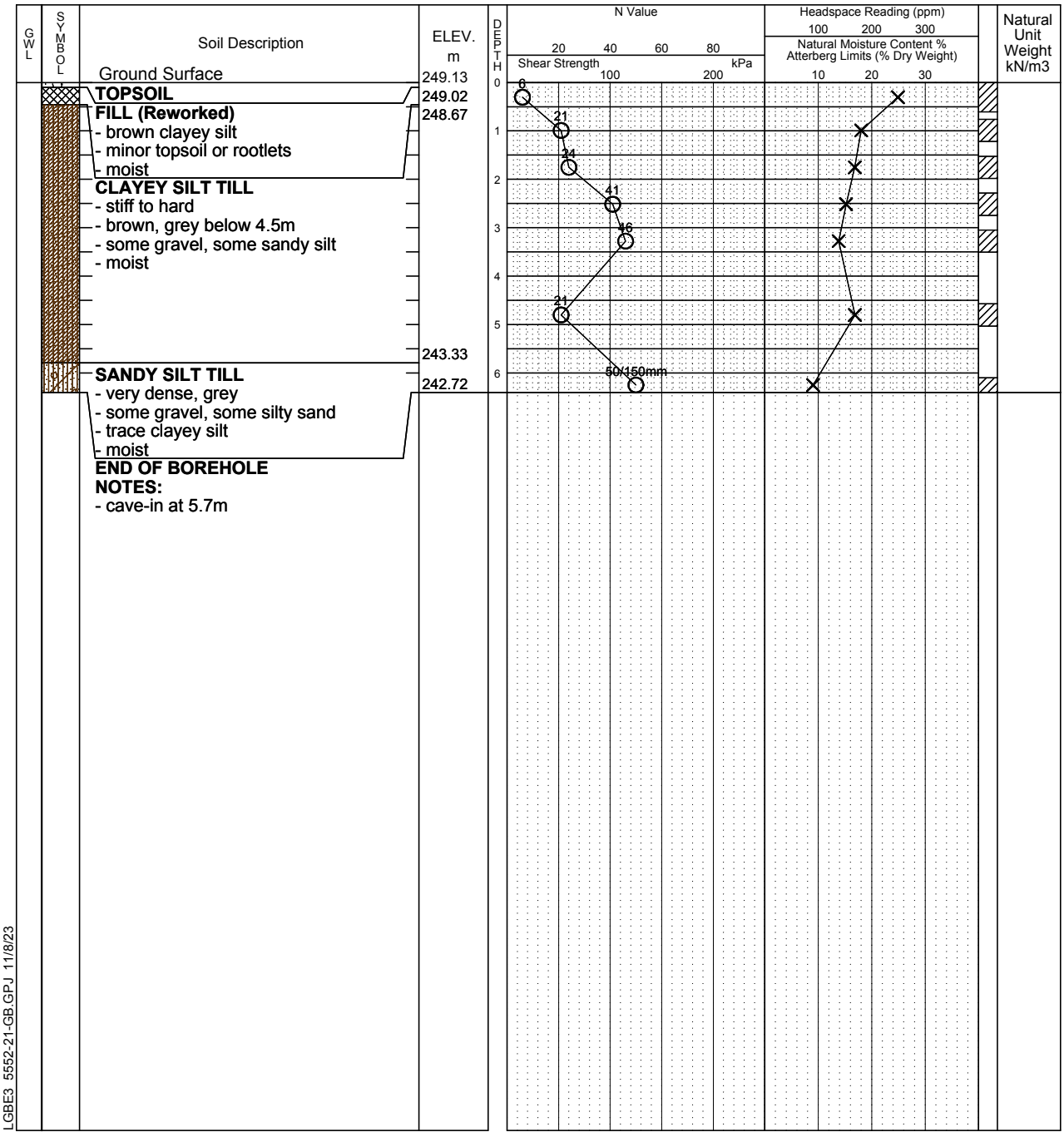
Date Drilled: 6/6/23

Drill Type: Track Mounted

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 11/8/23

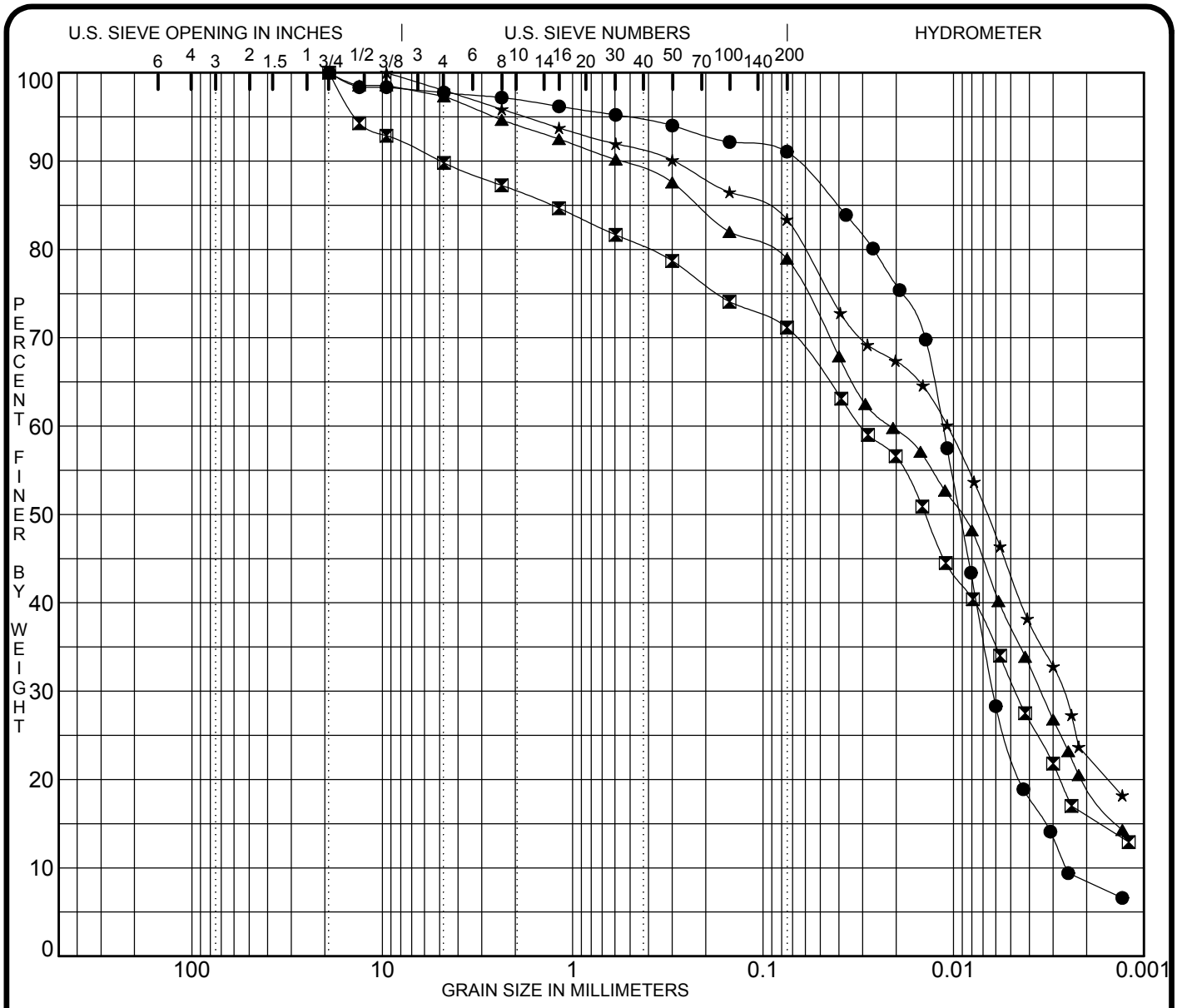
NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Figure

Grain Size Distribution



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	MC%	LL	PL	PI	Cc	Cu
●	**21BH-1**	**1.5**						**1.32**	**4.4**
⊠	**21BH-15**	**1.5**							
▲	**23BH-1 (MW)**	**1.5**						**0.66**	**24.8**
★	**23BH-2 (MW)**	**1.5**							

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**21BH-1**	**1.5**	**19.00**	**0.01**	**0.006**	**0.0026**	**2.2**	**6.7**	**67.9**	**23.2**
⊠	**21BH-15**	**1.5**	**19.00**	**0.03**	**0.005**		**10.2**	**18.6**	**39.9**	**31.2**
▲	**23BH-1 (MW)**	**1.5**	**19.00**	**0.02**	**0.003**	**0.0009**	**2.7**	**18.4**	**41.7**	**37.3**
★	**23BH-2 (MW)**	**1.5**	**9.50**	**0.01**	**0.003**		**2.0**	**14.6**	**40.3**	**43.1**

PROJECT **Geotechnical Investigation - Airport Road and Mayfield Road, Caledon, Ontario**

JOB NO. **5552-21-GB**

DATE **11/8/23**

GRADATION CURVES

Toronto Inspection Ltd.

FIGURE NO. 1

Toronto Inspection Ltd.

Appendix A
Engineering Fill Guidelines

GUIDELINES FOR ENGINEERED FILL

The information presented in this guideline is intended for general guidance only. Site specific and prevailing weather conditions may require modification of the material(s) to be used and the compaction standards or procedures changed. The site preparation and the material(s) to be used must be discussed and procedures agreed with ***Toronto Inspection Ltd.*** prior to the start of the earthworks and must be subjected to on going review during construction.

For fill to be classified as engineered fill, suitable for supporting structural loads, a number of conditions must be satisfied, including but not necessarily limited to the following:

1. Areal Extent

The engineered fill must extend beyond the envelope of the structure to be supported. The minimum extent should be 2.0m beyond the envelope in all directions at the foundation level, including the loading dock pad and the front sidewalk, and sloping downwards to the sub-grade at 45°. Once the envelope is set, the structure cannot be moved out of the envelope without consultation with ***Toronto Inspection Ltd.*** Similarly, no excavation should encroach on the engineered fill envelope without consultation with ***Toronto Inspection Ltd.***

2. Survey Control

Accurate survey control is essential to the success of an engineered fill project. The boundaries of the engineered fill must be laid out by a surveyor. During construction. it is necessary to have qualified surveyors providing control stations on the three-dimensional extent of the engineered fill.

3. Subsurface Preparation

Prior to placement of the engineered fill, the sub-grade must be prepared to the satisfaction of ***Toronto Inspection Ltd.*** All deleterious material must be removed and in some cases excavation of native mineral soils may also be required. Particular attention must be paid to wet sub-grade and possible additional measures required to achieve sufficient compaction. Where fill is placed against a slope, benching will be necessary and natural drainage paths must not be blocked.

4. Suitable Fill Material

All material to be used as fill must be approved by ***Toronto Inspection Ltd.*** Such approval will be influenced by weather factors. External sources of fill material must be sampled, tested and approved prior to material being hauled to the job site.

5. Trial Test Section

In advance of the construction of the engineered fill pad, the contractor should conduct a trial test section. The compaction criterion will be assessed for the backfill material to be used, using specified lift thicknesses and number of passes for the compaction equipment proposed by the contractor. To achieve a uniform degree of compaction of each layer, the lift thickness of loose

material, prior to start of compaction, must not exceed 200mm (8 inches). Additional trial test section(s) may be required throughout the course of the project to reflect changes in material sources, the moisture content of the material and the weather conditions.

6. Degree of Compaction

The minimum degree of compaction for the engineered fill should not be less than 100% of the Standard Proctor maximum dry density, or 95% of the Modified Proctor maximum dry density, to the level at or above 0.3m from proposed footing founding level. Each layer must be tested and approved by this office before the next layer is placed.

7. Inspection and Testing

Uniform and thorough compaction is crucial to the performance of the fill and the supported structure. Hence, all subgrade preparation, filling and compacting must be done with full time inspection and to the satisfaction of ***Toronto Inspection Ltd.*** All founding surfaces must be inspected and approved by ***Toronto Inspection Ltd.*** prior to placement of concrete.

8. Protection of Fill

Fills are generally more susceptible to the effects of weather than are natural soils. Fill placed and approved to the level at which structural support is required must be protected from excessive wetting, drying, erosion or freezing. Where inadequate protection had been provided, it may be necessary to provide deeper founding level for footings or to strip and re-compact some of the filled layers.

9. Limitations

The engineered fill is subjected to the following limitations:

i. Proper drainage must be maintained at all times within the engineered fill pad.
ii. If the engineered fill is left in place during the winter months, adequate protection must be provided against frost penetration to the proposed footing depths.
iii. If the engineered fill depth exceeds 5m below the foundation depth, the construction of the foundations might have to be delayed for a period of 1 year after placement, depending on the type of fill material used.
iv. Strip footings and foundation walls founded on engineered fill must be reinforced continuously with a minimum of two 15mm steel bars with at least 1m of overlap.