

September 19, 2023
Report No.: 4515-22-GC

Guelph Watson Holdings Inc.
406 - 56 The Esplanade
Toronto, Ontario
M5E 1A7

Attention : Ms. Tatiana Guzman

Re: Addendum To Geotechnical Investigation Report
Project No.: 4515-22-GC, dated June 7, 2022
Supplementary Subsoil Data - 115 Watson Parkway North, Guelph, Ontario

Further to our Geotechnical Investigation Report, Project No.: 4515-22-GC, dated June 7, 2022, *Toronto Inspection Ltd.* was requested to carry out additional boreholes, within the proposed mid-rise building area, with 2 level underground parking, at the west portion of the site, to obtain supplementary subsoil data. The main purpose of the additional boreholes was to determine the subsoil and groundwater conditions at and below the footing levels and provide our comments / recommendations for the design of foundations for the proposed buildings at the site.

Borehole Drilling

Four additional boreholes (23BH-1 to 23BH-4) were drilled at the west portion of the site on August 22 and 23, 2023. The boreholes were drilled and sampled 0.76m intervals to depths of 3.0m from grade and 1.5m intervals thereafter, to depths of 10.8m to 12.6m from grade.

The boreholes were advanced using a track mounted drill rig, equipped with continuous flight hollow stem augers, sampling rods and a drop hammer, supplied by a specialist drilling contractor. Soil samples were taken at 0.76m intervals to depths of 3.0m below the existing ground level. Below the depth, the sampling frequency was increased to 1.5m. The samples were obtained using a split spoon sampler in conjunction with Standard Penetration Tests using a driving energy of 475 joules (350 ft-lbs).

Groundwater observations were made in the boreholes during and upon the completion of drilling. Boreholes 23BH-2 and 23BH-3 were also completed as monitoring wells to document the current static groundwater levels. The symbol (MW), besides the borehole identification, indicates a monitoring well. The groundwater records are presented in the borehole logs.

The locations of the additional and the original boreholes are shown in Drawing No. 1. The borehole logs for the additional boreholes and sections, including original boreholes, are also enclosed.

Subsoil and Groundwater Conditions

The boreholes revealed, in the additional borehole locations, 23BH-1 to 23BH-4, that the subsoil consisted of a layer of fill, overlying native deposits of sand and gravel, sandy silt till and silty sand deposits, which were similar to the subsoil revealed in the original boreholes.

Brief descriptions of the subsurface materials, encountered at the additional borehole locations, are as follows:

Surface Course (Topsoil)

Topsoil, approximately 25mm to 100mm in thickness, was contacted at the ground surface at Boreholes 23BH-1 to 23BH-4 locations.

Fill

A layer of fill was contacted below the topsoil at Boreholes 23BH-1 to 23BH-4 locations. The fill consisted of a mixture of sandy silt to silty sand or sand, trace to some gravel with trace to some clayey silt and contained occasional minor rootlets and topsoil. The fill extended to depths of 1.4m to 2.9m from grade.

Based on the soil quality and the Standard Penetration N-values, in the range of 6 to 22 blows per 0.3m penetration, it appears that the fill might have been placed and compacted under some supervision. The N-values higher than 35 blows per 0.3m penetration, could be due to the presence of big gravel.

The in-situ moisture content of the soil samples obtained from the fill ranged from 7% to 16%, indicating moist to very moist conditions.

Sand and Gravel

Sand and gravel deposit was contacted at Boreholes 23BH-1 to 23BH-4 locations, below the fill, at depths of 1.4m to 2.9m from grade. The sand and gravel deposit contained some silty sand and / or sandy silt. The sand and gravel extended to depths of 4.0m to 7.0m from grade.

Based on the Standard Penetration N-values of 32 to more than 100 blows per 0.3m penetration, the relative density of the sand and gravel deposit were dense to very dense.

The in-situ moisture content of the soil samples retrieved from this deposit ranged from 3% to 12%, indicating moist to wet conditions.

Sandy Silt Till

A sandy silt till deposit was contacted at Boreholes 23BH-1 to 23BH-4 locations, below the sand and gravel deposit, at depths of 4.0m to 7.0m from grade. The deposit consisted of a heterogeneous mixture of silt, sand, some clay, some gravel, seams of fine sand, with occasional layers of silty sand, sandy silt. The sandy silt till deposit extended to depths of 5.5m to 9.4m from grade.

A lower sandy silt till deposit was contacted at Boreholes 23BH-3 and 23BH-4 locations, below a silty sand deposit, at depths of 7.0m to 10.1m from grade. Boreholes 23BH-3 and 23BH-4 were terminated in the lower sandy silt till deposit at depths of 10.8m to 12.6m from grade.

Based on the Standard Penetration N-values of 31 to more than 100 blows per 0.3m penetration, the relative density of the sandy silt till deposits was dense to very dense.

The in-situ moisture content of the soil samples retrieved from these deposits ranged from 8% to 17%, indicating moist to very moist conditions, with some wet pockets.

Silty Sand

A silty sand deposit was contacted at Boreholes 23BH-1 to 23BH-4 locations, below the sandy silt till deposit, at depths of 5.5m to 9.4m from grade. The deposit was fine to medium grained and contained trace gravel.

Boreholes 23BH-1 and 23BH-2 were terminated in the silty sand deposit at depths of 12.6m from grade. The silty sand deposit, at Boreholes 23BH-3 and 23BH-4 locations, extended to depths of 7.0m to 10.1m from grade.

Based on the Standard Penetration N-values of 27 to 96 blows per 0.3m penetration, the relative density of the silty sand deposit was compact to very dense, generally dense to very dense.

The in-situ moisture content of the soil samples retrieved from this deposit ranged from 12% to 19%, indicating very moist to wet conditions.

Groundwater

Free water was recorded in the open boreholes, at depths of 3.4m to 4.6m from grade, with wet cave-in at depths of 7.9m to 10.7m from grade, upon completion of drilling.

On September 12, 2023, the water levels, measured (by Palmer, the Hydrogeologist) in the additional monitoring wells installed at Boreholes 23BH-2 and 23BH-3, were documented at depths of 3.88m and 3.58m from grade, respectively.

During the monitoring round of May 26, June 2, July 11 & 18, August 10 & 22, September 14, 2022 and April 25, 2023, the water levels, measured (and provided by the Hydrogeologist) in the monitoring wells at Boreholes 22BH-1, 22BH-6 to 22BH-9, within the Block 1 and Block 2 areas of the mid-rise buildings, were at depths of 2.74m to 7.72m from grade; the water levels, in the monitoring wells at Boreholes 22BH-3, 22BH-12 and 22BH-13, within the Block 3 area of townhouses, were at depths of 2.09m to 5.37m from grade.

The documented water levels of the lowest and highest, during the period of May 26, 2022 to April 25, 2023, are listed below:

BH/WELL ID	Block	Ground Elevation	Depth of Well	Water Levels at Depths and Elevations	
				From May 26, 2022 to April 25, 2023	
22BH-1 (MW)	1	327.20m	15.2m	3.67m - 4.50m	323.53m - 322.70m
22BH-6 (MW)	2	328.20m	15.2m	5.02m – 7.72m	323.18m – 320.48m
22BH-7 (MW)	2	327.80m	15.2m	4.04m – 4.90m	323.76m – 322.90m
22BH-7S (MW)		327.80m	6.1m	4.07m – 4.97m	323.73m – 322.83m
22BH-8 (MW)	1	326.75m	15.2m	2.74m – 3.46m	324.01m – 323.29m
22BH-9 (MW)	1	326.48m	6.1m	2.82m – 3.52m	323.66m – 322.96m
22BH-3 (MW)	3	325.26m	6.1m	2.09m – 2.97m	323.17m – 322.29m
22BH-12 (MW)	3	325.55m	5.8m	2.42m – 3.28m	323.13m – 322.27m
22BH-12D (MW)		325.55m	10.7m	2.47m – 3.33m	323.08m – 322.22m
22BH-13 (MW)	3	327.30m	6.1m	3.72m – 5.37m	323.58m – 321.93m

Based on the moisture content profile of the soil samples retrieved from the boreholes, our field observations at the Site and the water levels measured, it is our opinion that the depths of the free water represent a continuous groundwater table within sand and gravel, and silty sand deposits.

The hydrogeological study, carried out by another party, should be referred for source of the groundwater, the groundwater table and the temporary / permanent groundwater control.

Recommendations

A review of a set of Architectural Drawings, Revision 1, prepared by Turner Fleischer, dated July 21, 2023, indicated that the development of the Site will consist of:

Block 1 - two 10 & 12-storey apartment buildings with two levels of underground parking,
Block 2 - two 12 & 14-story apartment buildings with two levels of underground parking,
Block 3 - a number of townhouses, with basement along the periphery units and without basements at the remaining units, with the associated roadways and parking lot or connection trail.

A review of a Preliminary Concept Grading Plan, Drawing No.: 2 of 4, Revision 1, prepared by Odan Detech Consulting Engineers, dated June 15, 2023, indicated the finished floor elevations (FFE) of the proposed development:

Block 1 buildings – elevation 327.80m,
Block 2 building – elevation 329.05m ,
Block 3 townhouses - elevations vary from 327.33m to 328.10m
These elevations will be at or above the existing grade up to 2.8m at the borehole locations.

At the time of preparation of this addendum, the slab-on-grade elevations of the two levels of underground parking under the mid-rise buildings and the townhouse basements, if any, were not known. For the purpose of this report, we have assumed that the slab-on-grade of P2 level will be at depths of 6.0m from grade/FFEs, elevations of 321.80m within Block 1 and 323.05m within Block 2. The founding levels of the spread footings are assumed to be 1.0m lower than the above slab-on-grade depths, i.e. at or below depths of 7.0m from grade/FFEs, elevations of 320.80m within Block 1 and 322.05m within Block 2. The elevator and the surrounding foundations are anticipated to be deeper than the above assumed levels, assumed at depths of 9.0m from grade/FFEs, at elevations 318.80m within Block 1 and 320.05m within Block 2.

These assumed P2 slab-on-grade depths of the 10 to 14-storey buildings are approximately 0.4m to 2.1m below the current static groundwater levels, documented at the monitoring wells at Boreholes 22BH-1, 22BH-6 to 22BH-9 locations, including the groundwater level recorded at Boreholes 23BH-1 to 23BH-4 locations, on completion of the drilling operation. Unless a permanent groundwater control system is used to maintain the water level a minimum of 0.5m below the proposed slab-on-grade elevations, we recommend that the part of the underground parking, below the highest anticipated water level, should be designed as a water tight structure and consideration should, therefore, be given to use a raft slab as the foundation of the proposed structure. In this respect, the hydrogeological study should be consulted to determine the highest water level.

5.1 Site Preparation

During the site preparation, the contractor must allow for removal of topsoil, deleterious fill and material with high moisture and/or organic content, if encountered, within the building / townhouse envelopes, the access roads and parking area.

The existing fill, as revealed in the borehole locations, appears to have been compacted under some supervision and may be left in place in its current state, for the design and construction of the slab-on-grade of the proposed townhouse, and the connection trail if encountered. To achieve uniform subgrade conditions, we recommend that after removal of any unsuitable surface soil, the subgrade should be proofrolled, after it has been reviewed by a soils engineer from our office. Any compressible, loose, or weak spots encountered during the proof rolling process, should be sub-excavated to a firm ground. Any backfill of the sub-excavated areas and new fill, below the footing levels of the townhouses, should consist of organic free soils, compacted in 200mm lifts to at least 100% of its Standard Proctor maximum dry density (SPMDD), in accordance with the engineered fill standards, and to 98% of its SPMDD up to the slab-on-grade levels. Guidelines of Engineered Fill is attached in Appendix A.

Any new fill, placed within the proposed pavement areas, should consist of organics free soil and compacted in 200mm lifts to at least 98% of its SPMDD.

5.2 Foundation Design

The proposed buildings and townhouses can be supported on conventional spread/strip footings, founded on the native undisturbed strata of sand and gravel, sandy silt till, silty sand deposits, or engineered fill.

Block 1 – 10 to 12-Storey Buildings (Boreholes 22BH-1, 22BH-9, 23BH-3 & 23BH-4)

A review of the above boreholes indicated that the subsoils at or below the assumed foundation levels will consist of compact to very dense sand and gravel to sandy silt till, or silty sand deposits. Spread or strip footings, founded in these deposits, at or below elevations of 318.80m to 320.8m, can be designed using the following bearing pressures:

- at Factored Ultimate Limit State = 450 kPa
- at Serviceability Limit State = 300 kPa

If there is a significant change in the assumed slab-on-grade and founding elevations, **Toronto Inspection Ltd.**, should be consulted to review and confirm these founding bearing pressures.

Block 2 – 12 to 14-Storey Buildings (Boreholes 22BH-6, 22BH-7, 23BH-1 & 23BH-2)

A review of the above boreholes indicated that the subsoils at or below the assumed foundation levels will consist of compact to very dense sand and gravel to sandy silt till deposits. Spread or strip footings, founded in these deposits, at or below elevations of 320.05m to 322.05m, can be designed using the following bearing pressures:

- at Factored Ultimate Limit State = 450 kPa
- at Serviceability Limit State = 300 kPa

If there is a significant change in the assumed slab-on-grade and founding elevations, *Toronto Inspection Ltd.*, should be consulted to review and confirm these founding bearing pressures.

Block 3 - Townhouses (Boreholes 22BH-2 to 22BH-5 & 22BH-10 to 22BH-14)

Spread / strip footings founded on the engineered fill and the native sand and gravel deposit can be designed using the following bearing pressures:

- at Factored Ultimate Limit State = 220 kPa
- at Serviceability Limit State = 150 kPa

The soils consist of predominately non-cohesive fill and native deposits, and vertical excavation, without side supports, will not be stable. Trench and pour method will not be feasible.

For strip footings placed in the engineered fill, we recommend that all perimeter footings should be reinforced continuously with at least 2-15M steel bars. This reinforcement will bridge any loose pockets of fill, if any, under the footings.

All perimeter footings should be founded a minimum of 1.2m below the final outside grade.

The native soils below the slab-on-grade of the mid-rise buildings, at an assumed depth of 6m below grade, will most probably consist of very permeable sand and gravel deposit or glacial till. If the slab-on-grade is up to 2m below the highest recorded water level, the groundwater in this deposit can be maintained below the slab-on-grade by the installation of a network of sub-floor drainage system. The elevator shafts on the other hand will be significantly below the groundwater table and we recommend that the elevator shafts should be designed as water tight structures. It is, therefore very important that *Toronto Inspection Ltd.* should review these recommendations once the slab-on-grade elevations have been finalised.

If the proposed slab-on-grade depths are deeper than assumed and the groundwater table cannot be maintained below the slab-on-grade, each building will have to be designed as a watertight structure, below the highest anticipated static groundwater level, founded on a raft slab. The raft foundation can be designed using bearing pressures of 300 kPa at the Serviceability Limit State. A modulus of subgrade reaction of 40 MN/m³ can be used for the design of raft slab on the compact to very dense deposits. The highest anticipated groundwater level should be as established by a hydrogeological study.

For the construction of the raft foundation, particularly at the elevator and the surrounding foundations, provision will have to be made to provide a space between the top of the raft and the slab-on-grade, for the installation of sewers and any other in-ground services.

The base of the raft foundation is anticipated to be up to 3.4m to 5.1mm below the current static groundwater levels and will be subject to an uplift pressure of approximately 42 kPa. In addition, provision will have to be made for a rise in the groundwater levels, within the excavation, during heavy rain / wet season. We, therefore, recommend that the temporary dewatering system must not be decommissioned until the total combined weight of the raft and the structure is at least 55 kPa - a factor of safety of F=1.33. The structural engineer will have to certify the loads, before decommissioning the temporary dewatering system.

The total and differential settlement of footings, designed for the above Serviceability Limit State, will not exceed 25mm and 20mm, respectively.

All perimeter footings or any footings, which may be exposed to freezing conditions, should be placed below the frost penetration depth of 1.2m below the outside grade or provided with an equivalent thermal protection.

There is no official rule governing the footing depth for a fully enclosed unheated garage. For the two level of underground parking, the interior columns / walls and the perimeter wall footings can be founded at depths of 0.9m and 0.6m respectively below the top of the garage slab. However, footings adjacent to the fresh air ducts, the entrance of the garage and any other areas which may be exposed to the outside, a minimum frost cover of 1.2m should be provided. In addition, a nominal 50mm of Styrofoam insulation should be provided under the floor slab within the close proximity to the fresh air ducts.

It should be noted that the above recommendations for foundations have been analysed by *Toronto Inspection Ltd.* from the subsoil information obtained at the borehole locations. 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.

5.3 Floor Slab Construction

The floor slab can be designed and constructed as a conventional slab-on-grade method. The subgrade should be thoroughly proof-rolled under the supervision of a geotechnical technician from *Toronto Inspection Ltd.* Any compressible, loose, or weak spots encountered during the proof rolling process, should be sub-excavated to a firm ground. Any backfill of the sub-excavated areas or new fill, below the slab-on-grade, should consist of organic free soils, compacted to at least 98% of its Standard Proctor maximum dry density (SPMDD).

A bedding consisting of at least 150 mm of granular A (OPSS Form 1010) or its approved equivalent, is recommended as a moisture barrier. The bedding should be compacted to at least 100% SPMDD. Based on the groundwater conditions encountered at Boreholes 22BH-1 and 22BH-6 to 22BH-9 locations, underfloor drainage systems, installed at a minimum depth of 0.6m on a positive gradient, at minimum of 6m centres, will be necessary below the slab-on-grade of P2 level to maintain the water level below the base of the slab. The underfloor drainage systems may be necessary for the slab-on-grade of basements, if wet conditions are encountered during construction.

For raft foundation design, the space between the top of the raft foundation and the slab-on-grade, for installation of sewers and other in-ground services, can be filled with 19mm clear stone. The floor slab can be poured directly over the clear stone backfill.

The addendum is provided for the site preparation and the design of the foundations, based on the subsoil data, encountered at the original and the additional boreholes. Other project data, information and Recommendations, provided in our Geotechnical Investigation Report (No.: 4515-22-GC, dated June 7, 2022) should be followed.

Should you have any questions, please contact our office.

Yours very truly,
TORONTO INSPECTION LTD.

David S. Wang, P.Eng.
Senior Engineer

Upkar S. Sappal, P.Eng.
Principal Engineer



Enclosures:
Borehole Location Plan
Logs of Additional Boreholes (23BH-1 to 23BH-4) & Sections
Logs of Original Boreholes (22BH-1 to 22BH-14) & Sections

Drawing No.1
Drawing Nos. 21 to 24, 25 & 26
Drawing Nos. 2 to 17&18 to 20



Source: City of Guelph Aerial Map

LEGEND:



Borehole and Monitoring Well Location (February 2022 Drilling)



Borehole and Monitoring Well Location (May 2022 Drilling)



Borehole and Monitoring Well Location (August 2023 Drilling)

--- Site Boundary

NOT TO SCALE

Toronto Inspection
GEO-ENVIRONMENTAL CONSULTANTS

110 Konrad Crescent,
Unit 16
Markham, Ontario
L3R 9X2

Tel: 905-940 8509

Fax: 905-940 8192

Email : TIL@torontoinpection.com

TITLE:

Borehole and Monitoring Well Location Plan

LOCATION:

115 Watson Parkway North (& Starwood Drive), Guelph, Ontario

PROJECT NO.

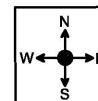
4515-22-GC

DATE :

August 2023

DRAWING NO.

1



Source: Turner Fleischer

LEGEND:



Borehole and Monitoring Well Location (February 2022 Drilling)



Borehole and Monitoring Well Location (May 2022 Drilling)



Borehole and Monitoring Well Location (August 2023 Drilling)



Site Boundary

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

LOCATION: 115 Watson Parkway North (& Starwood Drive), Guelph, Ontario

PROJECT NO. 4515-22-GC

DATE : August 2023

DRAWING NO. 1

Date Drilled: 8/22/23

Auger Sample



Headspace Reading (ppm)



Drill Type: Track Mounted Drill Rig

SPT (N) Value



Natural Moisture



Datum: Geodetic

Dynamic Cone Test



Plastic and Liquid Limit



Shelby Tube



Unconfined Compression



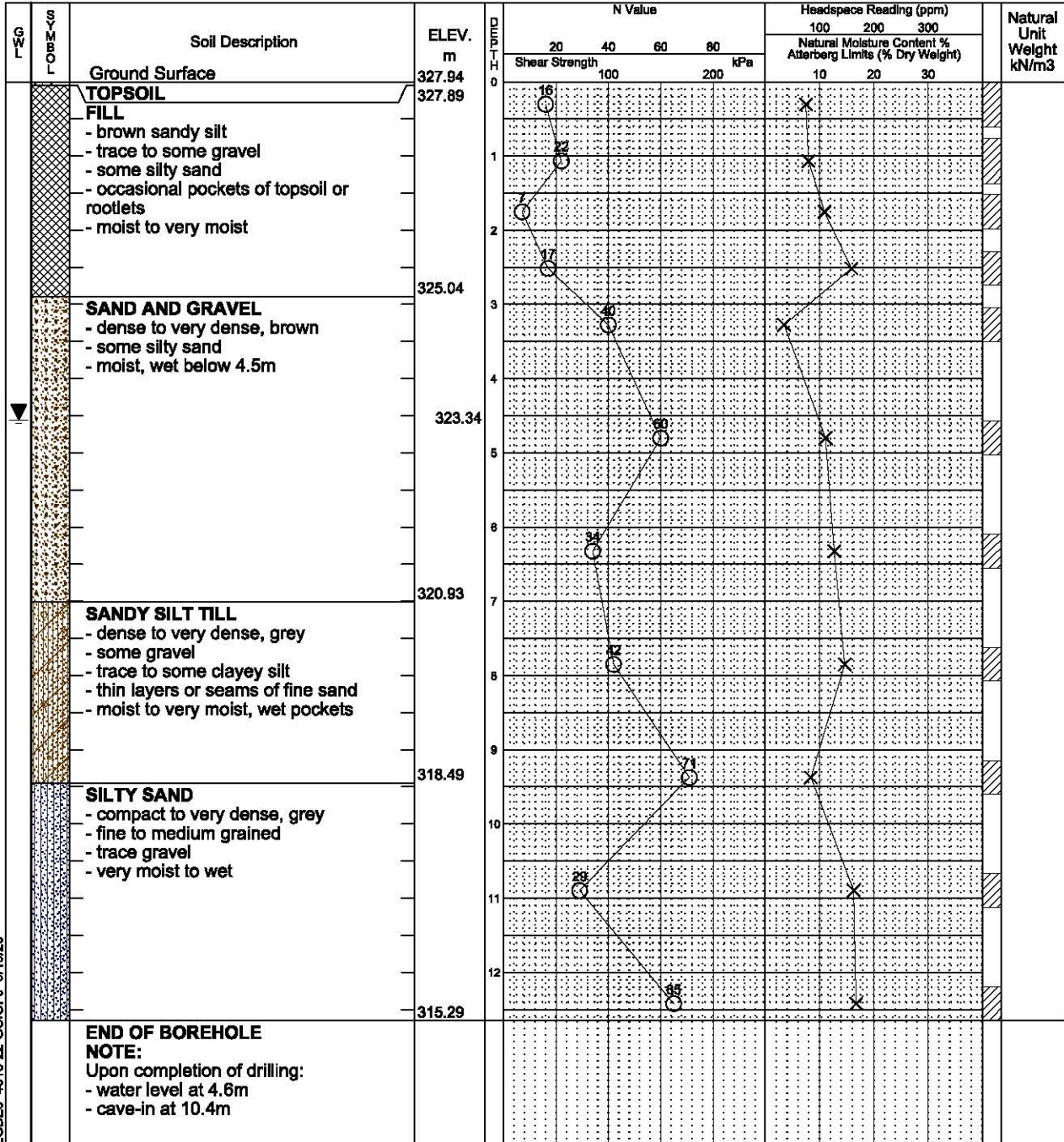
Field Vane Test



% Strain at Failure



Penetrometer



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)

Date Drilled: 8/22/23

Auger Sample



Headspace Reading (ppm)



Drill Type: Track Mounted Drill Rig

SPT (N) Value



Natural Moisture



Datum: Geodetic

Dynamic Cone Test



Plastic and Liquid Limit



Shelby Tube



Unconfined Compression



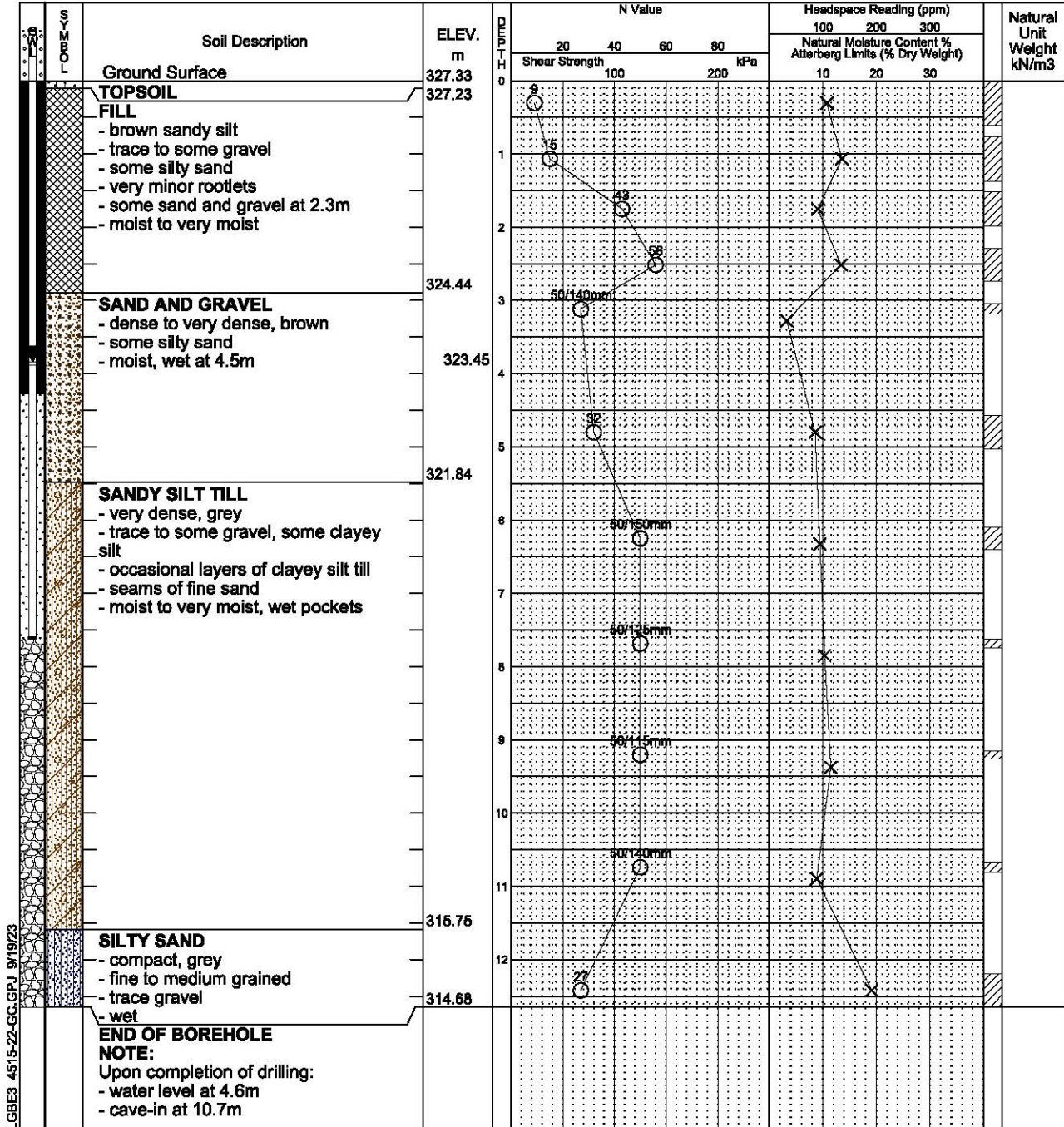
Field Vane Test



% Strain at Failure



Penetrometer



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Toronto Inspection Ltd.

Date Drilled: 8/23/23

Auger Sample



Headspace Reading (ppm)



Drill Type: Track Mounted Drill Rig

SPT (N) Value



Natural Moisture



Datum: Geodetic

Dynamic Cone Test



Plastic and Liquid Limit



Shelby Tube



Unconfined Compression



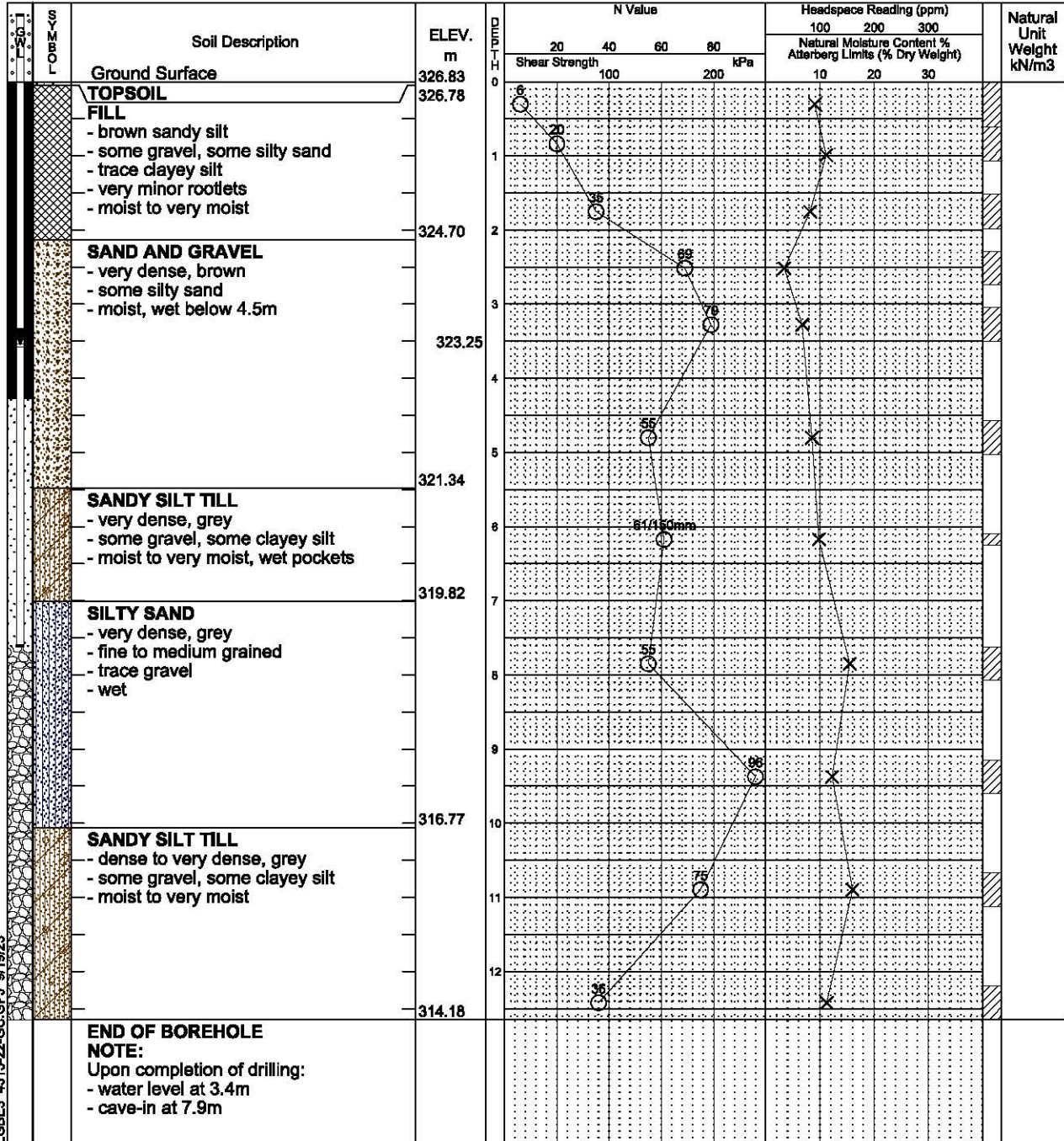
Field Vane Test



% Strain at Failure



Penetrometer



Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
Sept. 12, 2023	3.58m	

Date Drilled: 8/23/23

Auger Sample

Headspace Reading (ppm)

Drill Type: Track Mounted Drill Rig

SPT (N) Value

Natural Moisture

Datum: Geodetic

Dynamic Cone Test

Plastic and Liquid Limit

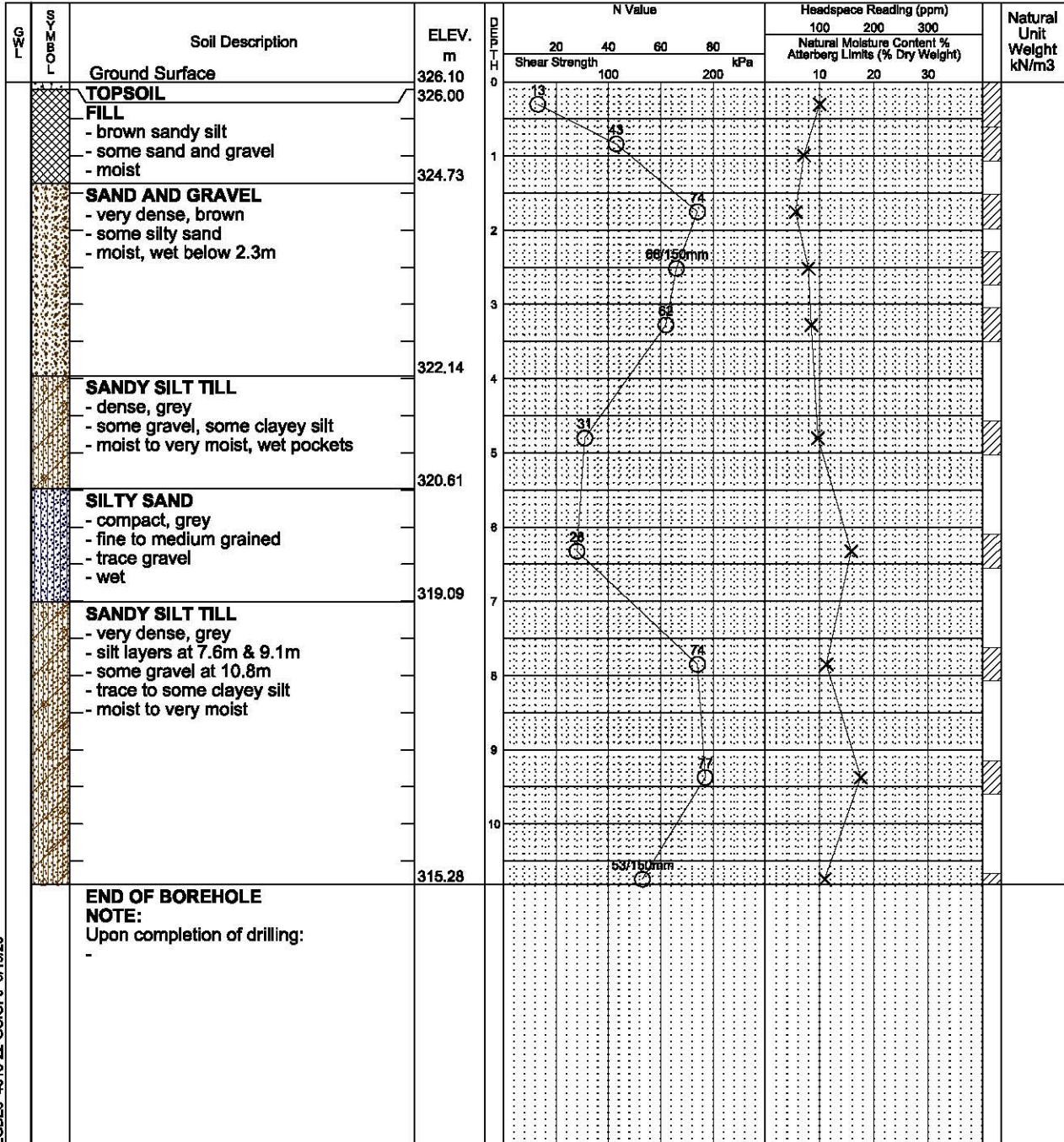
Shelby Tube

Unconfined Compression

Field Vane Test

% Strain at Failure

Penetrometer

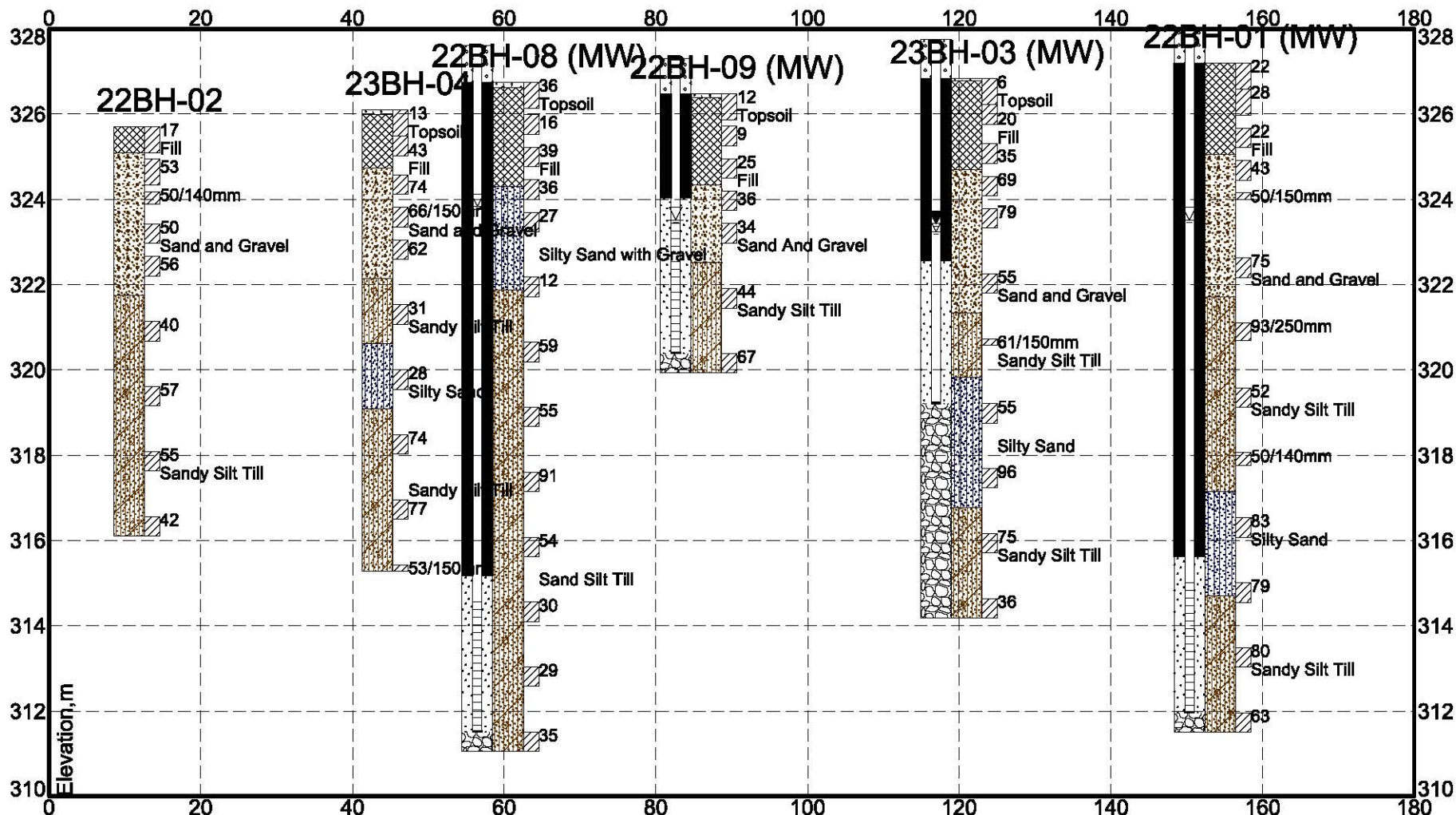


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NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

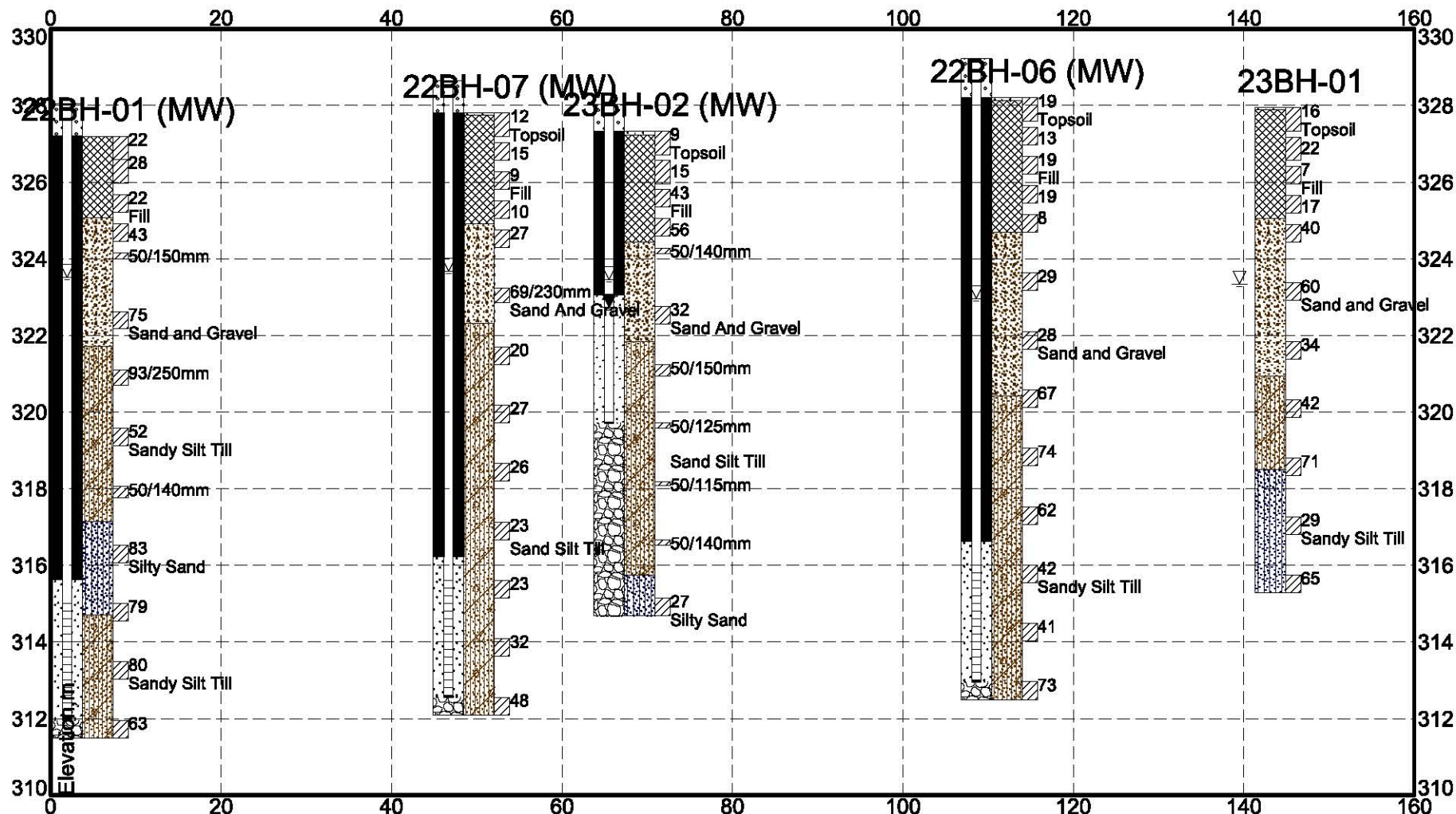
Time	Water Level (m)	Depth to Cave (m)



Borehole No	Elev.	Depth
22BH-01 (MW)	327.2	15.7
22BH-02	325.7	9.6
22BH-08 (MW)	326.7	15.7
22BH-09 (MW)	326.5	6.6
23BH-03 (MW)	326.8	12.6
23BH-04	326.1	10.8

SUBSURFACE STRATIGRAPHY		
Section 4		
Geotechnical Investigation		
PROJECT #	DATE	DRAWING
4515-22-GC	Sep 23	25

Toronto Inspection Ltd. 165 Watson Parkway North (& Starwood Drive), Guelph, Ontario



Borehole No	Elev.	Depth
22BH-01 (MW)	327.2	15.7
22BH-06 (MW)	328.2	15.7
22BH-07 (MW)	327.8	15.7
23BH-01	327.9	12.6
23BH-02 (MW)	327.3	12.6

SUBSURFACE STRATIGRAPHY		
Section 5		
Geotechnical Investigation		
PROJECT #	DATE	DRAWING
4515-22-GC	Sep 23	26

Toronto Inspection Ltd. 105 Watson Parkway North (& Starwood Drive), Guelph, Ontario

Date Drilled: 2/17/22

Auger Sample



Headspace Reading (ppm)



Drill Type: Track Mounted Drill Rig

SPT (N) Value



Natural Moisture



Datum: Geodetic

Dynamic Cone Test



Plastic and Liquid Limit



Shelby Tube



Unconfined Compression



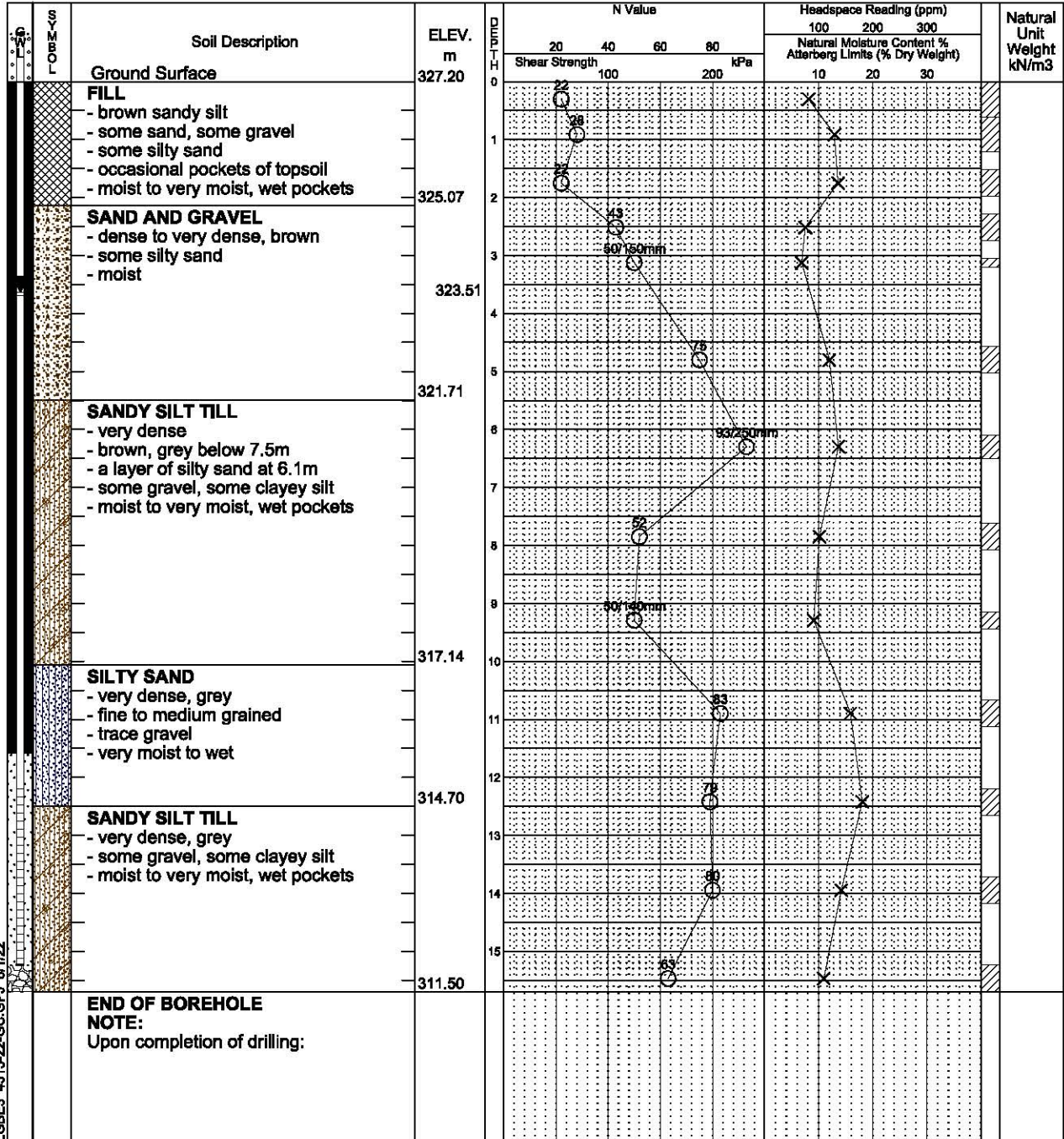
Field Vane Test



% Strain at Failure



Penetrometer



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)
Mar. 1, 2022	3.56m	
May 26, 2022	3.69m	

Date Drilled: 2/17/22

Auger Sample



Headspace Reading (ppm)



SPT (N) Value



Natural Moisture



Drill Type: Track Mounted Drill Rig

Dynamic Cone Test



Plastic and Liquid Limit



Datum: Geodetic

Shelby Tube



Unconfined Compression



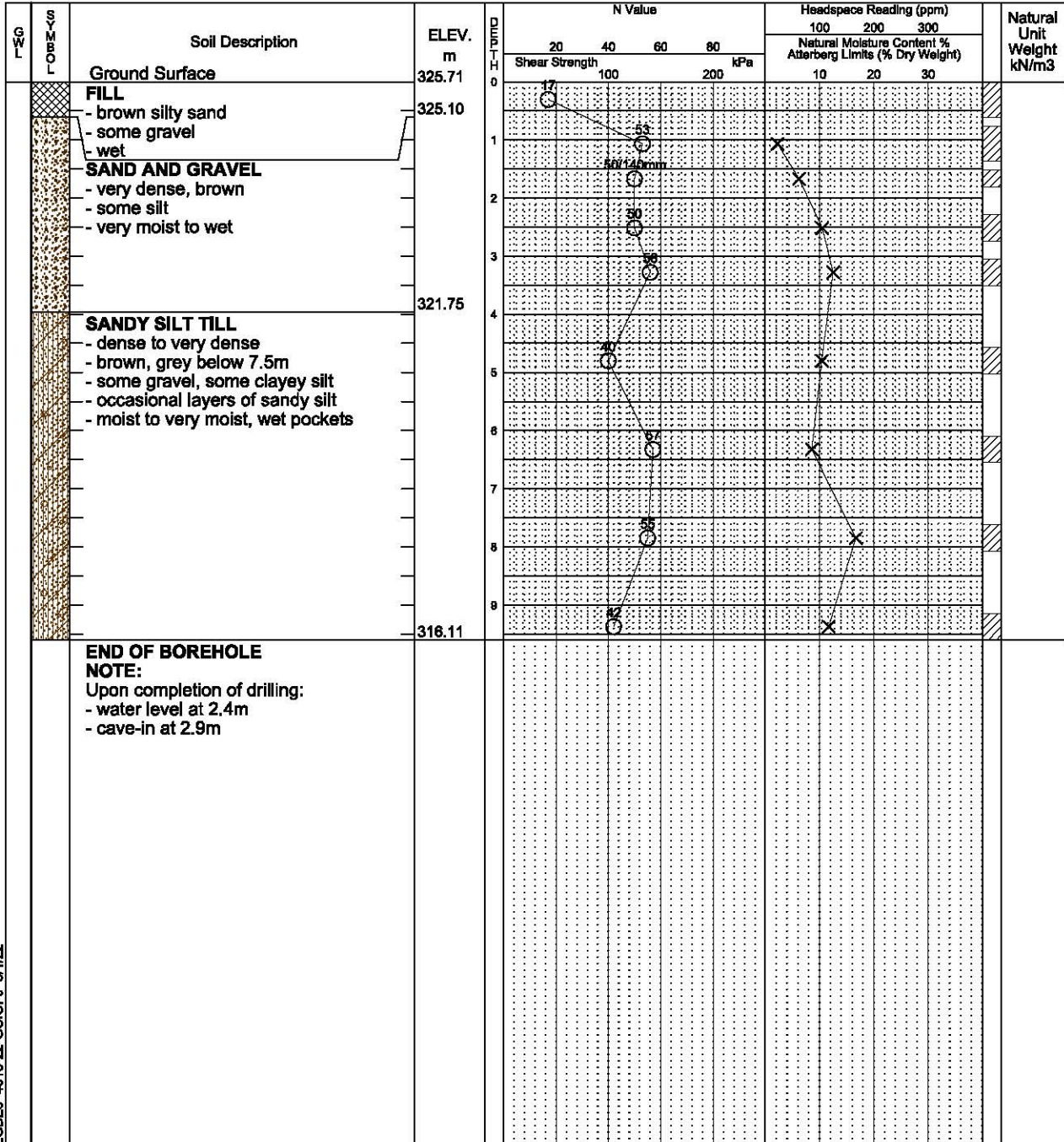
Field Vane Test



% Strain at Failure



Penetrometer



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)

Date Drilled: 2/18/22

Auger Sample



Headspace Reading (ppm)



Drill Type: Track Mounted Drill Rig

SPT (N) Value



Natural Moisture



Datum: Geodetic

Dynamic Cone Test



Plastic and Liquid Limit



Shelby Tube



Unconfined Compression



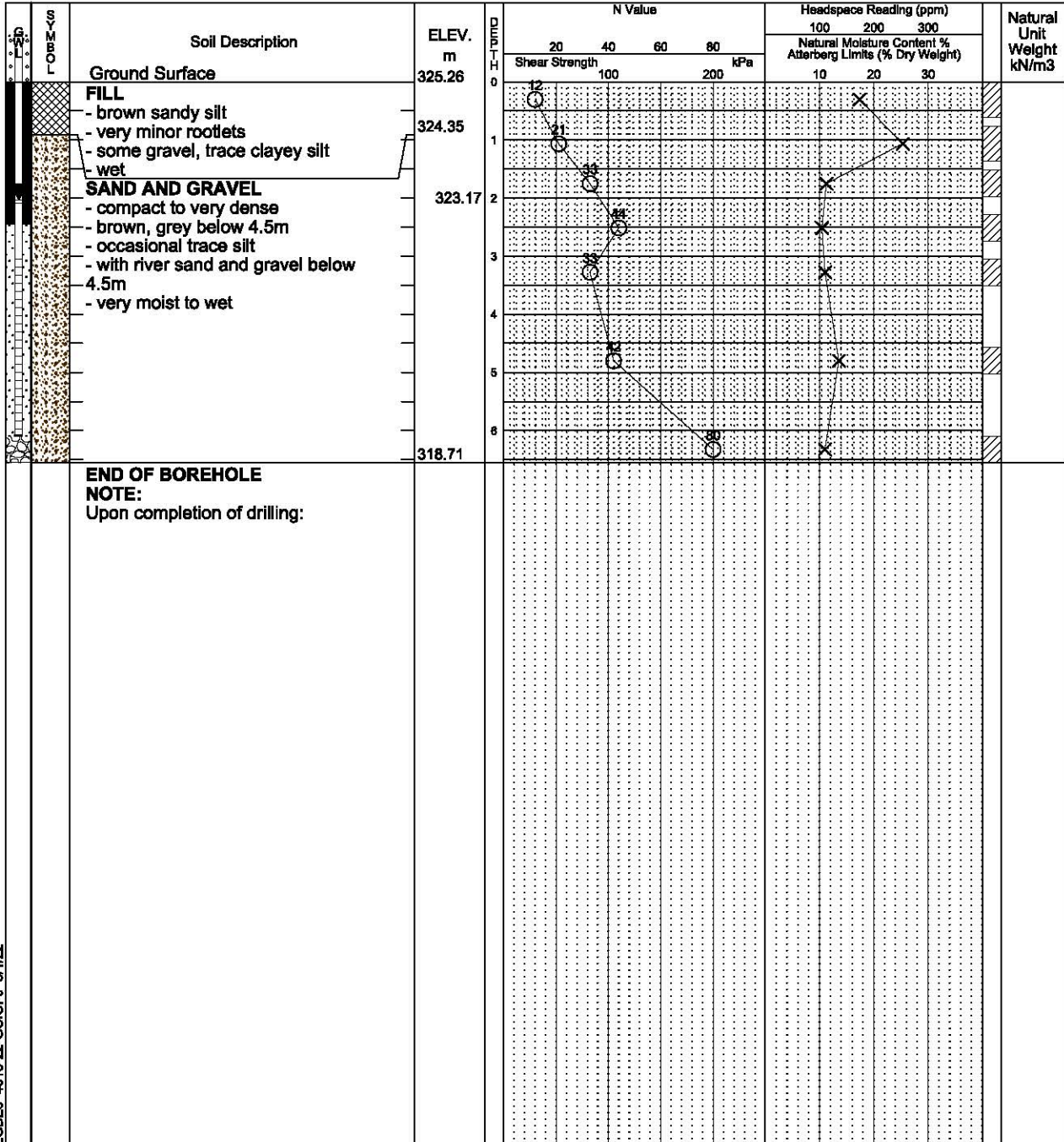
Field Vane Test



% Strain at Failure



Penetrometer



Date Drilled: 2/18/22

Auger Sample



Headspace Reading (ppm)



Drill Type: Track Mounted Drill Rig

SPT (N) Value



Natural Moisture



Datum: Geodetic

Dynamic Cone Test



Plastic and Liquid Limit



Shelby Tube



Unconfined Compression



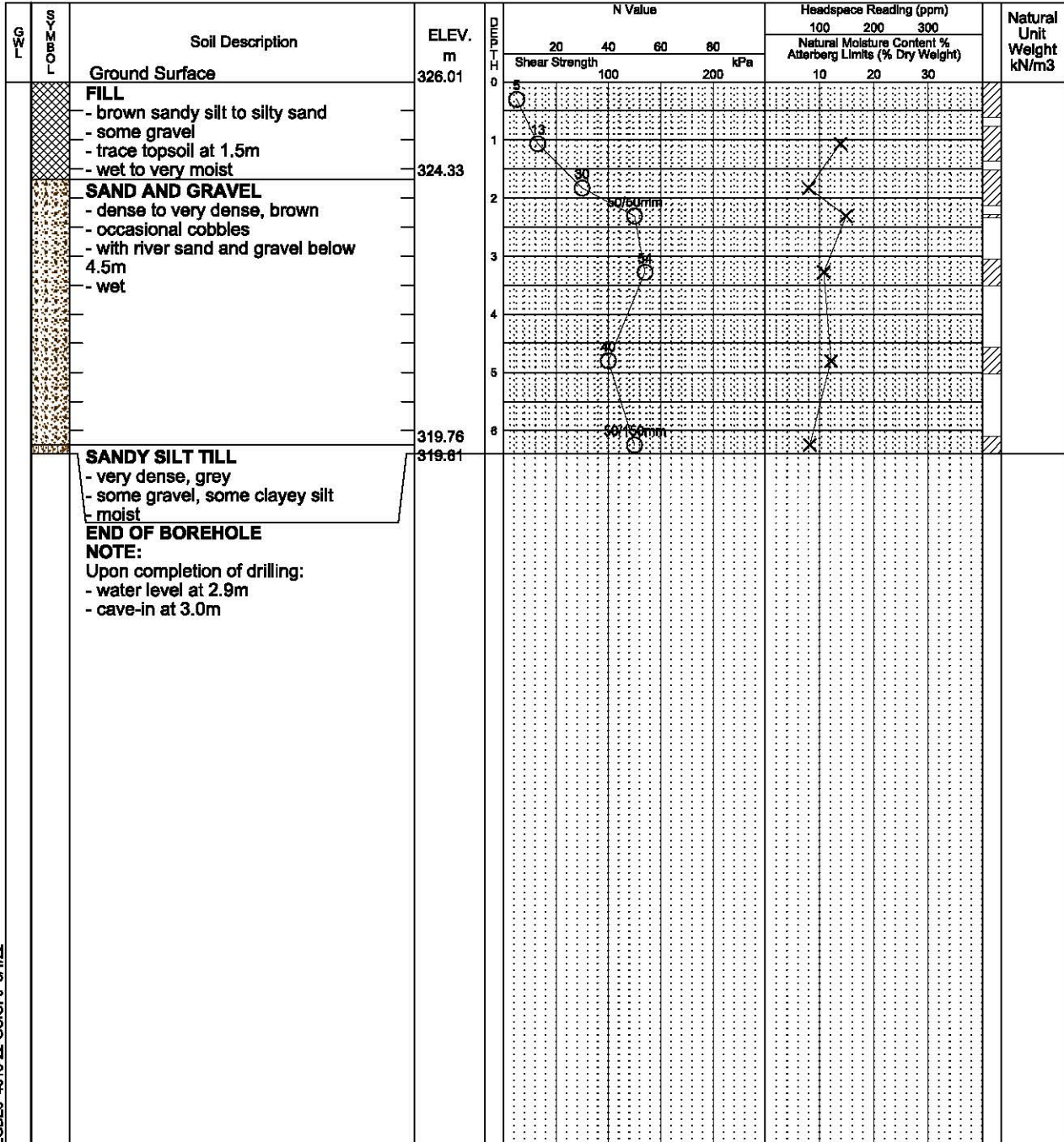
Field Vane Test



% Strain at Failure



Penetrometer



LGBE3 4515-22-GC.GPJ 8/1/22

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)

Date Drilled: 2/17/22

Auger Sample



Headspace Reading (ppm)



Drill Type: Track Mounted Drill Rig

SPT (N) Value



Natural Moisture



Datum: Geodetic

Dynamic Cone Test



Plastic and Liquid Limit



Shelby Tube



Unconfined Compression



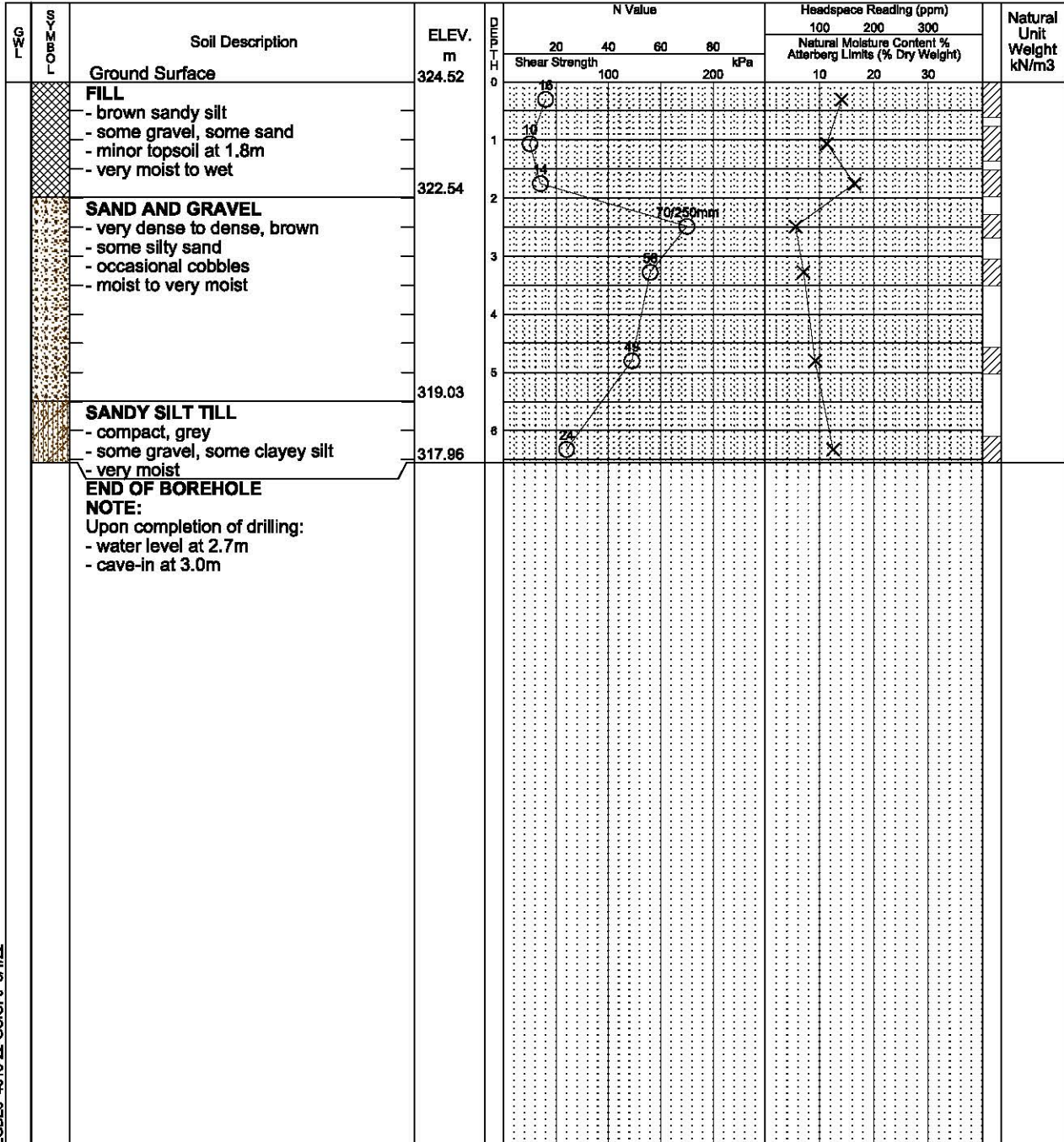
Field Vane Test



% Strain at Failure



Penetrometer



LGBE3 4515-22-GC.GPJ 8/1/22

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)

Date Drilled: 5/11/22

Auger Sample



Headspace Reading (ppm)



Drill Type: Track Mounted Drill Rig

SPT (N) Value



Natural Moisture



Datum: Geodetic

Dynamic Cone Test



Plastic and Liquid Limit



Shelby Tube



Unconfined Compression



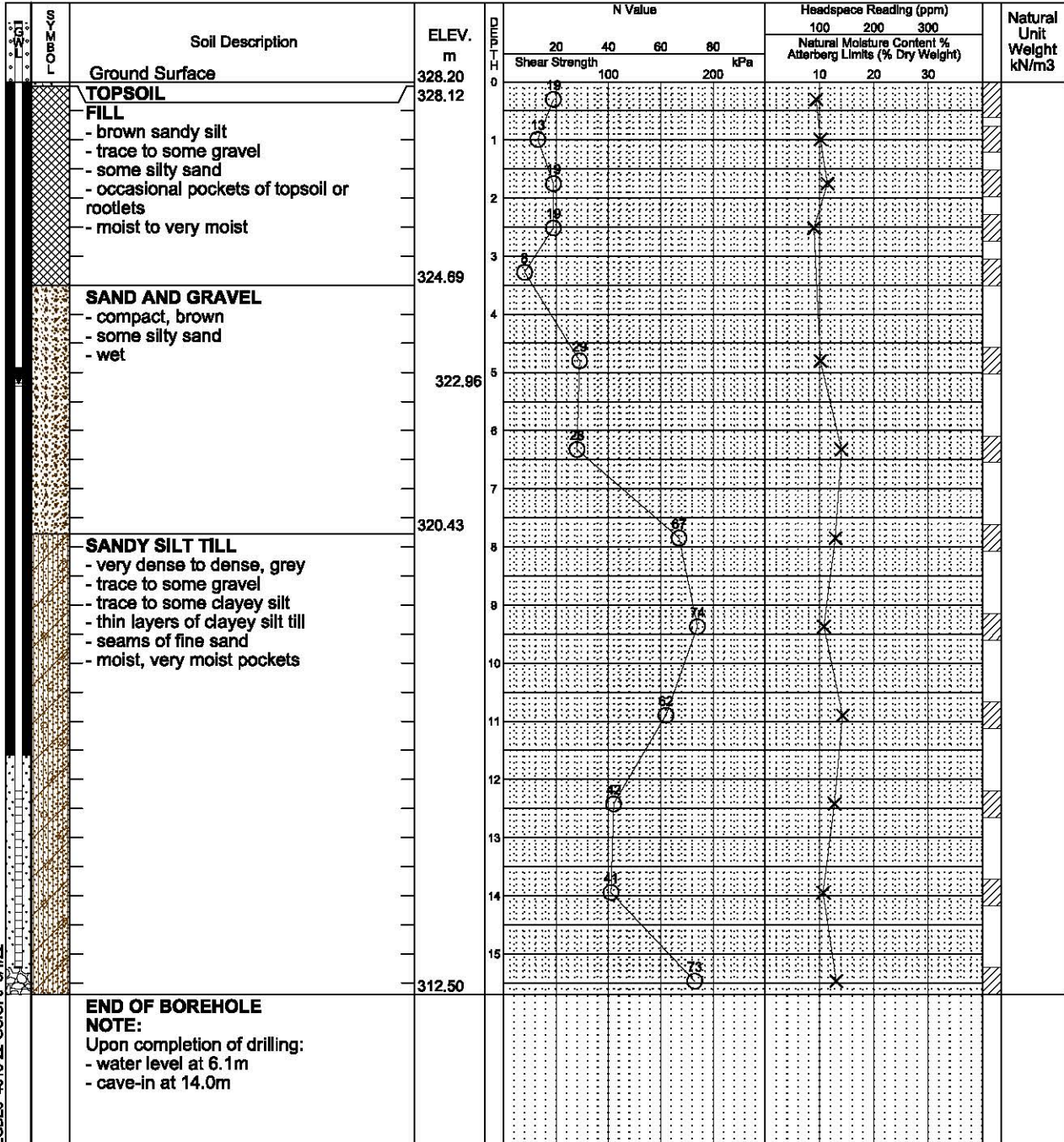
Field Vane Test



% Strain at Failure



Penetrometer



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)
May 26, 2022	5.26m	

Date Drilled: 5/10/22

Auger Sample

Headspace Reading (ppm)

Drill Type: Track Mounted Drill Rig

SPT (N) Value

Natural Moisture

Datum: Geodetic

Dynamic Cone Test

Plastic and Liquid Limit

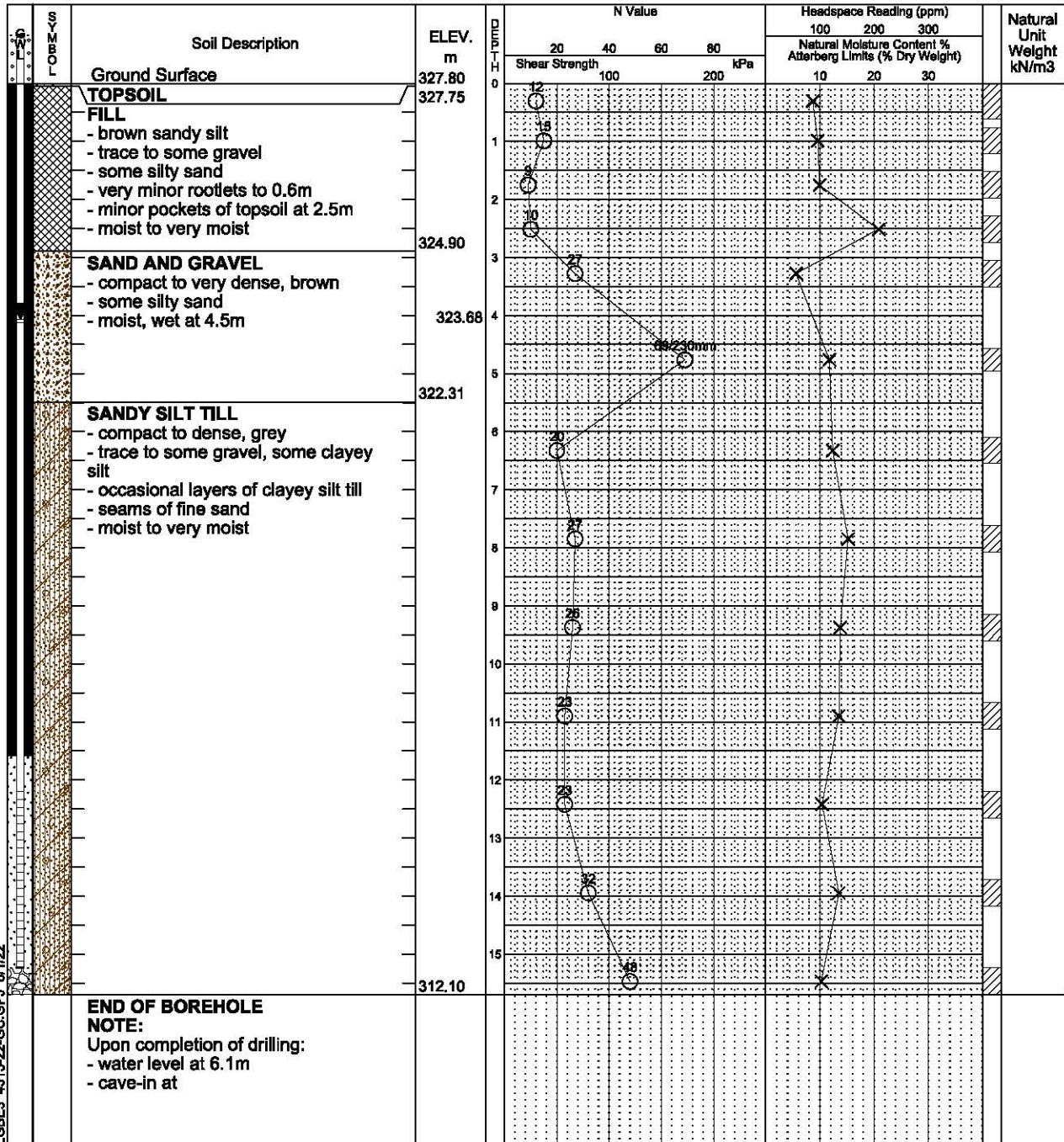
Shelby Tube

Unconfined Compression

Field Vane Test

% Strain at Failure

Penetrometer



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)
May 26, 2022	4.12m	

Project No. 4515-22-GC

Log of Borehole 22BH-07S (MW)

Dwg No. 9

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: 115 Watson Parkway North (& Starwood Drive), Guelph, Ontario

Date Drilled: 5/10/22

Auger Sample

Headspace Reading (ppm)

SPT (N) Value

Natural Moisture

Dynamic Cone Test

Plastic and Liquid Limit

Shelby Tube

Unconfined Compression

Drill Type: Track Mounted Drill Rig

Field Vane Test

% Strain at Failure

Datum: Geodetic

Penetrometer

DEPTH (m)	Soil Description	ELEV. m	N Value				Headspace Reading (ppm)			Natural Unit Weight kN/m ³
			20	40	60	80	100	200	300	
			Shear Strength kPa				Natural Moisture Content % Atterberg Limits (% Dry Weight)			
0	Ground Surface NO SAMPLING - straight drill to 6.12m	327.80								
1										
2										
3										
4		323.75								
5										
6	END OF BOREHOLE NOTE: Upon completion of drilling:	321.70								

LBBE3 4515-22-GC.GPJ 8/1/22

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)
May 26, 2022	4.07m	

Date Drilled: 5/10/22

Auger Sample



Headspace Reading (ppm)



Drill Type: Track Mounted Drill Rig

SPT (N) Value



Natural Moisture



Datum: Geodetic

Dynamic Cone Test



Plastic and Liquid Limit



Shelby Tube



Unconfined Compression



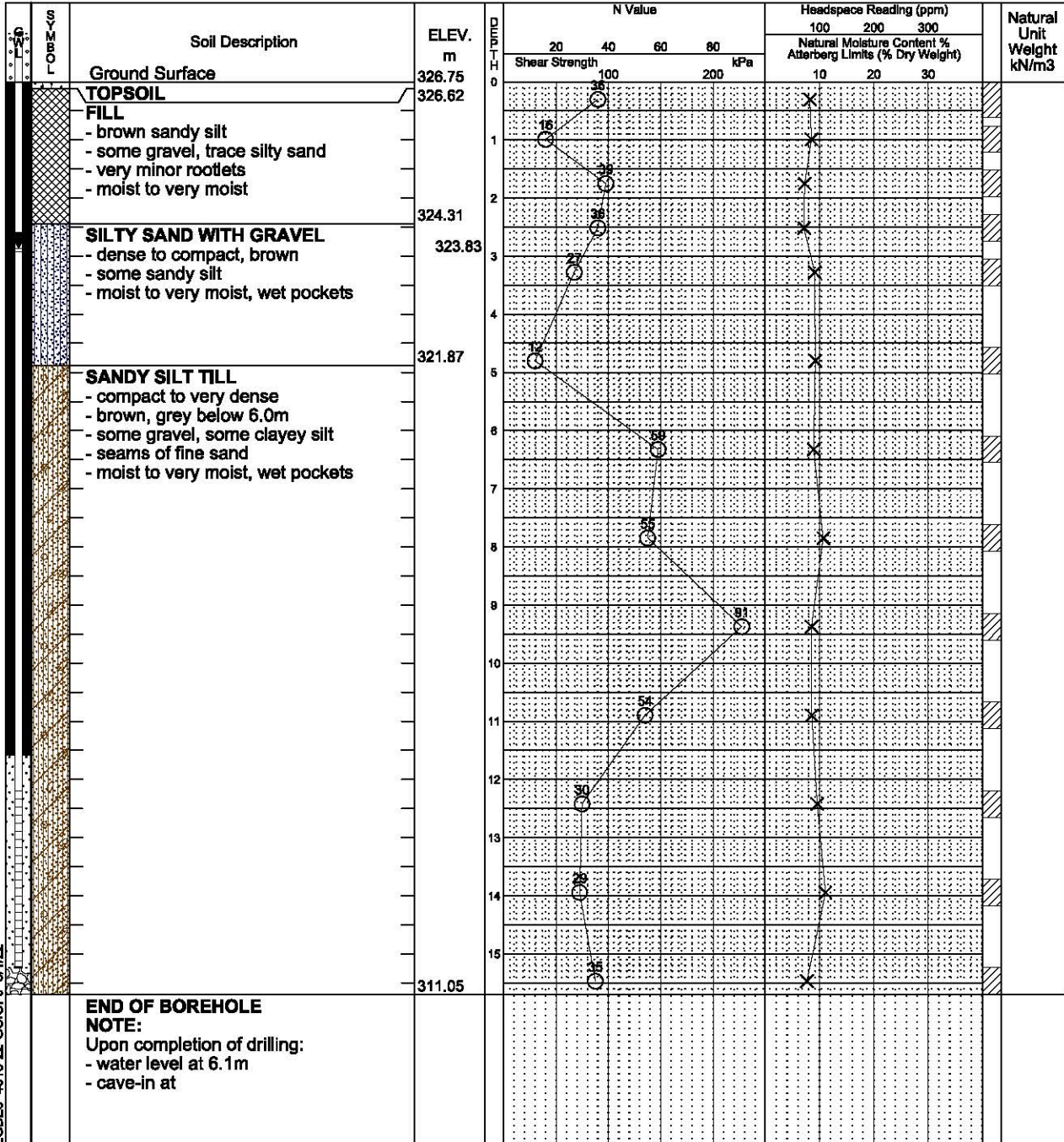
Field Vane Test



% Strain at Failure



Penetrometer



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)
May 26, 2022	2.92m	

Date Drilled: 5/12/22

Auger Sample



Headspace Reading (ppm)



Drill Type: Track Mounted Drill Rig

SPT (N) Value



Natural Moisture



Datum: Geodetic

Dynamic Cone Test



Plastic and Liquid Limit



Shelby Tube



Unconfined Compression



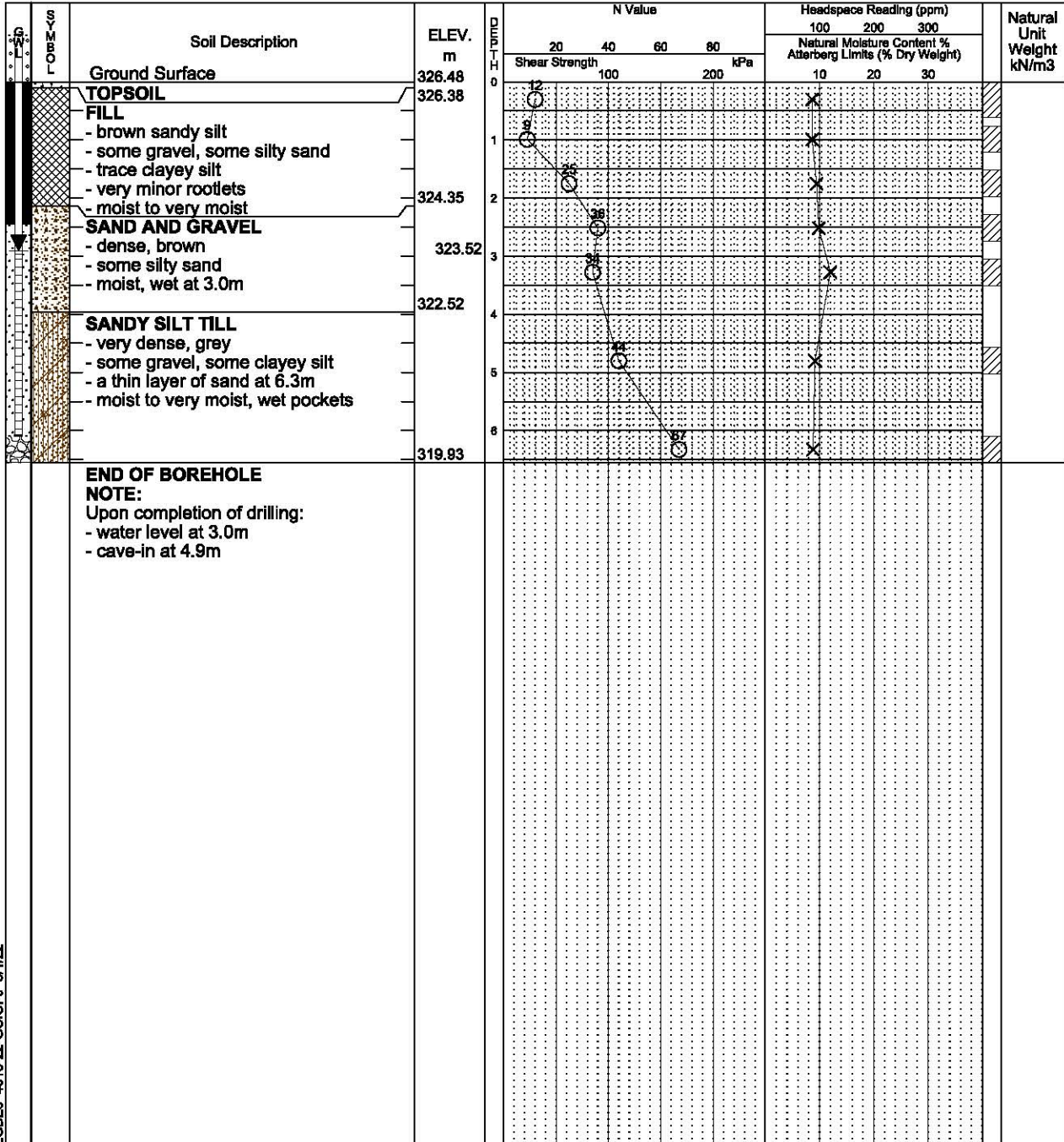
Field Vane Test



% Strain at Failure



Penetrometer



LGBE3 4515-22-GC.GPJ 8/1/22

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)
May 26, 2022	2.96m	

Date Drilled: 5/12/22

Auger Sample



Headspace Reading (ppm)



Drill Type: Track Mounted Drill Rig

SPT (N) Value



Natural Moisture



Datum: Geodetic

Dynamic Cone Test



Plastic and Liquid Limit



Shelby Tube



Unconfined Compression



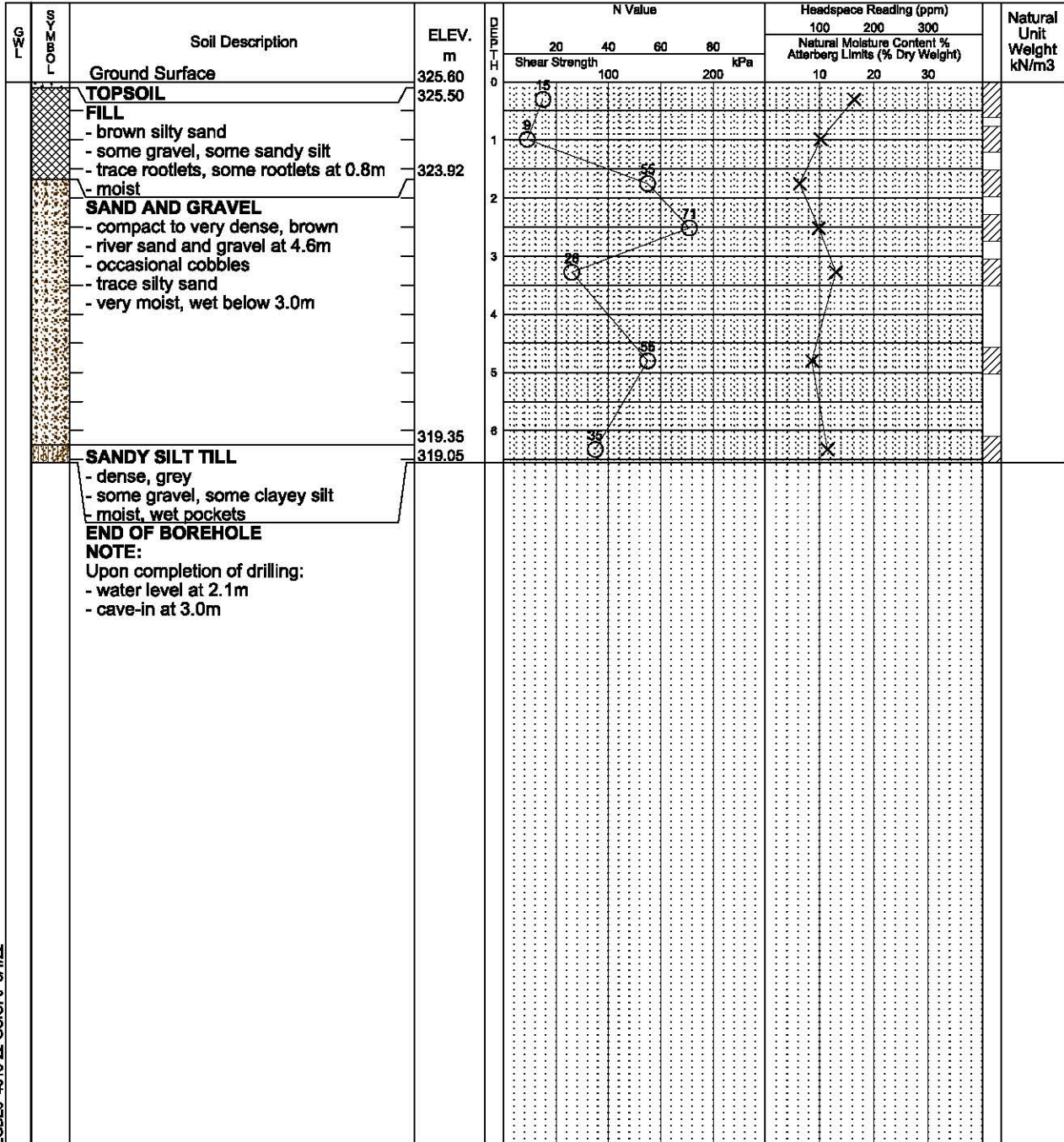
Field Vane Test



% Strain at Failure



Penetrometer



LGBE3 4515-22-GC.GPJ 6/1/22

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)

Date Drilled: 5/11/22

Auger Sample



Headspace Reading (ppm)



SPT (N) Value



Natural Moisture



Drill Type: Track Mounted Drill Rig

Dynamic Cone Test



Plastic and Liquid Limit



Datum: Geodetic

Shelby Tube



Unconfined Compression



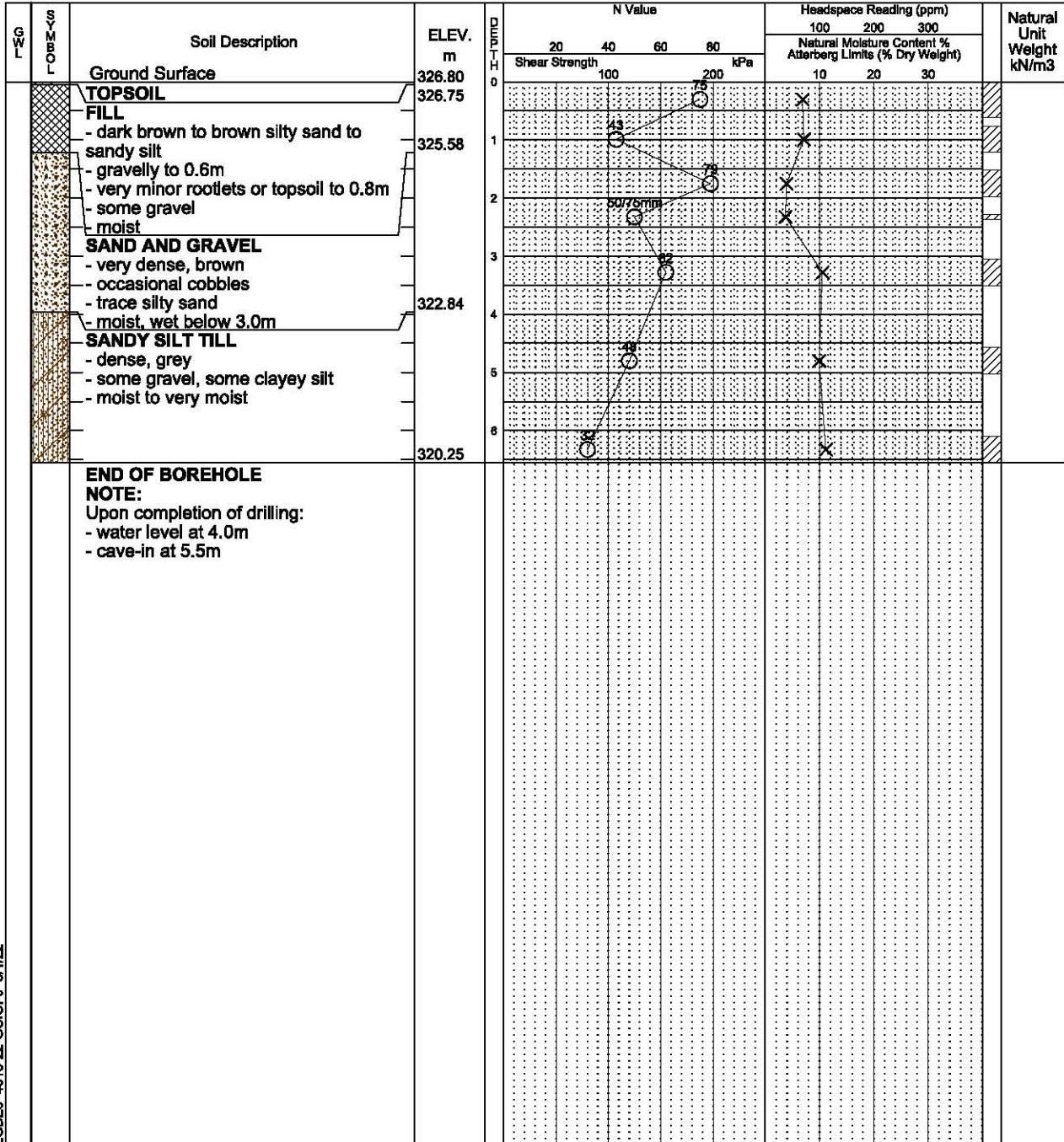
Field Vane Test



% Strain at Failure



Penetrometer



LGBE3 4515-22-GC.GPJ 8/1/22

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)

Date Drilled: 5/12/22

Auger Sample



Headspace Reading (ppm)



Drill Type: Track Mounted Drill Rig

SPT (N) Value



Natural Moisture



Datum: Geodetic

Dynamic Cone Test



Plastic and Liquid Limit



Shelby Tube



Unconfined Compression



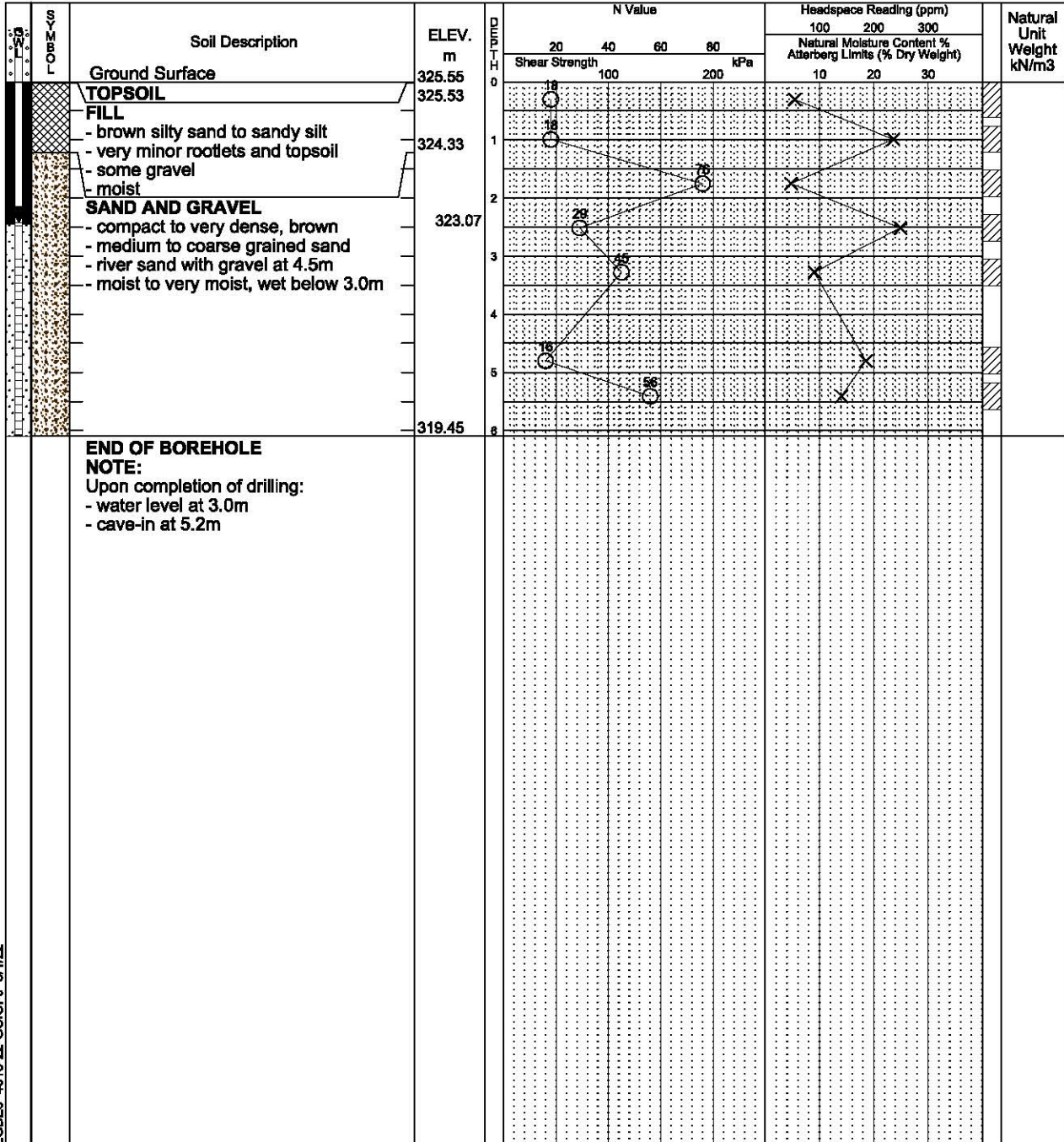
Field Vane Test



% Strain at Failure



Penetrometer



LGBE3 4515-22-GC.GPJ 8/1/22

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)
May 26, 2022	2.48m	

Project No. 4515-22-GC

Log of Borehole 22BH-12D (MW)

Dwg No. 15

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: 115 Watson Parkway North (& Starwood Drive), Guelph, Ontario

Date Drilled: 5/12/22

Auger Sample



Headspace Reading (ppm)



Drill Type: Track Mounted Drill Rig

SPT (N) Value



Natural Moisture



Datum: Geodetic

Dynamic Cone Test



Plastic and Liquid Limit



Shelby Tube



Unconfined Compression



Field Vane Test



% Strain at Failure



Penetrometer



DEPTH m	Soil Description	ELEV. m	N Value				Headspace Reading (ppm)			Natural Unit Weight kN/m ³
			Shear Strength kPa				100	200	300	
			20	40	60	80	Natural Moisture Content % Atterberg Limits (% Dry Weight)			
0	Ground Surface NO SAMPLING - straight drill to 9.9m	325.55								
1										
2		322.96								
3										
4										
5										
6										
7										
8										
9										
10		314.88								
	END OF BOREHOLE NOTE: Upon completion of drilling:									

LBBE3 4515-22-GC.GPJ 8/1/22

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)
May 26, 2022	2.59m	

Date Drilled: 5/11/22

Auger Sample



Headspace Reading (ppm)



Drill Type: Track Mounted Drill Rig

SPT (N) Value



Natural Moisture



Datum: Geodetic

Dynamic Cone Test



Plastic and Liquid Limit



Shelby Tube



Unconfined Compression



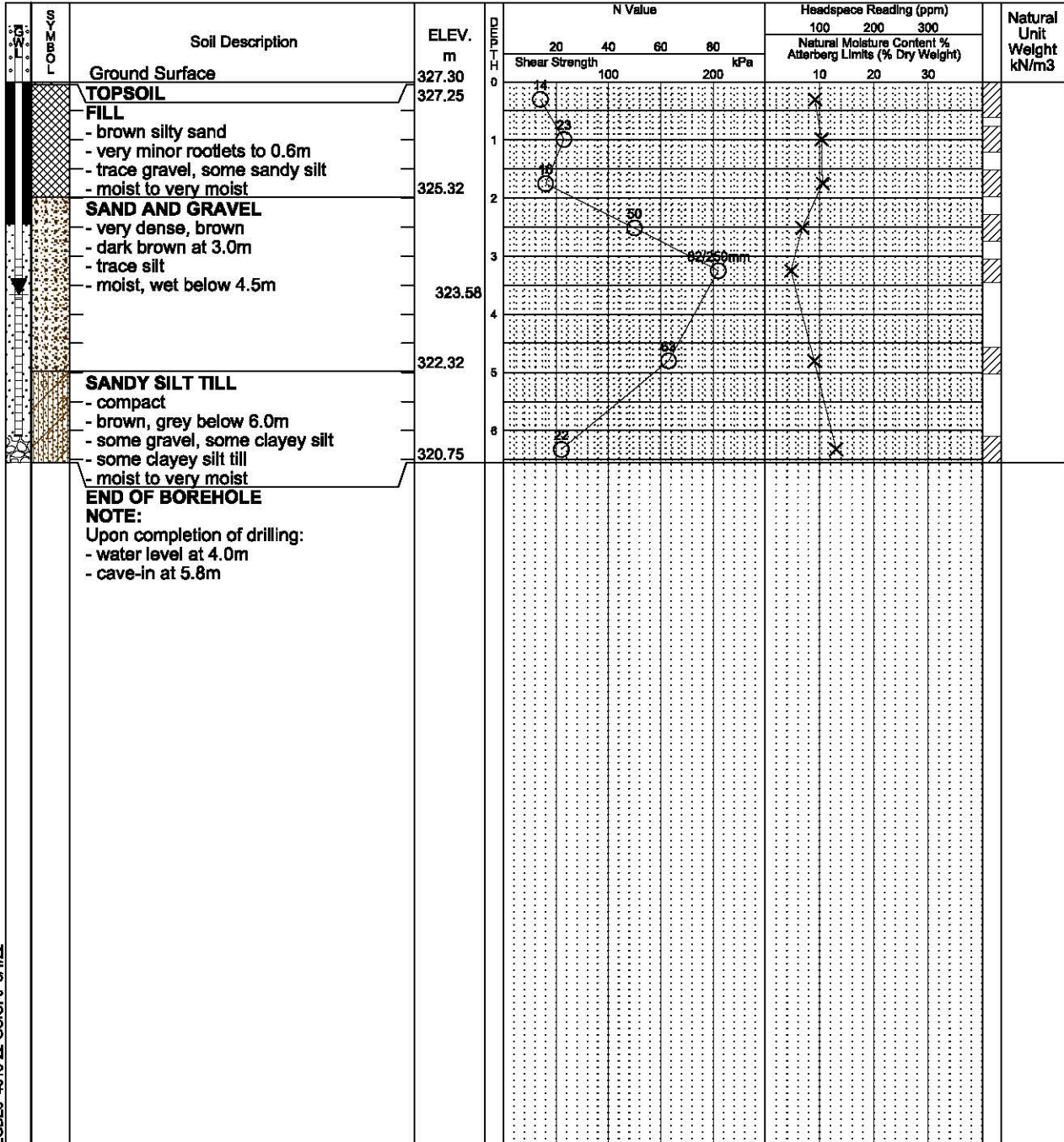
Field Vane Test



% Strain at Failure



Penetrometer



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)
May 26, 2022	3.72m	

LBBE3 4515-22-GC.GPJ 8/1/22

Date Drilled: 5/10/22

Auger Sample



Headspace Reading (ppm)



Drill Type: Track Mounted Drill Rig

SPT (N) Value



Natural Moisture



Datum: Geodetic

Dynamic Cone Test



Plastic and Liquid Limit



Shelby Tube



Unconfined Compression



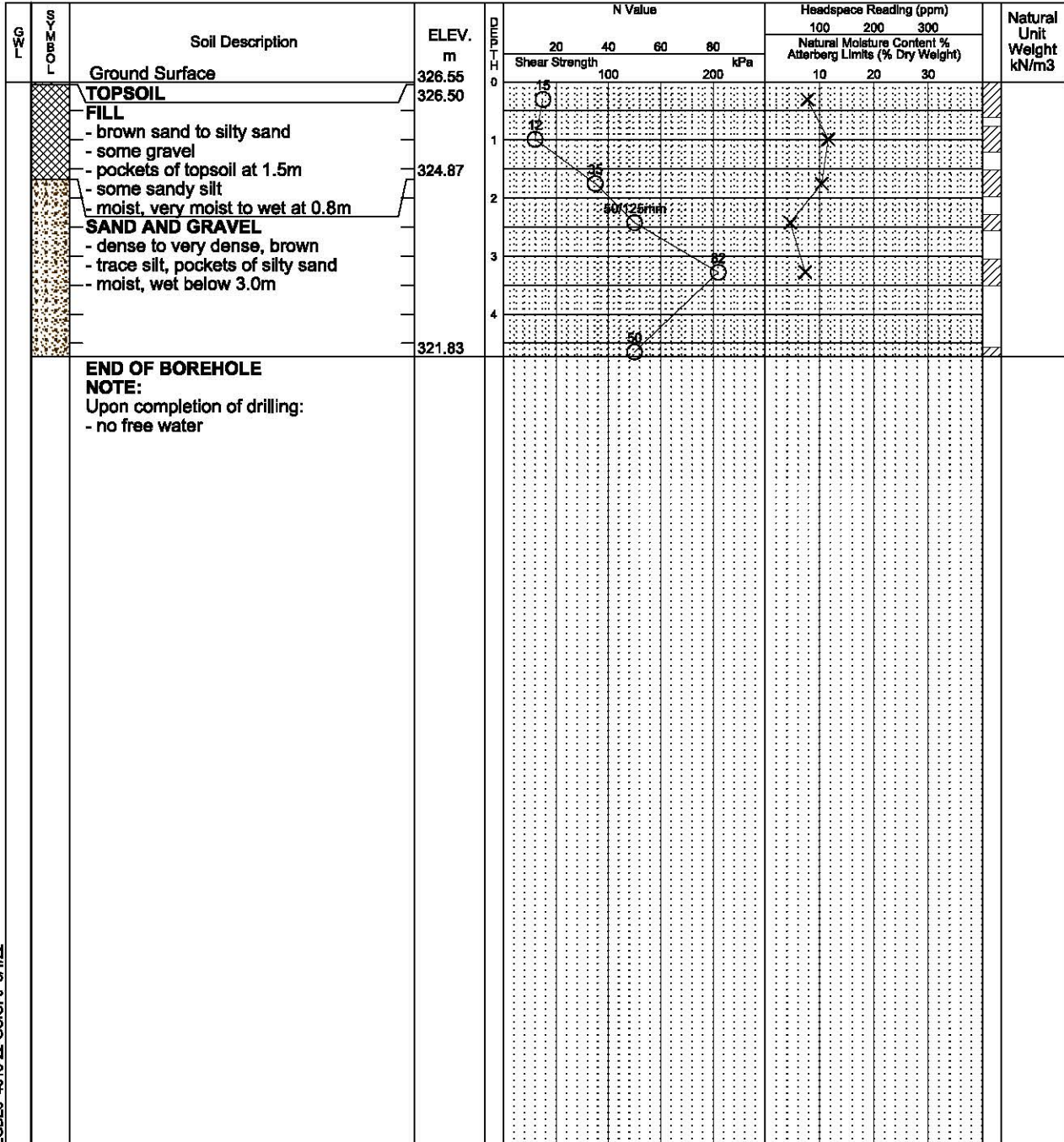
Field Vane Test



% Strain at Failure



Penetrometer

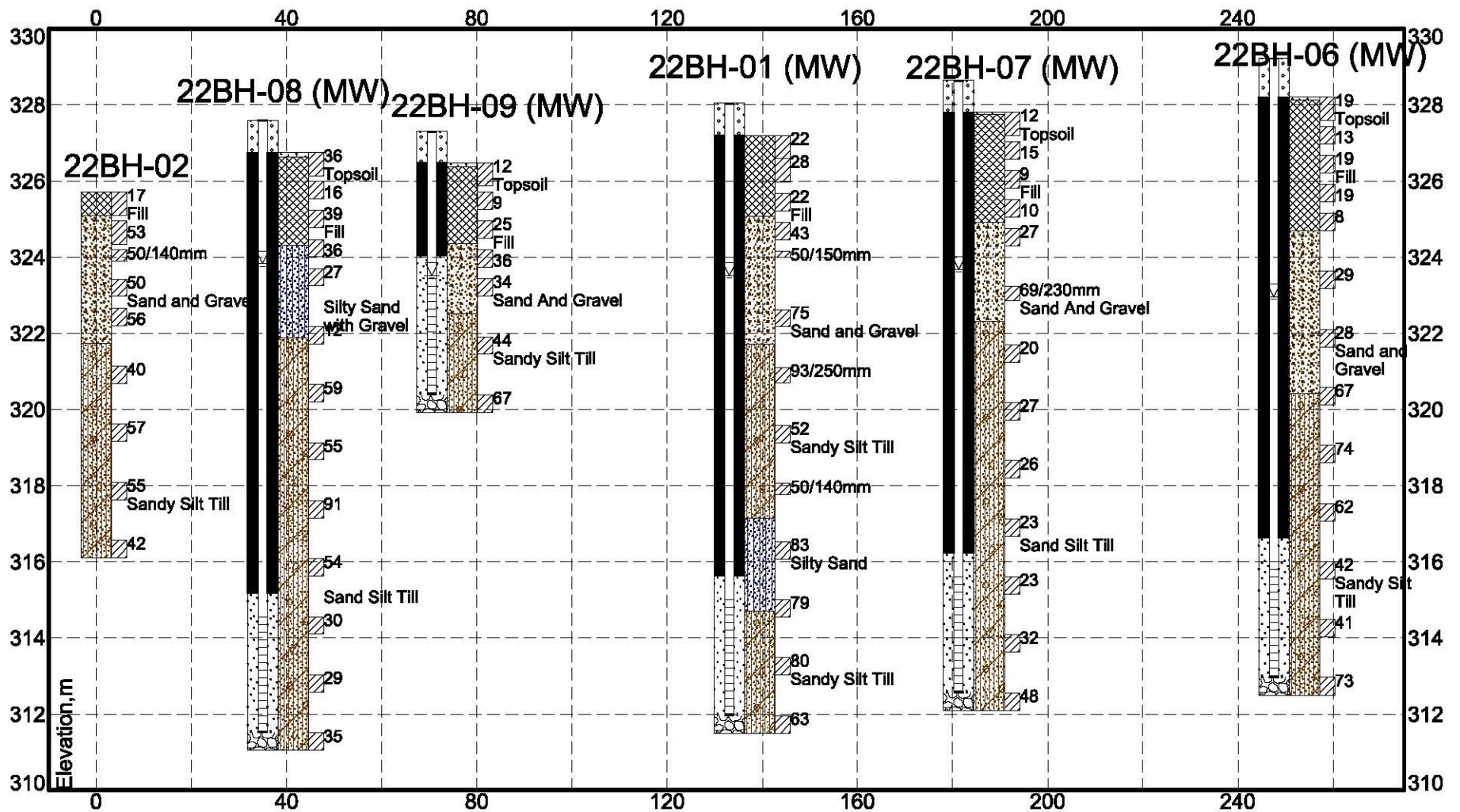


LGBE3 4515-22-GC.GPJ 8/1/22

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)



Borehole No	Elev.	Depth
22BH-01 (MW)	327.2	15.7
22BH-02	325.7	9.6
22BH-06 (MW)	328.2	15.7
22BH-07 (MW)	327.8	15.7
22BH-08 (MW)	326.7	15.7
22BH-09 (MW)	326.5	6.6

Toronto Inspection Ltd.

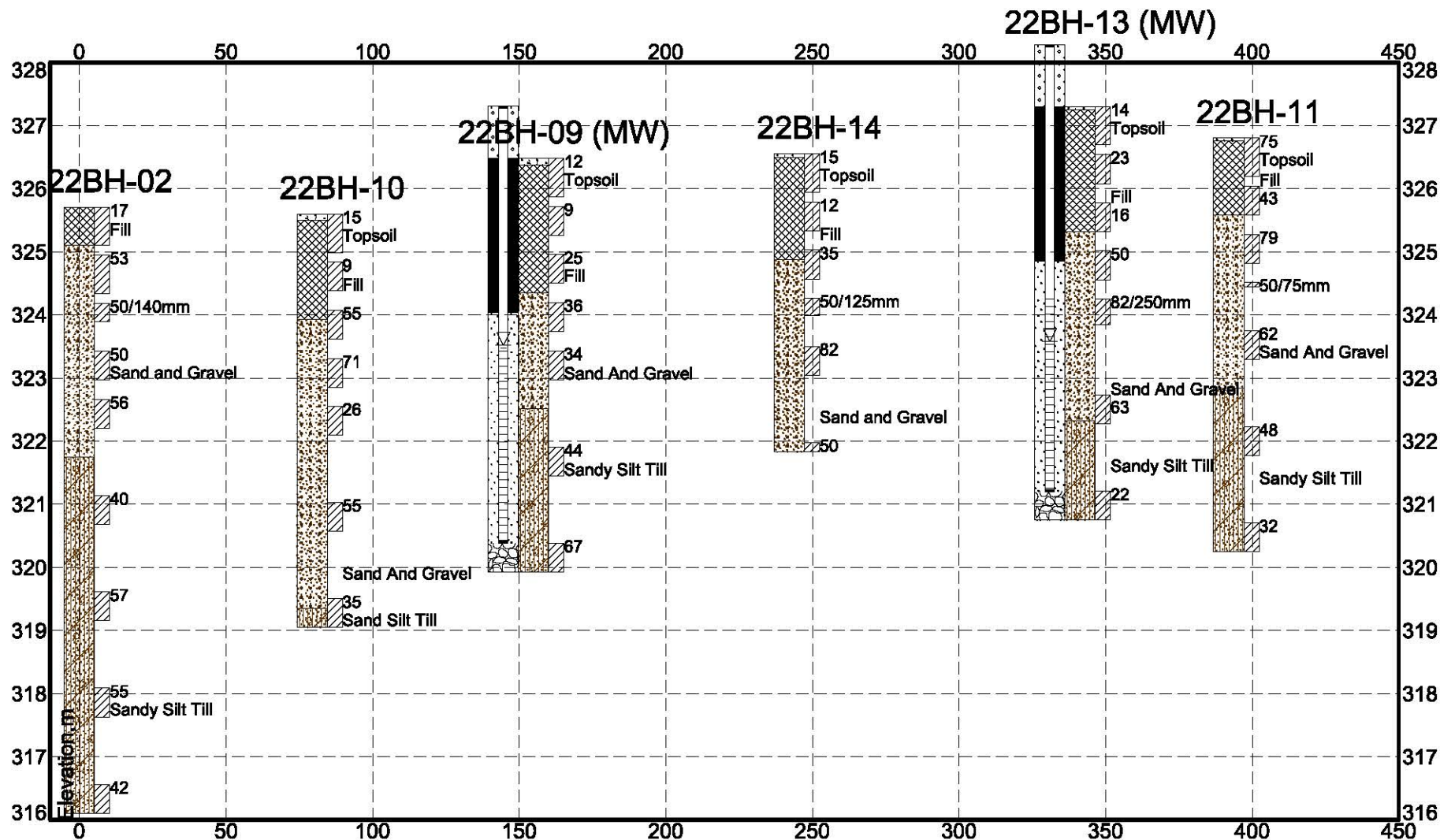
SUBSURFACE STRATIGRAPHY

Section 1

Geotechnical Investigation

115 Watson Parkway North
(& Starwood Drive), Guelph, Ontario

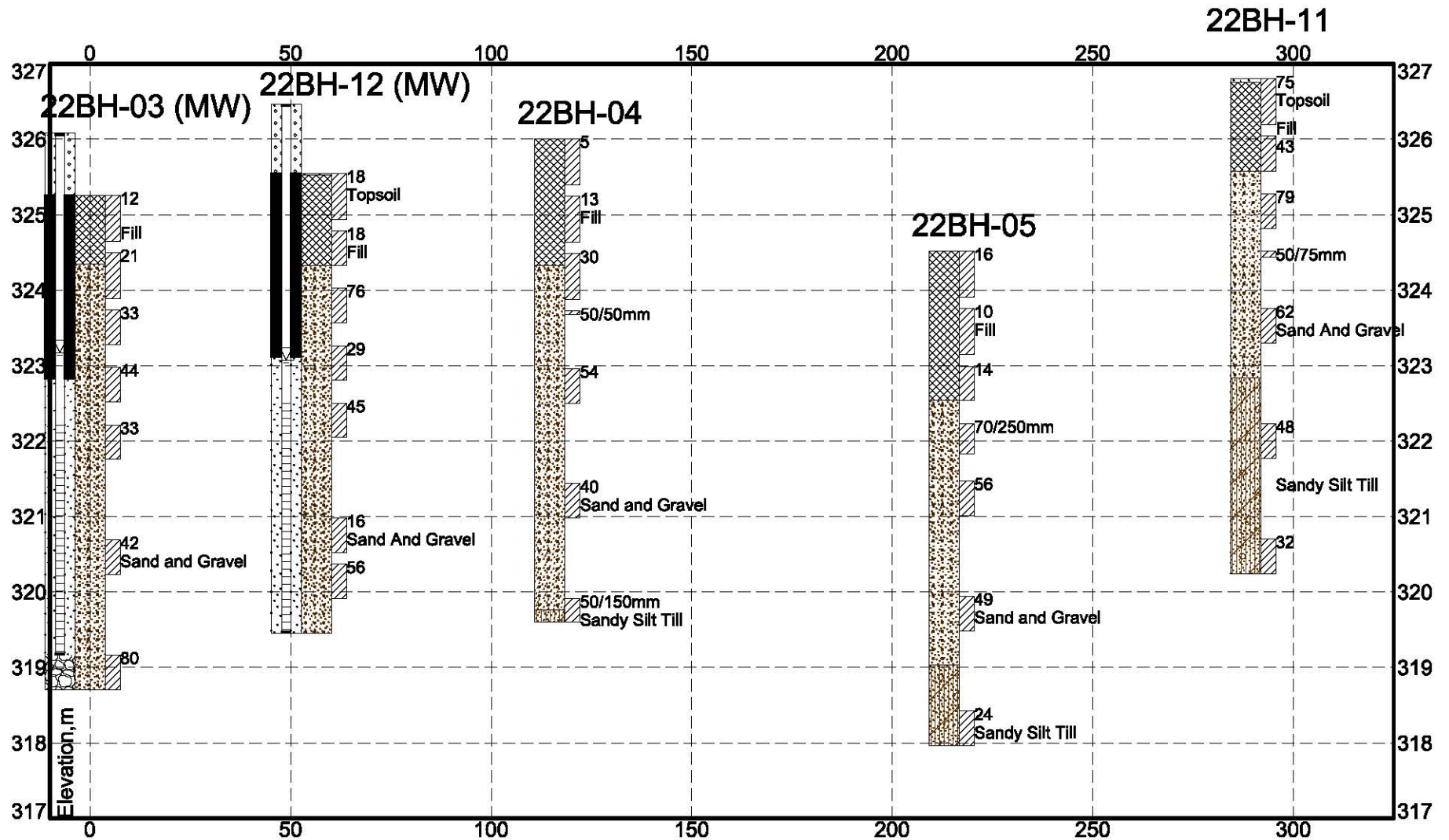
PROJECT #	DATE	DRAWING
4515-22-GC	Jun 22	18



Borehole No	Elev.	Depth
22BH-02	325.7	9.6
22BH-09 (MW)	326.5	6.6
22BH-10	325.6	6.6
22BH-11	326.8	6.6
22BH-13 (MW)	327.3	6.6
22BH-14	326.6	4.7

Toronto Inspection Ltd.

SUBSURFACE STRATIGRAPHY		
Section 2		
Geotechnical Investigation		
115 Watson Parkway North (& Starwood Drive), Guelph, Ontario		
PROJECT #	DATE	DRAWING
4515-22-GC	Jun 22	19



Borehole No	Elev.	Depth
22BH-03 (MW)	325.3	6.6
22BH-04	326.0	6.4
22BH-05	324.5	6.6
22BH-11	326.8	6.6
22BH-12 (MW)	325.6	6.1

Toronto Inspection Ltd.

SUBSURFACE STRATIGRAPHY		
Section 3		
Geotechnical Investigation		
115 Watson Parkway North (& Starwood Drive), Guelph, Ontario		
PROJECT #	DATE	DRAWING
4515-22-GC	Jun 22	20