Geotechnical Investigation Report

Proposed Additions to Guardian Angels Catholic School
4 Baywood Drive
Ottawa, Ontario

Client:
Ottawa Catholic School Board
570 West Hunt Club Road
Ottawa, Ontario K2G 3R4

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Executive Summary

EXP Services Inc. (EXP) is pleased to present the results of the geotechnical investigation completed for the proposed additions to Guardian Angels Catholic School located at 4 Baywood Drive, Ottawa, Ontario (Figure 1). This work was authorized by Mr. Donald Wood on behalf of the Ottawa-Catholic District School Board (OCSB) on March 23, 2026.

EXP completed a Phase One Environmental Site Assessment (ESA) and a Soil Characterization Report (SCR) in conjunction with this geotechnical investigation and the results are provided in separate reports.

Proposed Development

Plans call for the design and construction of two (2) additions at the Guardian Angels Catholic School. The additions will be located on the southeast and west sides of the south wing of the existing school. The proposed additions will be one-storey with no basement and the design elevation of the ground floor will match the elevation of the ground floor of the existing school building at Elevation 114.5 m.

Fieldwork Program

The borehole fieldwork was undertaken on April 23,2026 and consists of six (6) boreholes (Borehole Nos. 26-01 to 26-06) advanced to termination and auger refusal depths ranging from 1.1 m to 5.7 m. The borehole fieldwork was supervised on a full-time basis by a representative from EXP.

Subsurface Conditions

The borehole information indicates that beneath the pavement structure, the site is underlain by fill, compact to dense glacial till and limestone bedrock contacted at 1.4 m depth (Elevation 112.7 m). The boreholes remained dry during and upon completion of drilling the boreholes.

Geotechnical Comments and Recommendations

Site Designation and Classification for Seismic Design and Liquefaction Potential of Soils

Based on a review of the borehole information, it is considered feasible to support the proposed two (2) building additions without basement by strip and spread footings founded on the glacial till, engineered fill pad (constructed on the glacial till or bedrock) or on the competent sound limestone bedrock.

A comparison of the borehole information with Table 4.1.8.4.-B of the 2024 Ontario Building Code (OBC) indicates that for seismic design, the site classification is Class C and the equivalent site designation is X_c.

An improved or higher site class and designation may be available if a shear wave velocity sounding survey is conducted on the site of the proposed additions to the school building.

Based on a review of the borehole information, the subsurface soils are considered not to be susceptible to liquefaction during a seismic event.

Grade Raise Restrictions

The borehole information indicates that compressible clays do not exist at the site. Therefore, from a geotechnical perspective, there is no restriction to raising the grades at the site.

Since there is no grade raise restriction for the sites of the proposed additions to the existing school building, the Grading and Drainage Plan (Project No. 26010 and Drawing No. 26018-GR1) dated April 30,2026 and prepared by Robinson Land Development is considered acceptable from a geotechnical perspective.

Foundation Considerations

The results of the geotechnical investigation revealed that the subsurface conditions at the two (2) sites for the proposed additions to the existing school are well suited to support the proposed additions by strip and spread footings founded on the compact to dense glacial till, on an engineered fill pad constructed on the glacial till or on the competent sound limestone bedrock or directly on the competent sound limestone bedrock. The existing granular base and subbase fill and the underlying fill are considered not suitable to support footings and slab-on-grade.

Strip and spread footings founded on the compact to dense glacial till or on an engineered fill pad constructed on the glacial till or constructed on the competent sound limestone bedrock in accordance with the procedure indicated in the attached geotechnical report may be designed for a bearing pressure at serviceability limit state (SLS) of 150 kPa and factored geotechnical resistance at ultimate limit state (ULS) of 300 kPa. Settlements of footings designed for the above recommended SLS and factored ULS values and properly constructed are expected to be less 25 mm total and 19 mm differential movements.

Strip and spread footings founded directly on the competent sound limestone bedrock may be designed for a factored geotechnical resistance at ULS of 500 kPa. The competent sound limestone bedrock should be free of weathered zones of the bedrock, loose material (soil and bedrock pieces) and soft seams. The serviceability limit state (SLS) bearing pressure of the bedrock, required to produce 25 mm total settlement of the structure will be much larger than the recommended value for factored geotechnical resistance at ULS. Therefore, the factored geotechnical resistance at ULS will govern the design. Settlement of foundations founded on the competent sound bedrock and designed for the above recommended factored ULS value and properly constructed are expected to be less than 10 mm.

It is recommended that the new footings located next to the existing footings of the school building be founded at the same depth (elevation) as the existing footing and designed for the above recommended SLS and factored ULS values provided the soils or bedrock at that depth (elevation) can support the recommended SLS and factored ULS values.

Slab-on-Grade Constructions and Drainage Requirements

The ground floor of the proposed additions may be designed and constructed as a slab-on-grade placed on a 200 mm thick well-packed 19 mm sized clear stone bed placed on a minimum 300 mm thick engineered fill pad set on the approved glacial till. The engineered fill pad should consist of Ontario Provincial Standard Specification (OPSS) Granular B Type II material compacted to 98 percent standard Proctor maximum dry density (SPMDD). The clear stone will minimize the capillary rise of moisture from the sub-soil to the floor slab. Alternatively, the clear stone layer may be replaced with a 200 mm thick bed of OPSS Granular A compacted to 100 percent SPMDD overlain by a vapour barrier. Adequate saw cuts should be provided in the floor slabs to control cracking.

Perimeter and underfloor drainage systems are not required for the proposed additions. However, if an existing perimeter drainage system is encountered along the exterior walls of the school building, the drainage system should be reinstated and provided along the exterior of the proposed additions to the school building.

Excavation and De-Watering Requirements

Excavations for the proposed new additions are anticipated to extend to a maximum 1.5 m depth below existing grade. The excavations will extend through the pavement structure, fill and into the glacial till and into the limestone bedrock. Excavations are anticipated to be above the groundwater level.

Excavations within the soils may be undertaken using heavy equipment capable of removing cobbles and boulders within the glacial till.

All excavations must be undertaken in accordance with the Occupational Health and Safety Act (OHSA), Ontario Reg. 213/91. Based on the definitions provided in OHSA, the subsurface soils on site are considered to be Type 3 and as such must be cut back at 1H:1V from the bottom of the excavation. Within zones of persistent seepage and below the groundwater level, the excavation side slopes are expected to slough and eventually stabilize at a slope of 2H:1V to 3H:1

The excavations are anticipated to extend to a shallow depth into the bedrock. The excavation side slopes in the upper depths of the weathered zone of the limestone bedrock may be cut back at a 1H:1V gradient. The excavation side slopes in the competent sound limestone bedrock may be undertaken with near vertical sides subject to examination by a geotechnical engineer.

It is understood that blasting of the bedrock is not permitted on the sites for the proposed additions. Therefore, the anticipated shallow excavation depths into the limestone bedrock may be excavated using a hoe ram for removal of small quantities of the bedrock; however, this process is expected to be very slow. Contractors bidding on this project should review the project specification and requirements and decide on their own the most preferred rock removal method.

Backfilling Requirements

The on-site soils to be excavated are anticipated to consist of granular fill, silty sand and gravel fill and glacial till. These soils that are free of cobbles, boulders and rock fragments are considered suitable for re-use as backfill material along the exterior side of the foundation walls of the proposed additions.

Fill required to be imported for backfilling purposes and engineered fill pad construction should preferably conform to the specifications provided in the attached geotechnical report.

Closure

The above and other related considerations are discussed in greater detail in the attached geotechnical report.

This executive summary is a brief synopsis of the attached geotechnical report and should not be read in lieu of reading the attached geotechnical report in its entirety.

1. Introduction

EXP Services Inc. (EXP) is pleased to present the results of the geotechnical investigation completed for the proposed additions to Guardian Angels Catholic School located at 4 Baywood Drive, Ottawa, Ontario (Figure 1). This work was authorized by Mr. Donald Wood on behalf of the Ottawa-Catholic District School Board (OCSB) on March 23, 2026.

Plans call for the design and construction of two (2) additions at the Guardian Angels Catholic School. The additions will be located on the southeast and west sides of the south wing of the existing school. The proposed additions will be one-storey with no basement and the design elevation of the ground floor will match the elevation of the ground floor of the existing school building at Elevation 114.5 m.

EXP completed a Phase One Environmental Site Assessment (ESA) and a Soil Characterization Report (SCR) in conjunction with this geotechnical investigation and the results are provided in separate reports.

The geotechnical investigation was undertaken to:

a) Establish the subsurface soil and groundwater conditions at six (6) boreholes located in the areas of the proposed two (2) building additions,

b) Provide the site classification and site designation for seismic design in accordance with the requirements of the 2024 Ontario Building Code (OBC) and assess the potential for liquefaction of the subsurface soils during a seismic event,

c) Comment on grade-raise restrictions and provide site grading requirements,

d) Make recommendations regarding the most suitable type of foundations, founding depth and bearing pressure at serviceability limit state (SLS) and factored geotechnical resistance at ultimate limit state (ULS) of the founding strata and comment on the anticipated total and differential settlements of the recommended foundation type for the proposed additions to the existing school building,

e) Comment on slab-on-grade construction and requirements for perimeter and underfloor drainage systems,

f) Comment on excavation conditions and de-watering requirements during construction,

g) Discuss backfilling requirements and suitability of on-site soils for backfilling purposes,

h) Recommend a pavement structure for the reinstatement of the paved surface of the existing playground areas that will be affected by the construction of the proposed new additions; and

i) Comment on the corrosion potential of subsurface soils to buried concrete and metal structures/members.

The comments and recommendations given in this report are based on the assumption that the above-described design concepts will proceed into construction. If changes are made either in the design phase or during construction, this office must be retained to review these modifications. The result of this review may be a modification of our recommendations, or it may require additional field or laboratory work to check whether the changes are acceptable from a geotechnical viewpoint.

2. Site Description

The areas of the proposed additions will be located on the southeast and west sides of the south wing of the existing school building. At the time of this geotechnical investigation, the sites were occupied by outdoor paved playground areas. The topography of the sites of the two (2) proposed additions is generally flat with borehole elevations ranging from Elevation 114.28 m to 114.10 m.

3. Geology of the Site

3.1 Surficial Geology

The surficial geology was reviewed via the Google Earth applications published by the Ontario Ministry of Energy, Northern Development and Mines available via www. mndm. gov.on.ca /en /mines -and -minerals/ applications/ ogsearth/surficial-geology and was last modified on May 23, 2017. The map indicates that beneath any fill the site is underlain by stone-poor, sandy silt to silty sand-textured glacial till on Paleozoic bedrock. Organics deposits consisting of peat, muck and marl as well as coarse-textured glaciomarine deposits consisting of sand, gravel, minor silt and clay are noted to the south of the site. The surficial deposits are shown in Image 1 below.

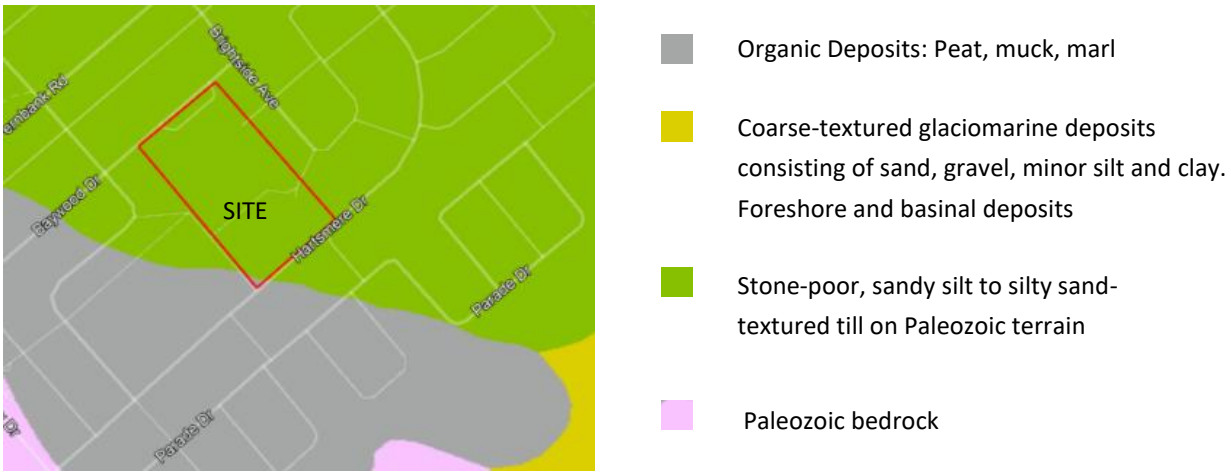


Image 1 – Surficial Geology

3.2 Bedrock Geology

The bedrock geology was reviewed via the Google Earth applications published by the Ontario Ministry of Energy, Northern Development and Mines available via http://www.geologyontario.mndm.gov.on.ca/ mines /data /google /MRD219 /geology/ doc.kml and publish in 2007. The map indicates limestone, dolostone, shale and sandstone of the Gull River formation. The bedrock geology is shown in Image 2 below.

Image 2 – Bedrock Geology

4. Procedure

4.1 Borehole Fieldwork

The borehole fieldwork was undertaken on April 23,2026 and consists of six (6) boreholes (Borehole Nos. 26-01 to 26-06) advanced to termination and auger refusal depths ranging from 1.1 m to 5.7 m. The borehole fieldwork was supervised on a full-time basis by a representative from EXP.

The locations and the geodetic elevations of the boreholes were established on site by EXP and are shown on the Borehole Location Plans, Figures 2 and 2A.

The borehole locations were cleared of private and public underground services, prior to the start of borehole drilling operations.

The boreholes were drilled using a CME-75 truck-mounted drill rig equipped with continuous flight hollow stem augers and soil sampling and rock coring capabilities. Standard penetration tests (SPTs) were performed in all the boreholes on a continuous basis to a 0.75 m depth interval with soil samples retrieved by the split-barrel sampler. The presence of the bedrock was proven by coring the bedrock in one (1) borehole by conventional coring techniques using NQ size core barrel. A field record of wash-water return, colour of wash water and any sudden drops of the core barrel were kept during coring operations. All boreholes were backfilled upon completion of drilling, sampling and coring operations.

The subsurface soil conditions in each borehole were logged with each soil sample placed in labelled plastic bags. Similarly, the bedrock cores were visually examined, placed in core boxes, identified, and logged.

4.2 Laboratory Testing Program

On completion of the borehole fieldwork, the soil samples and rock cores were transported to the EXP laboratory in Ottawa. The soil samples were visually examined in the laboratory by a geotechnical engineer. The soils were classified by the main constituents in accordance with the Unified Soil Classification System (USCS) using the soil group name and symbol and by the modified Burmister method to classify the minor constituents of the soil using modifiers and adjectives such as trace and some. The bedrock cores were logged and photographs taken.

The laboratory testing program for the soil samples and bedrock cores is summarized in Table I.

Table I: Summary of Laboratory Testing Program

Type of Test	Number of Tests Completed
Soil Samples	
Moisture Content Determination	16
Grain Size Analysis	2
Corrosion Analysis (pH, sulphate, chloride and resistivity)	2
Bedrock Cores	
Unit Weight Determination	2
Unconfined Compressive Strength Test	2

5. Subsurface Conditions and Groundwater Levels

A detailed description of the subsurface conditions and groundwater levels from the boreholes are given on the attached Borehole Logs, Figures 3 to 8. The borehole logs and related information depict subsurface conditions only at the specific locations and at the times indicated. Subsurface conditions and water levels at other locations may differ from conditions at the locations where sampling was conducted. The passage of time also may result in changes in the conditions interpreted to exist at the locations where sampling was conducted.

Boreholes were drilled to provide representation of subsurface conditions as part of a geotechnical exploration program and are not intended to provide evidence of potential environmental conditions.

It should be noted that the soil and bedrock boundaries indicated on the borehole logs are inferred observations during drilling and coring operations. These boundaries are intended to reflect approximate transition zones for the purpose of geotechnical design and should not be interpreted as exact planes of geological change. The “Notes on Sample Descriptions” preceding the borehole logs form an integral part of this report and should be read in conjunction with this report.

A review of the borehole logs indicates the following subsurface conditions with depth and groundwater level measurements.

Borehole Nos. 26-01 to 26-03 are located in the area of the proposed southeast addition and Borehole Nos. 26-04 to 26-06 are located in the area of the proposed west addition.

5.1 Pavement Structure

The six (6) boreholes are located in a paved area where the pavement structure consists of 25 mm to 90 m thick asphaltic concrete underlain by pavement base and subbase granular fill layers having a total thickness of approximately 380 mm to 560 mm. The overall pavement structure extends to depths of 0.5 m and 0.6 m below existing grade (Elevation 113.8m to Elevation 113.6 m). Based on the standard penetration test (SPT) N-values of 6 to 26, the pavement granular fill layers are in a loose to compact state. The moisture content of the pavement granular fill layers ranges from 3 percent to 10 percent.

A grain size analysis was conducted on one (1) sample of the pavement granular base and subbase material and the test results are shown in Table II. The grain size distribution curve is shown in Figure 9.

Table II: Summary of Results from Grain-Size Analysis – Granular Base and Subbase Material

Borehole No. (BH) - Sample No. (SS)	Depth (m)	Grain-Size Analysis (%)				
		Gravel	Sand	Silt	Clay	Soil Classification
BH 26-02 (SS1)	0.2-0.8	23	43	29	5	Silty Sand (SM): Gravelly, Trace Clay

Based on a review of the results from the grain size analysis the granular base and subbase fill material may be classified as a silty sand (SM) that is gravelly with trace clay.

5.2 Fill

The pavement structure is underlain by fill in Borehole Nos. 26-01 to 26-03. In Borehole Nos. 26-01 and 26-03, the fill extends to the auger refusal depths of 1.1 m and 1.9 m (Elevation 113.2 m and Elevation 112.4 m). The fill extends to a 0.9 m depth (Elevation 113.2 m) in Borehole No. 26-02. The fill consists of varying percentages of gravel, sand, silt and clay. Based on the SPT N-value of 7, the fill is in a loose state. The moisture content of the fill is 10 percent to 13 percent.

5.3 Glacial Till

The pavement structure and fill in Borehole Nos. 26-02 and 26-04 to 26-06 are underlain by glacial till that extends to a 1.4 depth (Elevation 112.7 m) in Borehole No. 26-02. The glacial till consists of a silty sand with gravel and possible cobbles, boulders and rock fragments. Based on SPT N-values of 14 to 45, the glacial till is in a compact to dense state. In some boreholes, the SPT N-values is high for low sampler penetration such as an N-value of 50 for 125 mm of sampler penetration. This may be a result of the sampler contacting a cobble, boulder or rock fragment in the glacial till. The natural moisture content of the glacial till ranges from 5 percent to 11 percent.

A grain size analysis was conducted on one (1) sample of the glacial till and the test results are shown in Table III. The grain size distribution curve is shown in Figure 10.

Table III: Summary of Results from Grain-Size Analysis – Glacial Till

Borehole No. (BH) - Sample No. (SS)	Depth (m)	Grain-Size Analysis (%)				
		Gravel	Sand	Silt	Clay	Soil Classification
BH 26-04 (SS2)	0.8-1.4	10	52	32	6	Silty Sand (SM): Some Gravel, Trace Clay

Based on a review of the results from the grain size analysis the glacial till may be classified as a silty sand (SM) that has some gravel and trace clay.

5.4 Limestone Bedrock

Auger refusal was met in Borehole Nos. 26-01, 26-03 and 26-04 to 26-06 at 1.1 m to 1.9 m depths (Elevation 113.2 m to Elevation 112.4 m) on inferred cobbles, boulders or bedrock. Limestone bedrock was contacted in Borehole No. 26-02 at a 1.4 m depth (Elevation 112.7 m).

A summary of the inferred bedrock depth (elevation) and actual bedrock depth (elevation) is shown in Table IV.

Table IV: Summary of Inferred and Actual Bedrock Depths (Elevations)

Borehole No. (BH)	Ground Surface Elevation (m)	Inferred Bedrock Depth (Elevation)	Actual Bedrock Depth (Elevation)
BH 26-01	114.27	1.1 (113.2)	-
BH 26-02	114.10	-	1.4 (112.7)
BH 26-03	114.28	1.9 (112.4)	-
BH 26-04	114.24	1.7 (112.5)	-
BH 26-05	114.26	1.7 (112.6)	-
BH 26-06	114.26	1.6 (112.7)	-

A review of the borehole logs Indicates that the total core recovery (TCR) ranges from 81 percent to 100 percent and the rock quality designation (RQD) ranges from 40 and 86 percent indicating the limestone bedrock is of a poor to good quality. The upper 600 mm of the limestone bedrock is weathered from 1.4 m to 2.0 m depths (Elevation 112.7 m to Elevation 112.1 m). Photograph of the bedrock cores are shown in Figure 11.

Unit weight determination and unconfined compressive strength tests were conducted on two (2) sections of the bedrock cores and the test results are summarized in Table V.

Table V: Summary of Unconfined Compressive Strength Test Results – Limestone Bedrock				
Borehole (BH) No. – Run No.	Depth (m)	Unit Weight (kN/m^3)	Unconfined Compressive Strength (MPa)	Classification of Rock with respect to Strength
BH 26-02 -Run 1	2.6 – 2.7	26.7	105.7	Very Strong R5
BH 26-02 – Run 2	3.9 – 4.1	26.3	163.6	Very Strong R5

A review of the test results in Table V indicates the strength of the rock may be classified as very strong (R5) in accordance with the Canadian Foundation Engineering Manual (CFEM), Fifth Edition, 2023.

5.5 Groundwater Level Measurements

All boreholes remained dry during and upon completion of the drilling the boreholes.

The groundwater levels were determined in the boreholes at the time and under the condition stated in this report. Note that fluctuations in the level of groundwater may occur due to a seasonal variation such as precipitation, snowmelt, rainfall activities, and other factors not evident at the time of measurement and therefore may be at a higher level during wet weather periods.

6. Site Classification and Designation for Seismic Design and Liquefaction Potential of Soils

6.1 Site Classification for Seismic Site Response

Based on a review of the borehole information, it is considered feasible to support the proposed two (2) building additions without basement by strip and spread footings founded on the glacial till, engineered fill pad (constructed on the glacial till or bedrock) or on the competent sound limestone bedrock.

A comparison of the borehole information with Table 4.1.8.4.-B of the 2024 Ontario Building Code (OBC) indicates that for seismic design, the site classification is Class C and the equivalent site designation is X_c.

The seismic hazard values for a site designation X_C and for a 2 percent, 5 percent and 10 percent probability of exceedance in 50 years may be obtained from the 2025 - 2020 National Building Code of Canada Seismic Hazard Tool website (available at: https://www.earthquakescanada.nrcan.gc.ca/hazard-alea/interpolat/nbc-cnb-en.php).

An improved or higher site class and designation may be available if a shear wave velocity sounding survey is conducted on the site of the proposed additions to the school building.

6.2 Liquefaction Potential of Soils

Based on a review of the borehole information, the subsurface soils are considered not to be susceptible to liquefaction during a seismic event.

7. Grade Raise Restrictions

The borehole information indicates that compressible clays do not exist at the site. Therefore, from a geotechnical perspective, there is no restriction to raising the grades at the site.

Since there is no grade raise restriction for the sites of the proposed additions to the existing school building, the Grading and Drainage Plan (Project No. 26010 and Drawing No. 26018-GR1) dated April 30,2026 and prepared by Robinson Land Development is considered acceptable from a geotechnical perspective.

8. Site Grading

Site grading within the footprint areas of the **proposed two (2) building additions** should consist of the excavation and removal of the pavement structure including the asphalt, granular fill base and subbase layers and the underlying fill down to the glacial till. The exposed subgrade should be examined by a geotechnician and proofrolled, if directed by a geotechnician. Any loose/soft areas identified during the subgrade examination should be excavated, removed and replaced with Ontario Provincial Standard Specification (OPSS) Granular B Type II material compacted to a minimum 98 percent standard Proctor maximum dry density (SPMDD). Once the subgrade has been approved, the grades may be raised to the design underside footing and floor slab elevations by the construction of an engineered fill pad that is prepared in accordance with the procedure outlined in Section 9 of this geotechnical report.

9. Foundation Considerations

The results of the geotechnical investigation revealed that the subsurface conditions at the two (2) sites for the proposed additions to the existing school are well suited to support the proposed additions by strip and spread footings founded on the compact to dense glacial till, on an engineered fill pad constructed on the glacial till or on the competent sound limestone bedrock or directly on the competent sound limestone bedrock. The existing granular base and subbase fill and the underlying fill are considered not suitable to support footings and slab-on-grade.

Strip and spread footings founded on the compact to dense glacial till or on an engineered fill pad constructed on the glacial till or constructed on the competent sound limestone bedrock in accordance with the procedure below may be designed for a bearing pressure at serviceability limit state (SLS) of 150 kPa and factored geotechnical resistance at ultimate limit state (ULS) of 300 kPa. Settlements of footings designed for the recommended SLS and factored ULS values and properly constructed are expected to be less 25 mm total and 19 mm differential movements.

Strip and spread footings founded directly on the competent sound limestone bedrock may be designed for a factored geotechnical resistance at ULS of 500 kPa. The competent sound limestone bedrock should be free of weathered zones of the bedrock, loose material (soil and bedrock pieces) and soft seams. The serviceability limit state (SLS) bearing pressure of the bedrock, required to produce 25 mm total settlement of the structure will be much larger than the recommended value for factored geotechnical resistance at ULS. Therefore, the factored geotechnical resistance at ULS will govern the design. Settlement of foundations founded on the competent sound bedrock and designed for the above recommended factored ULS value and properly constructed are expected to be less than 10 mm.

The factored ULS values include a geotechnical resistance factor of 0.5.

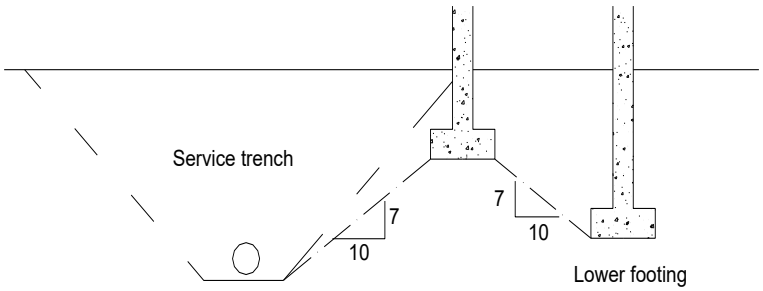
It is recommended that the new footings located next to the existing footings of the school building be founded at the same depth (elevation) as the existing footing and designed for the above recommended SLS and factored ULS values provided the soils or bedrock at that depth (elevation) can support the recommended SLS and factored ULS values.

Where a footing may be founded partly on the glacial till or on the engineered fill pad and partly on the competent sound bedrock, it is recommended that a gradual transition zone be created beneath the footing from the soil to the bedrock and vice versa. The transition zone should consist of excavating and removing the upper 500 mm of the bedrock for a length of 2.0 m on the bedrock side. The width of the excavation and removal of the bedrock should be the width of the footing plus 500 mm on both sides of the footings. The excavation should be backfilled with OPSS Granular A or Granular B Type II material compacted to 100 percent SPMDD. The footing should be designed for the SLS and factored ULS values provided above for footings founded on the glacial till or on the engineered fill pad.

The construction of engineered fill pad should consist of the removal of all existing fill (including the pavement granular base and subbase layers) down to the glacial till. The glacial till should be examined by a geotechnician. Any loose/soft areas identified during the subgrade examination should be excavated, removed and replaced with Ontario Provincial Standard Specification (OPSS) Granular B Type II material compacted to 100 percent standard Proctor maximum dry density (SPMDD). Once the glacial till subgrade has been approved, the grades may be raised to the design underside footing and floor slab elevation by the construction of an engineered fill pad. The excavation for the removal of the fill should extend to a sufficient distance beyond the limits of the proposed building additions to accommodate a 1.0 m wide horizontal bench of engineered fill that extends beyond the perimeter of the proposed building additions on all sides, which should thereafter be sloped at an inclination of 1H to 1V down to the approved subgrade. The engineered fill should consist of OPSS Granular B Type II material that is placed in 300 mm thick lifts and each lift compacted to 100 percent SPMDD. The placement and compaction of the engineered fill can in this way be undertaken to the founding level of the footings. From the footing level to the underside of the floor slab, each lift of the Granular B Type II material should be compacted to 98 percent of SPMDD. The engineered fill should be placed under the full-time supervision of a geotechnician working under the direction of a geotechnical engineer.

In-place density tests should be undertaken on each lift of the engineered fill to ensure that it is properly compacted prior to placement of subsequent lift.

Footings founded at different elevations on the glacial till or engineered fill pad should be located such that the higher footings are set below a line drawn up at 10 horizontal to 7 vertical (10H:7V) from the near edge of the lower footing, as shown below. This concept should also be applied to service excavation, etc. to ensure that undermining is not a problem.



FOOTINGS NEAR SERVICE TRENCHES OR AT DIFFERENT ELEVATIONS

Footings at different elevations in competent sound bedrock should be located such that the higher footing is located behind a line drawn up at 6V:1H from the limit of the lower footing excavation in the competent sound bedrock.

All footing beds should be examined by a geotechnical engineer to ensure that the founding glacial till or engineered fill pad are capable of supporting the recommended bearing pressure at SLS and that the footing beds have been properly prepared.

The bedrock subgrade for footings should be thoroughly examined by a geotechnical engineer to ensure that the bedrock is competent and capable of supporting the factored ULS value. Where weathered zones of the bedrock, loose material (soil and bedrock pieces) and soft seams are encountered at the founding surface of the exposed bedrock, sub-excavation may be undertaken to the underlying more competent bedrock. Any sub-excavated areas to sound bedrock must be backfilled with 25 MPa concrete to the proposed underside of footing.

A minimum of 1.5 m of earth cover should be provided to the foundations for heated structures to protect them from damage due to frost penetration. The frost cover should be increased to 2.1 m for unheated structures if snow will not be removed from their vicinity. If snow will be removed from the vicinity of the unheated structures, the frost cover should be increased to 2.4 m. Equivalent rigid insulation may be used instead of the required soil cover or a combination of rigid insulation and soil cover may be used to achieve the required frost protection for the foundations. EXP can provide additional recommendations regarding frost protection, once foundation details are available.

The recommended bearing pressure at SLS and factored geotechnical resistance at ULS has been calculated by EXP from the borehole information for the design stage only. The investigation and comments are necessarily on-going as new information of underground conditions becomes available. For example, more specific information is available with respect to conditions between boreholes when foundation construction is underway. The interpretation between boreholes and the recommendations of this report must therefore be checked through field monitoring provided by an experienced geotechnical engineer to validate the information for use during the construction stage.

10. Floor Slab and Drainage Requirements

The ground floor of the proposed additions may be designed and constructed as a slab-on-grade placed on a 200 mm thick well-packed 19 mm sized clear stone bed placed on a minimum 300 mm thick engineered fill pad set on the approved glacial till. The engineered fill pad should consist of Ontario Provincial Standard Specification (OPSS) Granular B Type II material compacted to 98 percent standard Proctor maximum dry density (SPMDD). The clear stone will minimize the capillary rise of moisture from the sub-soil to the floor slab. Alternatively, the clear stone layer may be replaced with a 200 mm thick bed of OPSS Granular A compacted to 100 percent SPMDD overlain by a vapour barrier. Adequate saw cuts should be provided in the floor slabs to control cracking.

Perimeter and underfloor drainage systems are not required for the proposed additions. However, if an existing perimeter drainage system is encountered along the exterior walls of the school building, the drainage system should be reinstated and provided along the exterior of the proposed additions to the school building.

The floor slab should be set at a minimum of 150 mm higher than the surrounding final exterior grade.

The final exterior grade surrounding the proposed building additions should be sloped away from the proposed building additions to prevent ponding of surface water close to the exterior walls of the proposed additions.

11. Excavation and De-Watering Requirements

11.1 Excess Soil Management

Ontario Regulation 406/19 specifies protocols that are required for the management and disposal of excess soils. As set forth in the regulation, specific analytical testing protocols need to be implemented and followed based on the volume of soil to be managed and the requirements of the receiving site. The testing protocols are specific as to whether the soils are stockpiled or in situ. In either scenario, the testing protocols are far more onerous than have been historically carried out as part of standard industry practices. These decisions should be factored in and accounted for prior to the initiation of the project-defined scope of work. EXP would be pleased to assist with the implementation of a soil management and testing program that would satisfy the requirements of Ontario Regulation 406/19.

Reference is made to the soil characterization report (SCR) prepared by EXP regarding the environmental condition of the soils.

11.2 Excavations

Excavations for the proposed new additions are anticipated to extend to a maximum 1.5 m depth below existing grade. The excavations will extend through the pavement structure, fill and into the glacial till and limestone bedrock. Excavations are anticipated to be above the groundwater level.

11.2.1 Soil Excavation

Excavations within the soils may be undertaken using heavy equipment capable of removing cobbles and boulders within the glacial till.

All excavations must be undertaken in accordance with the Occupational Health and Safety Act (OHSA), Ontario Reg. 213/91. Based on the definitions provided in OHSA, the subsurface soils on site are considered to be Type 3 and as such must be cut back at 1H:1V from the bottom of the excavation. Within zones of persistent seepage and below the groundwater level, the excavation side slopes are expected to slough and eventually stabilize at a slope of 2H:1V to 3H:1V.

11.2.2 Bedrock Excavation

The excavations are anticipated to extend to a shallow depth into the bedrock. The excavation side slopes in the upper depths of the weathered zone of the limestone bedrock may be cut back at a 1H:1V gradient. The excavation side slopes in the competent sound limestone bedrock may be undertaken with near vertical sides subject to examination by a geotechnical engineer.

It is understood that blasting of the bedrock is not permitted on the sites for the proposed additions. Therefore, the anticipated shallow excavation depths into the limestone bedrock may be excavated using a hoe ram for removal of small quantities of the bedrock; however, this process is expected to be very slow. Contractors bidding on this project should review the project specification and requirements and decide on their own the most preferred rock removal method.

11.2.3 Additional Comments for Excavations

A pre-construction condition survey of existing buildings and infrastructure located within the construction zone of influence should be undertaken prior to the start of any construction activities.

It is recommended that vibration monitoring of existing buildings and infrastructure located within the construction zone of influence be undertaken during all construction activities.

Many geologic materials deteriorate rapidly upon exposure to meteorological elements. Unless otherwise specifically indicated in this report, walls and floors of excavations must be protected from moisture, desiccation, and frost action throughout the course of construction.

11.3 De-Watering Requirements

Seepage of surface and subsurface water into the excavation above and below the groundwater level is anticipated and may be removed by conventional sump pumping techniques. In areas of high infiltration, a higher seepage rate should be anticipated, and high-capacity pumps may be required to keep the excavation dry.

For future construction related dewatering where the daily pumping volumes exceed 50,000 L/day, the Project can be registered on the Environmental Activity and Sector Registry maintained by the Ontario Ministry of the Environment, Conservation and Parks (MECP). The registration requires dedicated Water Taking and Discharge reports to be registered in the EASR and the reports are to be prepared by a qualified Professional Engineer of Ontario or qualified Professional Geoscientist of Ontario that address all potential adverse impacts that the dewatering operations may have on the natural environment (i.e. settlement of adjacent structures, water quality of pumped water and applicable discharge location). There are no limits to the volume of water that can be included in an EASR registration, however durations of pumping of longer than 365 consecutive days will require approval from the Municipality and relevant Conservation Authorities. Specific permits related to the discharge water may be required (i.e. Sewer Use Agreements, etc.) either at the Municipal or Provincial levels depending on the volume and quality of the water to be discharged from the site.

Although this investigation has estimated the groundwater levels at the time of the fieldwork, and commented on dewatering and general construction problems, conditions may be present which are difficult to establish from standard boring and excavating techniques and which may affect the type and nature of dewatering procedures used by the contractor in practice. These conditions include local and seasonal fluctuations in the groundwater table, erratic changes in the soil profile, thin layers of soil with large or small permeabilities compared with the soil mass, etc. Only carefully controlled tests using pumped wells and observation wells will yield the quantitative data on groundwater volumes and pressures that are necessary to adequately engineer construction dewatering systems.

12. Backfilling Requirements and Suitability of On-Site Soils for Backfilling Purposes

The on-site soils to be excavated are anticipated to consist of granular fill, silty sand and gravel fill and glacial till. These soils that are free of cobbles, boulders and rock fragments are considered suitable for re-use as backfill material along the exterior side of the foundation walls of the proposed additions.

Fill required to be imported for backfilling purposes and engineered fill pad construction should preferably conform to the following specifications:

- Engineered fill under the footings and floor slab of the proposed additions - OPSS Granular B Type II placed in 300 mm thick lifts and each lift compacted to 100 percent under footings and 98 percent SPMDD under the floor slabs; and
- Backfill along the exterior sides of the foundation walls of the proposed additions - OPSS Granular B Type I or II placed in 300 mm thick lifts and each lift compacted to 95 percent of the SPMDD.

13. Re-instatement of Pavement Structure

The portion of the pavement structure of the playground areas that will be affected by the construction of the proposed two (2) new additions may be re-instated by using 50 mm thick OPSS 1050 HL3 (PG58-34) compacted to a range of 92 percent to 97 percent maximum relative density (MRD) underlain by a 300 mm thick layer of OPSS Granular A compacted to 100 percent SPMDD.

14. Corrosion Potential

Chemical tests limited to pH, sulphate, chloride and resistivity were undertaken on one (1) sample of the glacial till and one (1) section of a core from the limestone bedrock. The test results will be provided in the final geotechnical report.

15. Additional Comments

All earthwork activities from subgrade preparation to placement and compaction of engineered fill, backfill material, placement and compaction of granular materials and asphaltic concrete for pavement reinstatement, should be inspected by qualified geotechnicians to ensure that construction proceeds according to the project specifications.

16. General Comments

The comments given in this report are intended only for the guidance of design engineers. The number of boreholes required to determine the localized underground conditions between boreholes affecting construction costs, techniques, sequencing, equipment, scheduling, etc., would be much greater than has been carried out for the design purposes. Contractors bidding on or undertaking the works should, in this light, decide on their own investigations, as well as their own interpretations of the factual test hole results, so that they may draw their own conclusions as to how the subsurface conditions may affect them.

The information contained in this report is not intended to reflect on environmental aspects of the soils. Reference is made to the Soil Characterization Report (SCR) prepared by EXP regarding the environmental condition of the soils.

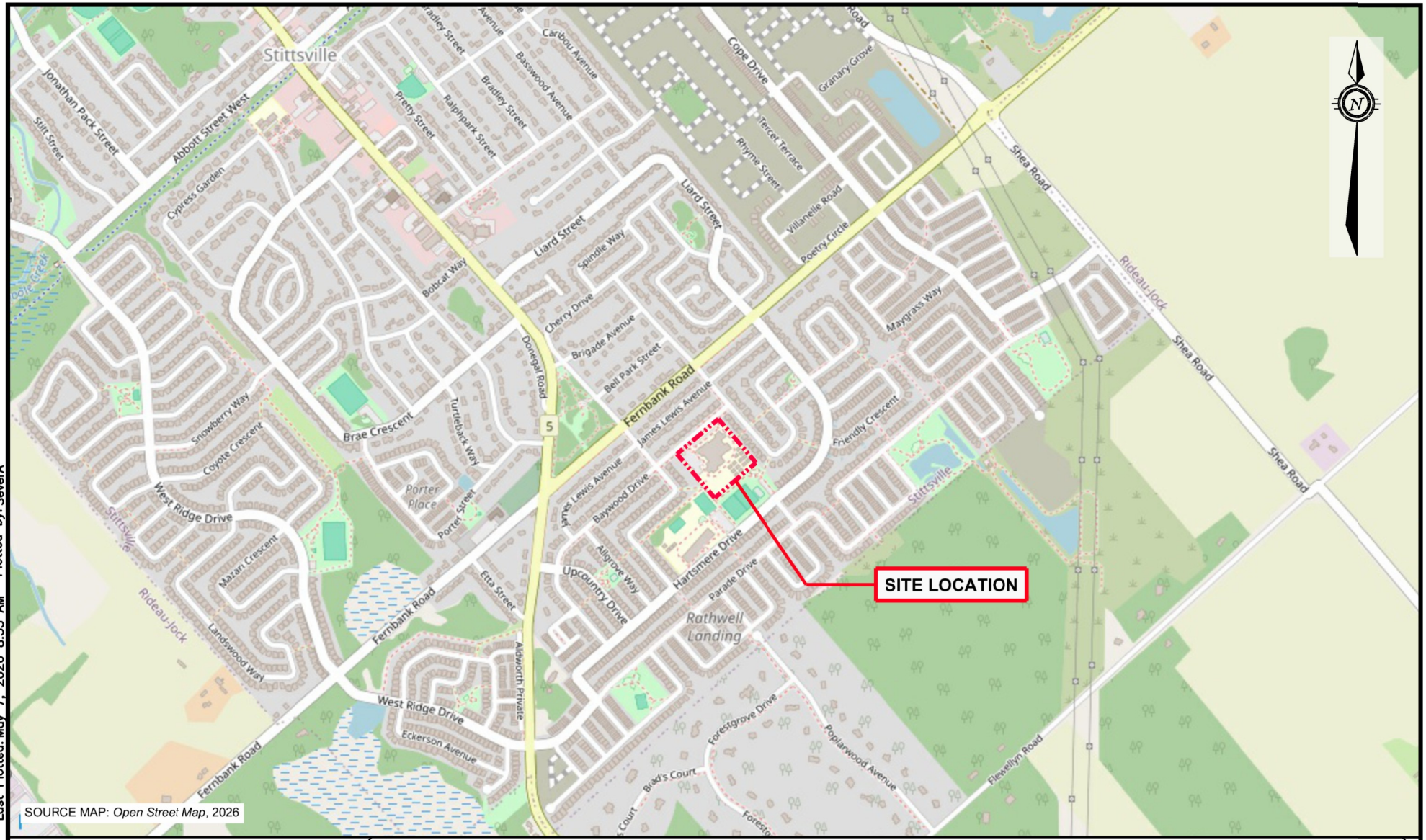
We trust that the information contained in this report will be satisfactory for your purposes. Should you have any questions, please do not hesitate to contact this office.

Sincerely

Ismail Taki, M. Eng., P.Eng.
Senior Manager, Eastern Regio
Earth & Environment

Susan M. Potyondy, P.Eng.
Senior Geotechnical Engineer
Earth & Environment

Figures



LEGEND

PROPERTY BOUNDARY

0 150m 300m 600m

HORIZONTAL 1:15,000

EXP Services Inc. www.exp.com
t: +1.613.688.1899 | f: +1.613.225.7337
2650 Queensview Drive, Suite 100
Ottawa, ON K2B 8H6, Canada

DATE: MAY 2026	PROJECT: GEOTECHNICAL INVESTIGATION GUARDIAN ANGELS CATHOLIC SCHOOL ADDITIONS	project no. OTT-26002180-A0
DESIGN: SP / CHECKED: IT	PROPERTY ADDRESS: 4 BAYWOOD DRIVE, OTTAWA, ONTARIO	scale 1:15,000
DRAWN BY: AS	TITLE: SITE LOCATION PLAN	FIG 1

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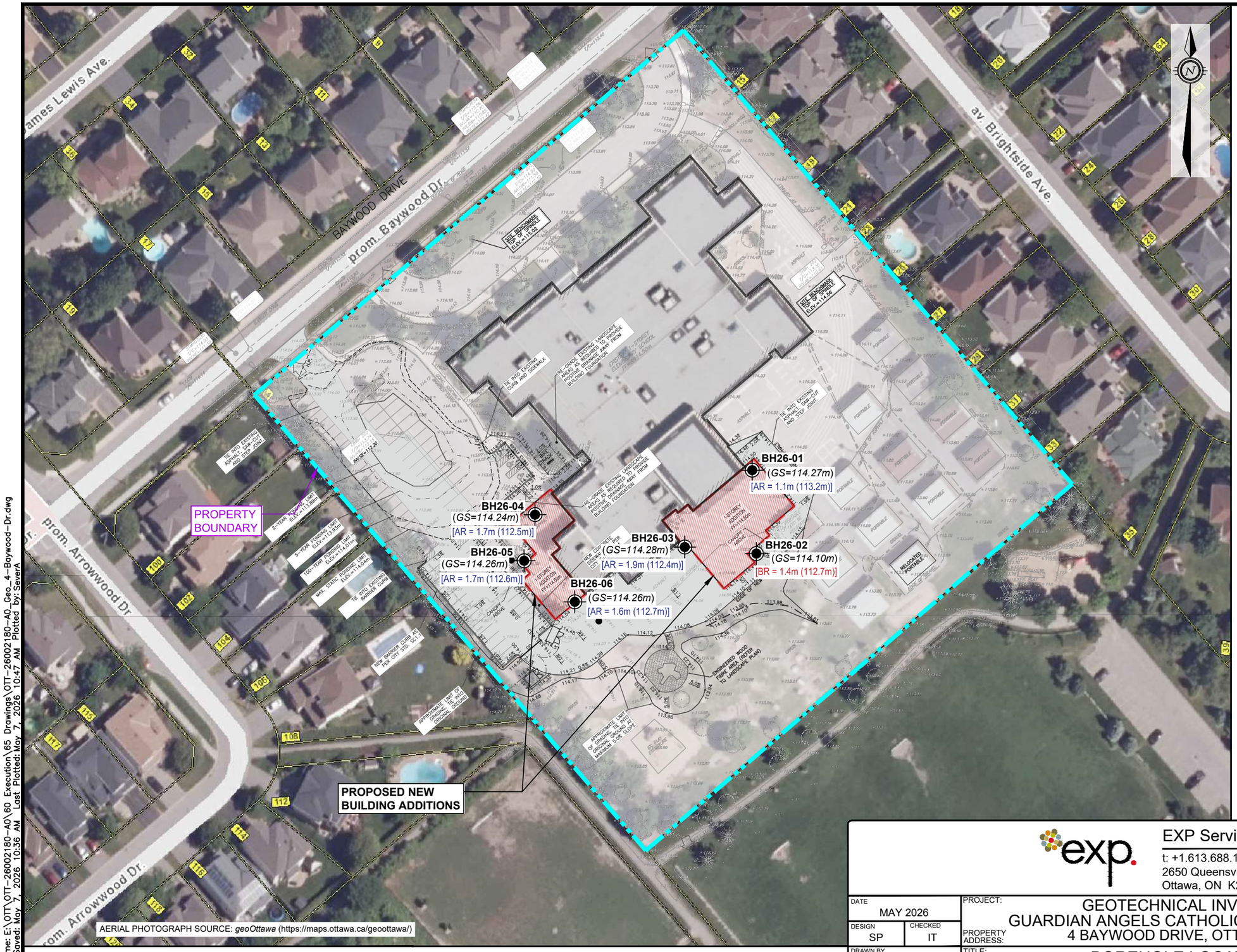
Last Saved: May 5, 2026 1:51 PM Last Plotted: May 7, 2026 8:53 AM Plotted by: SeverA



LEGEND

- PROPERTY BOUNDARY
- **BH26-01** — BOREHOLE NUMBER AND LOCATION (*EXP*, 2026)
- (*GS=114.27m*) — GROUND SURFACE ELEVATION (m)
- [AR = 1.1m (113.2m)] — AUGER REFUSAL DEPTH (ELEVATION) (m) ON INFERRED COBBLES, BOULDERS OR BEDROCK
- [BR = 1.4m (112.7m)] — BEDROCK DEPTH (ELEVATION) (m)
- EXISTING SCHOOL BUILDING (AND OTHER ON-SITE STRUCTURES) FOOTPRINT

GENERAL NOTES:

1. THE BOUNDARIES, SOIL AND ROCK TYPES HAVE BEEN ESTABLISHED ONLY AT BOREHOLE LOCATIONS. BETWEEN BOREHOLES THEY ARE ASSUMED AND MAY BE SUBJECT TO CONSIDERABLE ERROR.
2. SOIL SAMPLES AND ROCK CORES WILL BE RETAINED IN STORAGE FOR THREE MONTHS AND THEN DESTROYED UNLESS THE CLIENT ADVISES THAT AN EXTENDED TIME PERIOD IS REQUIRED.
3. ASPHALT QUANTITIES SHOULD NOT BE ESTABLISHED FROM THE INFORMATION PROVIDED AT THE BOREHOLE LOCATIONS.
4. BOREHOLE ELEVATIONS SHOULD NOT BE USED TO DESIGN BUILDING(S) OR FLOOR SLABS OR PARKING LOT(S) GRADES.
5. THIS DRAWING FORMS PART OF THE REPORT PROJECT NUMBER AS REFERENCED AND SHOULD BE USED ONLY IN CONJUNCTION WITH THIS REPORT.
6. BASE GRADING & DRAINAGE PLAN PRODUCED BY: *ROBINSON LAND DEVELOPMENT*, PROJECT NO.: 26010, DWG. NO.: 26018-GR1, DATED: APRIL 2026

ORIGINAL SHEET SIZE = 17" X 11"

0 10m 20m 40m

HORIZONTAL 1:1000

EXP Services Inc. www.exp.com
t: +1.613.688.1899 | f: +1.613.225.7337
2650 Queensview Drive, Suite 100
Ottawa, ON K2B 8H6, Canada

DATE: MAY 2026	PROJECT: GEOTECHNICAL INVESTIGATION GUARDIAN ANGELS CATHOLIC SCHOOL ADDITIONS		project no. OTT-26002180-A0
DESIGN: SP / CHECKED: IT	PROPERTY ADDRESS: 4 BAYWOOD DRIVE, OTTAWA, ONTARIO		scale 1:1,000
DRAWN BY: AS	TITLE: BOREHOLE LOCATION PLAN		FIG 2

Filename: E:\OTT\OTT-26002180-A0\60 Execution\65 Drawings\OTT-26002180-A0_Geo_4-Baywood-Dr.dwg
Last Saved: May 7, 2026 10:36 AM Last Plotted: May 7, 2026 10:47 AM Plotted by: SeverA

BH26-01
(GS=114.27m)
[AR = 1.1m (113.2m)]

BH26-02
(GS=114.10m)
[BR = 1.4m (112.7m)]

BH26-03
(GS=114.28m)
[AR = 1.9m (112.4m)]

BH26-04
(GS=114.24m)
[AR = 1.7m (112.5m)]

BH26-05
(GS=114.26m)
[AR = 1.7m (112.6m)]

BH26-06
(GS=114.26m)
[AR = 1.6m (112.7m)]

PROPERTY BOUNDARY

PROPOSED NEW BUILDING ADDITIONS

NEW ONE-STOREY ADDITION (4 CLASSROOMS) AREA: 538.9 m²

NEW ONE-STOREY ADDITION (2 KINDERGARTENS) AREA: 307.4 m²

EXISTING PORTABLE #4

EXISTING PORTABLE #5

EXISTING PORTABLE #6

EXISTING PORTABLE #7

EXISTING PORTABLE #8

EXISTING PORTABLE #9

EXISTING PORTABLE #10

RELOCATED PORTABLE (#11)

PORTABLE TO BE RELOCATED

SNOW STORAGE

NEW 9-SPACE BIKE RACK ANCHORED TO CONCRETE SONOTUBE IN MULCH SEE LANDSCAPE

TIE IN NEW ASPHALT TO EXISTING

EXG PARKING LOT: 22@7.445sqm
NEW PARKING LOT: 24@7.575sqm

7.5m REQUIRED SIDE YARD SETBACK

RELOCATED SHEDS

ENGINEERED WOOD FALL PLAY AREA SEE LANDSCAPE

AERIAL PHOTOGRAPH SOURCE: *geoOttawa* (https://maps.ottawa.ca/geoottawa/)

LEGEND

- PROPERTY BOUNDARY
- **BH26-01** — BOREHOLE NUMBER AND LOCATION (*EXP*, 2026)
- (*GS=114.27m*) — GROUND SURFACE ELEVATION (m)
- [AR = 1.1m (113.2m)] — AUGER REFUSAL DEPTH (ELEVATION) (m) ON INFERRED COBBLES, BOULDERS OR BEDROCK
- [BR = 1.4m (112.7m)] — BEDROCK DEPTH (ELEVATION) (m)
- EXISTING SCHOOL BUILDING (AND OTHER ON-SITE STRUCTURES) FOOTPRINT

GENERAL NOTES:

1. THE BOUNDARIES, SOIL AND ROCK TYPES HAVE BEEN ESTABLISHED ONLY AT BOREHOLE LOCATIONS. BETWEEN BOREHOLES THEY ARE ASSUMED AND MAY BE SUBJECT TO CONSIDERABLE ERROR.
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4. BOREHOLE ELEVATIONS SHOULD NOT BE USED TO DESIGN BUILDING(S) OR FLOOR SLABS OR PARKING LOT(S) GRADES.
5. THIS DRAWING FORMS PART OF THE REPORT PROJECT NUMBER AS REFERENCED AND SHOULD BE USED ONLY IN CONJUNCTION WITH THIS REPORT.
6. BASE ARCHITECTURAL SITE PLAN PRODUCED BY: *PYE & RICHARDS - TEMPRANO & YOUNG ARCHITECTS INC.*, PROJECT NO.: 25032, DWG. NO.: A100, DATED: 2026-APR-30

ORIGINAL SHEET SIZE = 17" X 11"

0 5m 10m 20m

HORIZONTAL 1:500

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2650 Queensview Drive, Suite 100
Ottawa, ON K2B 8H6, Canada

DATE: MAY 2026	PROJECT: GEOTECHNICAL INVESTIGATION GUARDIAN ANGELS CATHOLIC SCHOOL ADDITIONS		project no. OTT-26002180-A0
DESIGN: SP / CHECKED: IT	PROPERTY ADDRESS: 4 BAYWOOD DRIVE, OTTAWA, ONTARIO		scale 1:500
DRAWN BY: AS	TITLE: BOREHOLE LOCATION PLAN		FIG 2A

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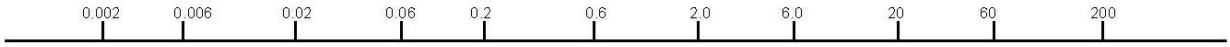
Last Saved: May 7, 2026 10:36 AM Last Plotted: May 7, 2026 10:43 AM Plotted by: SeverA

Notes On Sample Descriptions

1. All sample descriptions included in this report follow the Canadian Foundations Engineering Manual soil classification system. This system follows the standard proposed by the International Societv for Soil Mechanics and Foundation Engineering. Laboratory grain size analyses provided by **exp** Services Inc. also follow the same system. Different classification systems may be used by others; one such system is the Unified Soil Classification. Please note that, with the exception of those samples where a grain size analysis has been made, all samples are classified visually. Visual classification is not sufficiently accurate to provide exact grain sizing or precise differentiation between size classification systems.

ISSMFE SOIL CLASSIFICATION

CLAY	SILT			SAND			GRAVEL			COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE		



EQUIVALENT GRAIN DIAMETER IN MILLIMETRES

CLAY (PLASTIC) TO	FINE	MEDIUM	CRS.	FINE	COARSE
SILT (NONPLASTIC)	SAND			GRAVEL	

UNIFIED SOIL CLASSIFICATION

2. Fill: Where fill is designated on the borehole log it is defined as indicated by the sample recovered during the boring process. The reader is cautioned that fills are heterogeneous in nature and variable in density or degree of compaction. The borehole description may therefore not be applicable as a general description of site fill materials. All fills should be expected to contain obstruction such as wood, large concrete pieces or subsurface basements, floors, tanks, etc., none of these may have been encountered in the boreholes. Since boreholes cannot accurately define the contents of the fill, test pits are recommended to provide supplementary information. Despite the use of test pits, the heterogeneous nature of fill will leave some ambiguity as to the exact composition of the fill. Most fills contain pockets, seams, or layers of organically contaminated soil. This organic material can result in the generation of methane gas and/or significant ongoing and future settlements. Fill at this site may have been monitored for the presence of methane gas and, if so, the results are given on the borehole logs. The monitoring process does not indicate the volume of gas that can be potentially generated nor does it pinpoint the source of the gas. These readings are to advise of the presence of gas only, and a detailed study is recommended for sites where any explosive gas/methane is detected. Some fill material may be contaminated by toxic/hazardous waste that renders it unacceptable for deposition in any but designated land fill sites; unless specifically stated the fill on this site has not been tested for contaminants that may be considered toxic or hazardous. This testing and a potential hazard study can be undertaken if requested. In most residential/commercial areas undergoing reconstruction, buried oil tanks are common and are generally not detected in a conventional geotechnical site investigation.

3. Till: The term till on the borehole logs indicates that the material originates from a geological process associated with glaciation. Because of this geological process the till must be considered heterogeneous in composition and as such may contain pockets and/or seams of material such as sand, gravel, silt or clay. Till often contains cobbles (60 to 200 mm) or boulders (over 200 mm). Contractors may therefore encounter cobbles and boulders during excavation, even if they are not indicated by the borings. It should be appreciated that normal sampling equipment cannot differentiate the size or type of any obstruction. Because of the horizontal and vertical variability of till, the sample description may be applicable to a very limited zone; caution is therefore essential when dealing with sensitive excavations or dewatering programs in till materials.

Log of Borehole BH26-01

Project No: OTT-26002180-A0

Project: Proposed Additions to Guardian Angels Catholic School

Location: 4 Baywood Drive, Ottawa, Ontario

Figure No. 3

Page. 1 of 1

Date Drilled: 'April 23, 2026

Drill Type: Truck Mounted Drill Rig

Datum: Geodetic Elevation

Logged by: AN Checked by: IT

Split Spoon Sample	⊠	Combustible Vapour Reading	□
Auger Sample	◧	Natural Moisture Content	×
SPT (N) Value	○	Atterberg Limits	⊢○
Dynamic Cone Test	———	Undrained Triaxial at % Strain at Failure	⊕
Shelby Tube	■	Shear Strength by Penetrometer Test	▲
Shear Strength by Vane Test	+ S		

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic Elevation m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
			114.27		20 40 60 80 / 50 100 150 200	250 500 750 / 20 40 60		
		ASPHALT~ 50 mm thick	114.2	0				
		GRANULAR FILL (BASE AND SUBBASE)~405 mm thick Silty sand and crushed gravel, brown, moist, no odours, no stains, (compact).			24	×	SS1	
			113.8					
		FILL Silty sand with gravel, brown, moist, no odours, no stains.						
					9 then 50/75 mm		SS2	
			113.2	1				
		Auger Refusal at 1.1 m Depth						

Note:

1)BH1-SS1 sample submitted for environmental laboratory analyses.

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. Borehole backfilled upon completion of drilling.
3. Field work was supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-26002180-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
'Upon Completion"	Dry	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

LOG OF BOREHOLE OCDSB GUARDIAN ANGELS SCHOOL.GPJ TROW OTTAWA.GDT 5/7/26

Log of Borehole BH26-02

Project No: OTT-26002180-A0

Project: Proposed Additions to Guardian Angels Catholic School

Location: 4 Baywood Drive, Ottawa, Ontario

Figure No. 4

Page. 1 of 2

Date Drilled: 'April 23, 2026

Drill Type: Truck Mounted Drill Rig

Datum: Geodetic Elevation

Logged by: AN Checked by: IT

Split Spoon Sample ⊠
Auger Sample ◧
SPT (N) Value ○
Dynamic Cone Test ——
Shelby Tube ■
Shear Strength by Vane Test +S

Combustible Vapour Reading □
Natural Moisture Content ×
Atterberg Limits |—○—|
Undrained Triaxial at % Strain at Failure ⊕
Shear Strength by Penetrometer Test ▲

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic Elevation m	Depth
		ASPHALT~ 38 mm thick	114.1	0
		GRANULAR FILL(BASE AND SUBBASE)~ 420 mm thick Silty sand, gravelly (crushed), trace clay, brown, moist, no odours, no stains, (loose).	114.1	
		FILL Silty sand with gravel and clay, brown, damp, no odours, no stains.	113.6	
		GLACIAL TILL Silty sand with gravel, possible cobbles and boulders, brown, moist, no odours, no stains, (dense).	113.2	1
		WEATHERED LIMESTONE BEDROCK Grey.	112.7	
		LIMESTONE BEDROCK Grey, (poor to good quality).	112.1	2
				3

Standard Penetration Test N Value: 20 40 60 80
Shear Strength: 50 100 150 200 kPa
Combustible Vapour Reading (ppm): 250 500 750
Natural Moisture Content % Atterberg Limits (% Dry Weight): 20 40 60

6 (SS1)
31 (SS2)
48, then 50/50mm (SS3)

SAMPLES: SS1, SS2, SS3, RUN 1

Natural Unit Wt. kN/m³

Continued Next Page

NOTES:
1. Borehole data requires interpretation by EXP before use by others
2. Borehole backfilled upon completion of drilling.
3. Field work was supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-26002180-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %
1	1.7 - 2.8	85	40
2	2.8 - 4.4	81	66
3	4.4 - 5.7	100	86

LOG OF BOREHOLE OCDSB GUARDIAN ANGELS SCHOOL.GPJ TROW OTTAWA.GDT 5/7/26

Log of Borehole BH26-02

Project No: OTT-26002180-A0

Project: Proposed Additions to Guardian Angels Catholic School

Figure No. 4

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic Elevation m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		LIMESTONE BEDROCK Grey, (poor to good quality). *(continued)*	111.1	3	20 40 60 80 Shear Strength kPa 50 100 150 200	250 500 750 Natural Moisture Content % Atterberg Limits (% Dry Weight) 20 40 60		
				4			RUN 2	
				5			RUN 3	
			108.4					
		Borehole Terminated at 5.7 m Depth						
		Note: 1)BH2-SS2 sample submitted for environmental laboratory analyses.						

LOG OF BOREHOLE OCDSB GUARDIAN ANGELS SCHOOL.GPJ TROW OTTAWA.GDT 5/7/26

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. Borehole backfilled upon completion of drilling.
3. Field work was supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-26002180-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %
1	1.7 - 2.8	85	40
2	2.8 - 4.4	81	66
3	4.4 - 5.7	100	86

Log of Borehole BH26-03

Project No: OTT-26002180-A0

Project: Proposed Additions to Guardian Angels Catholic School

Location: 4 Baywood Drive, Ottawa, Ontario

Figure No. 5

Page. 1 of 1

Date Drilled: 'April 23, 2026

Drill Type: Truck Mounted Drill Rig

Datum: Geodetic Elevation

Logged by: AN Checked by: IT

Split Spoon Sample
Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Shear Strength by Vane Test

Combustible Vapour Reading
Natural Moisture Content
Atterberg Limits
Undrained Triaxial at % Strain at Failure
Shear Strength by Penetrometer Test

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic Elevation m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		ASPHALT~ 25 mm thick	114.28	0				
		GRANULAR FILL(BASE AND SUBBASE)~560 mm thick Silty sand with crushed gravel, brown, damp to moist, no odours, no stains, (compact).	114.3		16		SS 1	
		FILL Silty sand with gravel, brown, moist, no odours, no stains, (loose).	113.7	1	7		SS 2	
					7, then 50/50mm		SS 3	
		Auger Refusal at 1.9 m Depth	112.4					

Note:

1)BH3-SS1 sample submitted for environmental laboratory analyses.

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. Borehole backfilled upon completion of drilling.
3. Field work was supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-26002180-A0

WATER LEVEL RECORDS		
Date	Water Level (m)	Hole Open To (m)
'Upon Completion"	Dry	

CORE DRILLING RECORD			
Run No.	Depth (m)	% Rec.	RQD %

LOG OF BOREHOLE OCDSB GUARDIAN ANGELS SCHOOL.GPJ TROW OTTAWA.GDT 5/7/26

Log of Borehole BH26-04

Project No: OTT-26002180-A0

Project: Proposed Additions to Guardian Angels Catholic School

Location: 4 Baywood Drive, Ottawa, Ontario

Figure No. 6

Page. 1 of 1

Date Drilled: 'April 23, 2026

Drill Type: Truck Mounted Drill Rig

Datum: Geodetic Elevation

Logged by: AN Checked by: IT

Split Spoon Sample
Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Shear Strength by Vane Test (S)

Combustible Vapour Reading
Natural Moisture Content
Atterberg Limits
Undrained Triaxial at % Strain at Failure
Shear Strength by Penetrometer Test

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic Elevation m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
			114.24	0	20 40 60 80 / 50 100 150 200 kPa	250 500 750 / 20 40 60		
		ASPHALT~ 50mm thick	114.2					
		GRANULAR FILL(BASE AND SUBBASE)~ 405mm thick Silty sand and crushed gravel, brown, moist, no odours, no stains, (compact).						
			113.7		26		SS1	
		GLACIAL TILL Silty sand, some gravel, trace clay, possible cobbles and boulders, brown, moist, no odours, no stains, (dense).		1	43		SS2	
					50/125mm		SS3	
			112.5					
		Auger Refusal at 1.7 m Depth						

Note:

1)BH4-SS1 sample submitted for environmental laboratory analyses.

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. Borehole backfilled upon completion of drilling.
3. Field work was supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-26002180-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
'Upon Completion"	Dry	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

LOG OF BOREHOLE OCDSB GUARDIAN ANGELS SCHOOL.GPJ TROW OTTAWA.GDT 5/7/26

Log of Borehole BH26-05

Project No: OTT-26002180-A0

Project: Proposed Additions to Guardian Angels Catholic School

Location: 4 Baywood Drive, Ottawa, Ontario

Figure No. 7

Page. 1 of 1

Date Drilled: 'April 23, 2026

Drill Type: Truck Mounted Drill Rig

Datum: Geodetic Elevation

Logged by: AN Checked by: IT

Split Spoon Sample
Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Shear Strength by Vane Test (S)

Combustible Vapour Reading
Natural Moisture Content
Atterberg Limits
Undrained Triaxial at % Strain at Failure
Shear Strength by Penetrometer Test

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic Elevation m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		ASPHALT~ 75mm thick	114.26	0	20 40 60 80 / 50 100 150 200	250 500 750 / 20 40 60		
		GRANULAR FILL(BASE AND SUBBASE)~ 380mm thick Silty sand with crushed gravel, brown, damp to moist, no odours, no stains, (compact).	114.2					
		GLACIAL TILL Silty sand with gravel, possible cobbles and boulders, rock fragments, brown, moist, no odours, no stains, (compact).	113.8		15		SS1	
				1	14		SS2	
					50/75mm		SS3	
			112.6					
		Auger Refusal at 1.7 m Depth						
		Note: 1)BH5-SS2 & Duplicate samples submitted for environmental laboratory analyses.						

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. Borehole backfilled upon completion of drilling.
3. Field work was supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-26002180-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
"Upon Completion"	Dry	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

LOG OF BOREHOLE OCDSB GUARDIAN ANGELS SCHOOL.GPJ TROW OTTAWA.GDT 5/7/26

Log of Borehole BH26-06

Project No: OTT-26002180-A0

Project: Proposed Additions to Guardian Angels Catholic School

Location: 4 Baywood Drive, Ottawa, Ontario

Figure No. 8

Page. 1 of 1

Date Drilled: 'April 23, 2026

Drill Type: Truck Mounted Drill Rig

Datum: Geodetic Elevation

Logged by: AN Checked by: IT

Split Spoon Sample
Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Shear Strength by Vane Test

Combustible Vapour Reading
Natural Moisture Content
Atterberg Limits
Undrained Triaxial at % Strain at Failure
Shear Strength by Penetrometer Test

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic Elevation m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		ASPHALT~90mm thick	114.26	0	20 40 60 80 / 50 100 150 200	250 500 750 / 20 40 60		
			114.2					
		GRANULAR FILL(BASE AND SUBBASE)~ 395mm thick Silty sand with crushed gravel, brown, damp to moist, no odours, no stains, (compact).			19		SS1	
			113.8					
		GLACIAL TILL Silty sand with gravel, possible cobbles and boulders, rock fragments, brown, moist, no odours, no stains, (dense)		1	45		SS2	
					50/75mm		SS3	
			112.7					
		Auger Refusal at 1.6 m Depth						

Note:

1)BH6-SS2 sample submitted for environmental laboratory analyses.

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. Borehole backfilled upon completion of drilling.
3. Field work was supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-26002180-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
'Upon Completion"	Dry	

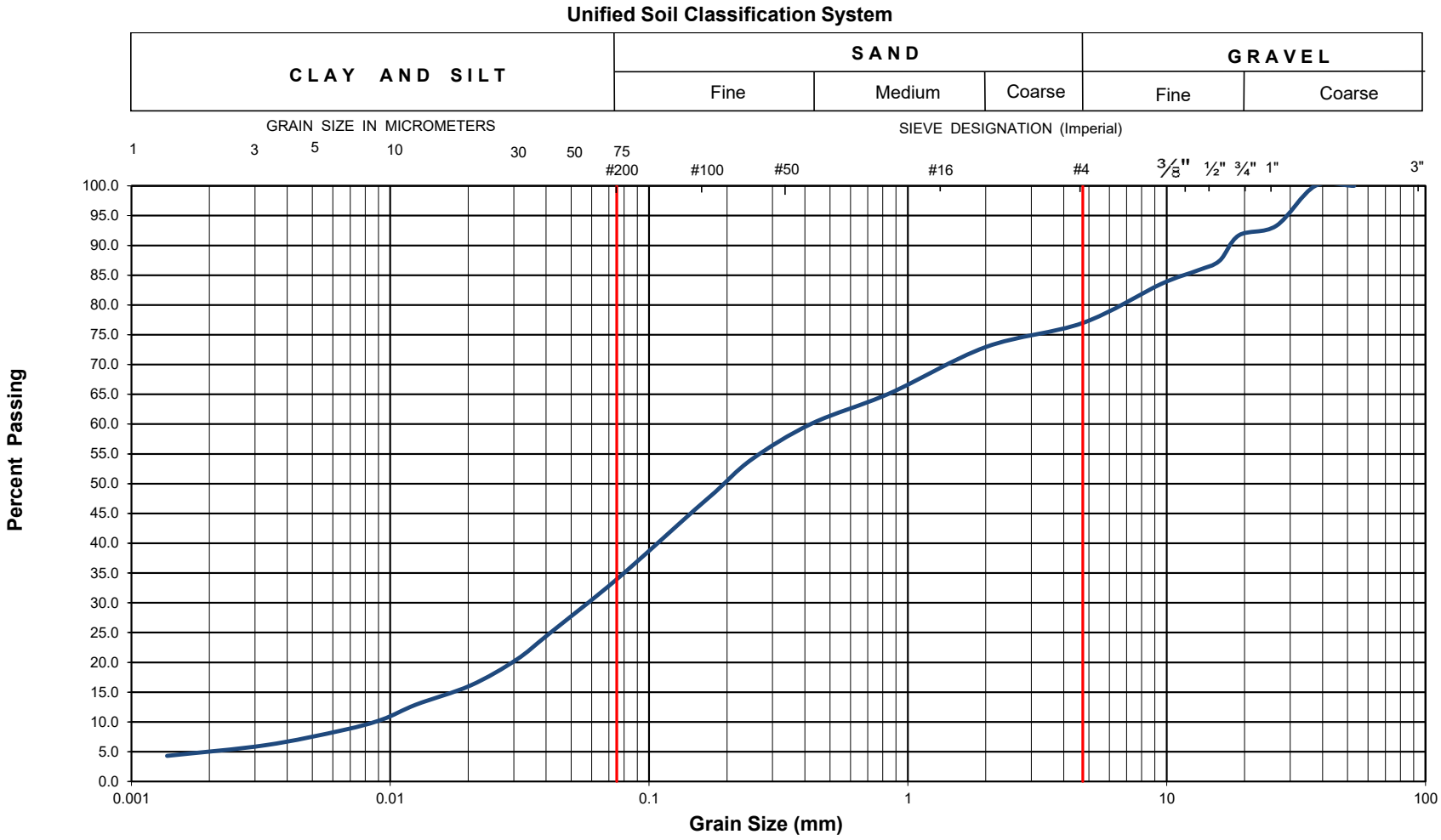
CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

LOG OF BOREHOLE OCDSB GUARDIAN ANGELS SCHOOL.GPJ TROW OTTAWA.GDT 5/10/26

EXP Services Inc.
100-2650 Queensview Drive
Ottawa, ON K2B 8H6

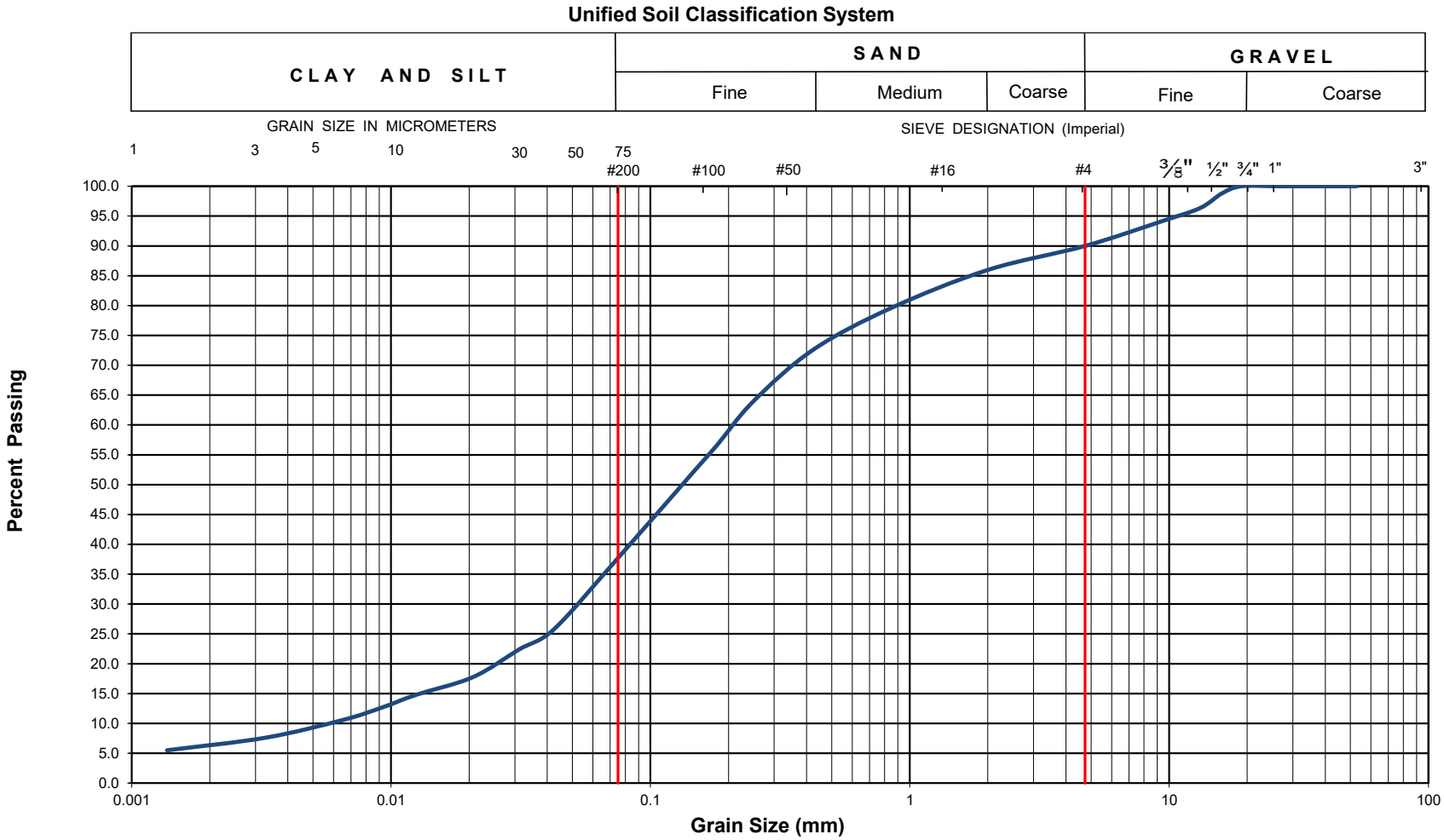
Grain-Size Distribution Curve
Method of Test For Particle Size Analysis of Soil
ASTM C-136/ASTM D422



EXP Project No.:	**OTT-26002180-A0**	**Project Name :**	**Proposed Additions to Guardian Angels Catholic School**						
Client :	**OCSB**	**Project Location :**	**4 Baywood Drive, Ottawa, Ontario**						
Date Sampled :	**April 23, 2026**	**Borehole No:**	**BH 26-02**	**Sample No.:**	**SS1**	**Depth (m) :**	**0.2-0.8**		
Sample Description :		**% Silt and Clay**	**34**	**% Sand**	**43**	**% Gravel**	**23**	**Figure :**	**9**
Sample Description :	**PAVEMENT GRANULAR BASE AND SUBBASE FILL MATERIAL: SILTY SAND (SM) - Gravelly, Trace Clay**								

EXP Services Inc.
100-2650 Queensview Drive
Ottawa, ON K2B 8H6

Grain-Size Distribution Curve
Method of Test For Particle Size Analysis of Soil
ASTM C-136/ASTM D422



EXP Project No.:	**OTT-26002180-A0**	**Project Name :**	**Proposed Additions to Guardian Angels Catholic School**						
Client :	**OCSB**	**Project Location :**	**4 Baywood Drive, Ottawa, Ontario**						
Date Sampled :	**April 23, 2026**	**Borehole No:**	**BH 26-04**	**Sample No.:**	**SS2**	**Depth (m) :**	**0.8-1.4**		
Sample Description :		**% Silt and Clay**	**38**	**% Sand**	**52**	**% Gravel**	**10**	**Figure :**	**10**
Sample Description :	**GLACIAL TILL: SILTY SAND (SM) - Some Gravel, Trace Clay**								

Borehole No: **BH26-02**	Core Runs Run 1: 1.7 m - 2.8 m Run 2: 2.8 m - 4.4 m Run 3: 4.4 m - 5.7 m	project Proposed Additions to Guardian Angels Catholic School 4 Baywood Drive, Ottawa, Ontario	Project N0: OTT-26002180-A0
Date Cored Apr 23, 2026		Bedrock Core Photographs	FIG. 11

Legal Notification

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