MEMORANDUM

TO:	CHIEF ADMINISTRATIVE OFFICER
FROM:	BRIGID REYNOLDS, CONSULTING TOWN PLANNER
SUBJECT:	DP2025-13 – 537 MOUNTAINVIEW RD
MEETING DATE:	JANUARY 27, 2026
SUBJECT PROPERTY:	LOT 3, SECTION 6, RENFREW DISTRICT, PLAN EPP109124 (PID 031-582-745)

Purpose

The purpose of this application is to approve a development permit for the construction of a single-family dwelling within the Natural Hazard Development Permit Area (DPA 2) for steep slopes and wildfire hazard.

Introduction

The subject property is located on a 764 m2 parcel located at 537 Mountain View Dr in the Slopes subdivision. The property is zoned Suburban (R-1). The OCP designates the property as within DPA 2 for the steep slopes.

Reports submitted in support of this application include:

- Geotechnical Hazard Assessment, prepared by Lewkowich Engineering Associates, dated December 12, 2025

Natural Hazard DPA

The purpose of the Natural Hazard DPA is to mitigate the potential risk associated with the steep slopes and fire hazard.

The applicant has provided a Geotechnical Hazard Assessment, prepared by Lewkowich Engineering Associates, dated December 12, 2025. The Geotechnical Report confirms that the slope ranges between 5 to 10 degrees (9 to 18% grade). The report recommends various

construction measures for foundation design, excavation, structural fill, and foundation drainage. The geotechnical report confirms the land is considered safe for the use intended, provided the recommendations in report are adhered to.

Public Works Department requires two StormTech SC-740 chambers or larger with a clean out be installed to manage the stormwater before it enters the Town system.

Fire Hazard

As identified in the DP guidelines, the applicant is not required to provide a wildfire assessment report because a section 219 covenant was registered on the title of the property as a condition of subdivision approval. The covenant identifies required building materials and fire smart vegetation management measures to be implemented to minimize the risk associated with wildfire.

IMPLICATIONS

a. Financial:
Application fees are collected to cover the cost of processing the application.

b. Policy/Legislation:
The subject property is in Development Permit Area – 2 for hazard lands pursuant to the Official Community Plan.

c. Strategic Priority:
N/A

d. Sustainability:
N/A

e. Communication:
As required by the Development Approval Procedures Bylaw No. 1109, notice of the application was sent to neighbours within 50 m of the subject property a minimum of 10 days prior to Council's consideration of the request. The notice was mailed out on January 16, 2025 and at the time of preparing the staff report no comments have been received.

f. Staffing Implication:
Processing this application is part of the Planning Department's regular duties.

Options

1) Approve the development permit for this application.
2) Approve the development permit with additional requirements.
3) Deny the development permit for this application.

Recommendation

The contract planner recommends approving DP2025-13 for the property located at 537 Mountain View Dr, legally described as Lot 3, Section 6, Renfrew District, Plan EPP109124 (PID 031-582-745) in conformance with the following conditions:

1. All development shall be in accordance with
    a. Attached site plan
    b. Geotechnical Hazard Assessment, prepared by Lewkowich Engineering Associates, dated December 12, 2025
    c. Install two StormTech SC-740 chambers or larger with a clean out before directing stormwater into the Town's system.
2. Prior to any land alteration and building permit issuance
    a. Implement sediment and erosion control measures to ensure sediment does not leave the subject property and enter into the storm system.

Signed:
Brigid Reynolds

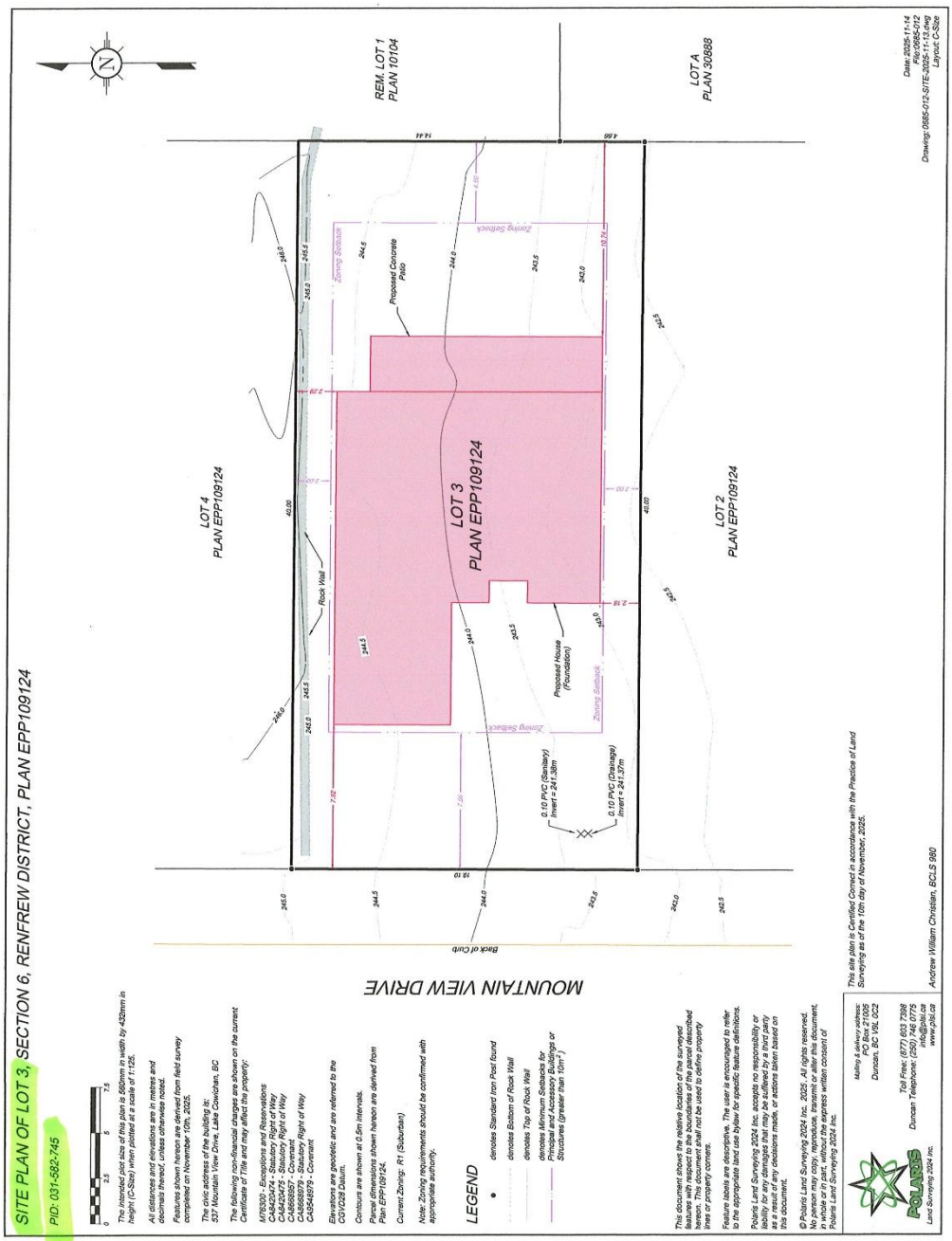
Brigid Reynolds RPP MCIP
Contract Planner

Concurrence:
John T

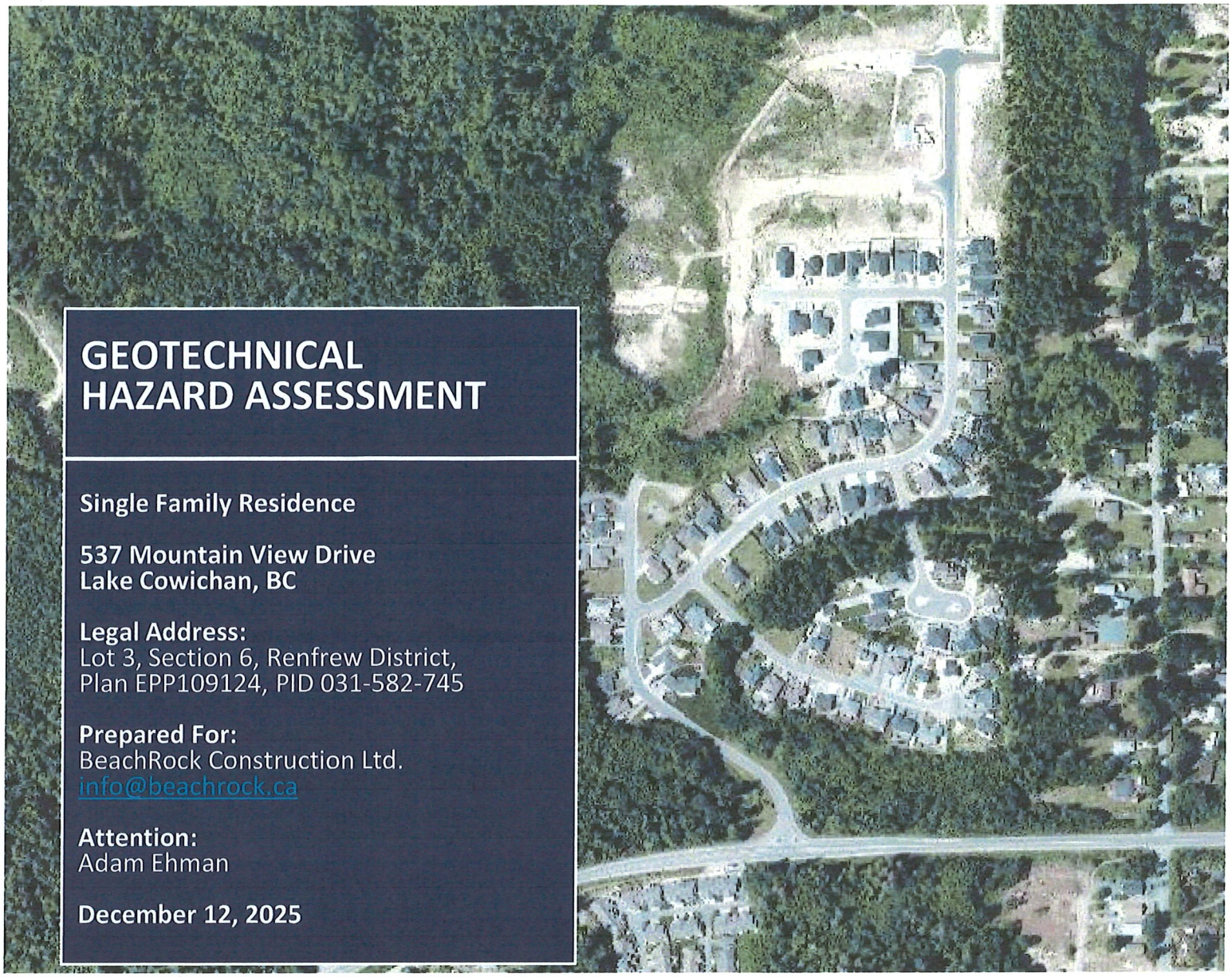
John Thomas
Chief Administrative Officer

ATTACHMENT 1

Site Plan



ATTACHMENT 2
Geotechnical Hazard Assessment, prepared by Lewkowich Engineering Associates, dated December 12, 2025



GEOTECHNICAL HAZARD ASSESSMENT

Single Family Residence

537 Mountain View Drive
Lake Cowichan, BC

Legal Address:
Lot 3, Section 6, Renfrew District,
Plan EPP109124, PID 031-582-745

Prepared For:
BeachRock Construction Ltd.
info@beachrock.ca

Attention:
Adam Ehman

December 12, 2025

File No.: E5076.02
Revision No.: 00
Prepared by: Stuart Crossfield, P.Geo., P.L.Eng.
Reviewed by: Chris Hudec, M.A.Sc., P.Eng.

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Permit to Practice No.: 1001802

LEA Lewkowich Engineering Associates Ltd.

DISCLAIMER, ACKNOWLEDGEMENTS, AND LIMITATIONS

1. Lewkowich Engineering Associates Ltd. (LEA) acknowledges that this report, from this point forward referred to as "the Report," may be used by the Town of Lake Cowichan (ToLC) as a precondition to the issuance of a development and/or building permit. It is acknowledged that Approving Officers and/or Building Officials of the ToLC may rely on this Report when making a decision on application for development of the land. It is acknowledged that this Report and any conditions contained in the Report may be included in a restrictive covenant under Section 56 of the Community Charter and registered against the title of the property at the discretion of the ToLC.
2. This Report has been prepared in accordance with standard geotechnical engineering practice solely for and at the expense of BeachRock Construction Ltd. We have not acted for or as an agent of the ToLC in the preparation of this Report.
3. The conclusions and recommendations submitted in this Report are based upon information from relevant publications, a visual site assessment of the property, observed and inferred subsurface conditions, current construction techniques, and generally accepted engineering practices. No other warrantee, expressed or implied, is made. If unanticipated conditions become known during construction or other information pertinent to the development becomes available, the recommendations may be altered or modified in writing by the undersigned.
4. This Report was authored, to the best of our knowledge at the time of issuance, with considerations for local requirements specific to the Authority Having Jurisdiction (AHJ) and their standards for the preparation of such reports, the 2024 British Columbia Building Code (BCBC), and current engineering standards. Updates to bylaws, policies, or requirements of the AHJ, and updates to the BCBC or professional practice guidelines, may impact the validity of this Report.
5. This Report has been prepared by Stuart Crossfield, P.Geo., P.L.Eng., and reviewed by Chris Hudec, M.A.Sc., P.Eng., both adequately experienced and are also members in good standing with the Engineers and Geoscientists of British Columbia (EGBC).

EXECUTIVE SUMMARY

1. The following is a brief synopsis of the property, assessment methods, and findings presented in the Report. The reader must read the Report in its entirety; the reader shall not rely solely on the information provided in this summary.
2. The subject property, 537 Mountain View Drive, Lake Cowichan, from this point forward referred to as "the Property," is located on Vancouver Island within the jurisdictional boundaries of the ToLC. The proposed development for the Property at the time of this Report consists of a new single family residence.
3. A site-specific assessment was conducted to identify any potential geotechnical hazards for the proposed development. Our assessment addresses one potential geotechnical hazard: nearby slopes.
4. The findings confirm the land is considered safe for the use intended, provided the recommendations of this Report are followed.

List of Abbreviations Used in the Report

Abbreviation	Title
AHJ	Authority Having Jurisdiction
BCBC	British Columbia Building Code
CVRD	Cowichan Valley Regional District
DPA	Development Permit Area
EGBC	Engineers and Geoscientists of British Columbia
LEA	Lewkowich Engineering Associates Ltd.
PGA	Peak Ground Acceleration
SLS	Service Limit State
ToLC	Town of Lake Cowichan
ULS	Ultimate Limit State

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1.0 INTRODUCTION

1.1 General

a. As requested, LEA has carried out a Geotechnical Hazard Assessment of the subject Property with respect to the proposed development. This Report provides a summary of our findings and recommendations.

1.2 Background

a. We understand the proposed development consists of a new single family residence. We further understand the new residence will be of conventional construction methods, including cast-in-place concrete foundations and a wood-frame superstructure.

b. The Property is located within the jurisdictional limits of the ToLC. The Property is zoned R-1 Suburban. The Property is located within one DPA: Natural Hazard Lands (DPA 2). Therefore, we understand a Geotechnical Assessment and report is required to assist in determining what conditions or requirements shall be included in the development permit so that the proposed development is protected from any identified natural hazards and no increase in hazard is posed to existing development on or near the Property. This Report addresses DPA 2 requirements for steep slopes.

1.3 Assessment Methodology

a. This assessment included a desktop review of relevant background information, including applicable ToLC bylaws,[1-2] available development plans, registered covenants on title, aerial photographs, and published geology and topography mapping. We also reviewed published regional-scale natural hazard assessments as commissioned by the CVRD. Please refer to the list of references at the end of this Report.

b. A site reconnaissance was conducted on October 27, 2025, to visually assess site conditions throughout the Property.

c. This assessment was prepared with consideration of the referenced EGBC professional practice guidelines, *Landslide Assessments in British Columbia*.[3] Please refer to the attached EGBC assurance statement.

1.4 Covenant Review

a. As part of our assessment, we have reviewed the legal title of the Property, specifically related to any restrictive covenants that may impact the conclusions or recommendations made in this Report.

b. At the time of this Report, there were no restrictive covenants related to geotechnical hazards registered against the title of the Property.

2.0 SITE CONDITIONS

2.1 Physical Setting

a. The Property is located near the northern limits of the ToLC. The Property is directly bordered by Mountain View Drive to the west and similar R-1 properties to the north and south. The Property is bordered by CVRD F2 – Secondary Forest Resource zoned property immediately to the east. See Figure 2.1 below.

Figure 2.1 – Location of the Property (CVRD Maps)

2.2 Terrain and Features

a. In general, the terrain within the Property and surrounding area gently declines from north to south. Based on available topographic information, the site survey plan (attached), the average natural slope angles range from 5 to 10 degrees from horizontal.

b. The Property is rectangular with dimensions of 40m long by 19m wide.

c. The Property was previously cleared of vegetation and is now covered with granular soil, and grasses/weeds. There is a low-height rock retaining wall along both north and south Property lines.

2.3 Regional Geology

a. Surficial geology mapping for the area indicates the Property falls within an area of predominately moraine deposits consisting of well-drained gravelly sandy loam, with minor fluvial deposits consisting of rapidly-

drained very gravelly loamy sand.[4]

b. Bedrock geology mapping for the area indicates the rock is classified as the the Sicker Group, Nitinat Formation, comprised of calc-alkaline volcanic rock from the middle to upper Devonian period, generally consisting of pyroxene-feldspar phyric agglomerate, breccia, lapilli tuff, massive and pillowed flows, massive tuffite, laminated tuff, jasper, and chert.[5]

2.4 Soil Conditions

a. A subsurface investigation was not completed as part of this assessment. The site reconnaissance allowed for observation of minor soil exposures throughout the Property. We also reviewed subsurface information from other developments in the immediate area.

b. Based on surficial geology, observed conditions, and LEA experience in the immediate area, we anticipate subsurface soil conditions will consist of thin deposits of surficial granular overburden, overlying dense to very dense till-like soil (i.e., silty sand and gravel) within approximately 1.5m from the ground surface.

c. There were also small stockpiles of fill observed within the Property, and considering the site has been previously disturbed, variable thicknesses of disturbed soil and fill should be anticipated. The depth to competent till-like soil may be greater in areas of fill.

2.5 Groundwater Conditions

a. There was no surface water or abnormal groundwater conditions observed during the site reconnaissance.

b. Considering the shallow glacial till subgrade, we expect a shallow perched groundwater table will be seasonally present.

c. Groundwater levels can be expected to fluctuate seasonally with cycles of precipitation. Groundwater conditions at other times and locations can differ from those observed within the time of our investigation.

3.0 SLOPE HAZARD ASSESSMENT

3.1 Debris Slides, Debris Flows, and Debris Floods

a. The Property is located down-slope of the north slope of Cowichan Lake. Therefore, as part of our assessment, we reviewed the referenced regional-scale natural hazard assessments, as commissioned by the CVRD, to determine if the Property is within a mapped debris slide, debris flow, and/or debris flood area, which would necessitate further study. A detailed debris slide, debris flow, and/or debris flood assessment was not completed and is beyond the scope of this Report.

b. We reviewed the referenced ebbwater/Palmer report entitled *Geohazard Risk Assessment North Slope of Cowichan Lake* report,[6] as well as the more recent Stantec/Palmer report entitled *Debris Flow Runout*

Model: North Shore Cowichan Lake.[7] The Stantec/Palmer report predicts the maximum runout limits of modeled debris flows from upslope landslides using LABS software, to a maximum annual encounter probability of 1:6,000 (i.e., 0.8% in 50 year probability).

c. Based on these assessments, the Property is not within any predicted debris flow runout extents.

d. Based on our review of the aforementioned publications, we conclude the chance of a life-threatening / catastrophic debris slide, debris flow, or debris flood event impacting the proposed development area is low, and no further assessment is required.

3.2 Slope Discussions

a. Detailed slope stability analyses are generally required when development is proposed near the top, bottom, or on soil slopes that are steeper than 2H:1V (27 degrees or 50%), or where indicators of global instability are present.

b. The slopes within the Property and the immediate surrounding areas gently decline at average slope angles ranging from 5 to 10 degrees (9 to 18%). Subsurface conditions are anticipated to consist of surficial compact to dense granular overburden and fill, overlying very dense glacial till at shallow depth. Groundwater was not identified during our assessment. The slopes were inspected for indicators of global instability and none were observed.

c. Considering the slopes within and immediately surrounding the Property are less than 2H:1V and there were no indicators of global instability, global slope stability is not a hazard for the Property and proposed development.

d. It should be noted that landslides can be triggered by human activity (i.e. excavation, placement of fill, removal of vegetation, etc.) or by failure of civil infrastructure (i.e. leakage or rupture of water and sewer mains, stormwater disposal from existing development, etc.). The concentrated discharge of collected stormwater can lead to erosion, earth movement, or slope failure.

4.0 DESIGN PHASE

4.1 Foundation Design

a. Prior to construction, the foundation areas should be stripped to remove all unsuitable materials to provide an undisturbed natural subgrade for footing support.

b. Foundation loads should be supported on natural undisturbed material or structural fill, approved for use as a bearing stratum by our office, and may be designed using the following values.

   i. For foundations constructed on dense, naturally deposited, glacial till subgrade, or on structural fill, placed and compacted as outlined in Section 5.2 below, an SLS bearing pressure of 150 kPa and a ULS

of 225 kPa may be used for design purposes. These values assume a minimum 0.45m footing embedment depth.

c. Exterior footings should be provided with a minimum 0.45m depth of ground cover for frost protection.

d. The Geotechnical Engineer should evaluate the bearing soils at the time of construction to confirm that footings are based on appropriate and properly prepared founding material.

4.2 Seismic Criteria

a. Based on the 2024 BCBC (Division B, Part 4, Section 4.1.8.4.), the observed and inferred subsurface conditions would be designated as "Site Class C" (very dense soil or soft rock).

5.0 CONSTRUCTION PHASE

5.1 General Excavation – Future Building Site

a. Prior to construction, all unsuitable materials should be removed beneath building areas to provide a suitable base of support. Unsuitable materials include any non-mineral material such as vegetation, topsoil, peat, fill, or other materials containing organic matter, as well as any soft, loose, or disturbed soils.

b. Ground water ingressing into any excavations should be controlled with a perimeter ditch located just outside of the building areas, connected to positive drainage.

c. Alluvially deposited fine-grained soils (silt and clay) are particularly moisture sensitive. Extended periods of saturated soil conditions can make these soils unsuitable for bearing purposes, where they could be suitable bearing surfaces when moist or damp. Exposure of these soils to water after excavation (rain or snow) can also make these soils unsuitable for bearing purposes. Therefore, weather conditions dictate whether these soils are suitable for bearing purposes at the time of construction.

d. Prior to placement of concrete footings, any bearing soil that has been softened, loosened, or otherwise disturbed during the course of construction, should be removed or else compacted following our recommendations for structural fill. Compaction will only be feasible if the soil has suitable moisture content and if there is access to heavy compaction equipment. If no structural fill is placed, a smooth-bladed clean up bucket should be used to finish the excavation.

e. The Geotechnical Engineer is to confirm the removal of all unsuitable materials and approve the exposed competent inorganic subgrade, prior to the placement of any structural fill materials.

5.2 Structural Fill

a. Where fill is required to raise areas that will support buildings, foundations, or slabs, structural fill should be used. The Geotechnical Engineer should first approve the exposed subgrade in fill areas, to confirm the

removal of all unsuitable materials.

b. Structural fill should be inorganic sand and gravel. If structural fill placement is to be carried out during the wet season, material with a fines content limited to 5% passing the 75µm sieve should be used, as such a material will not be overly sensitive to moisture, allowing compaction during rainy periods of weather.

c. Structural fill should be compacted to a minimum of 95% of Modified Proctor maximum dry density (ASTM D1557) in foundation and slab areas.

d. Structural fill under foundations and slabs should include the zone defined by a plane extending down and outward a minimum 0.5m from the outer edge of the foundation at an angle of 45 degrees from horizontal to ensure adequate subjacent support. This support zone is shown in Figure 5.2 below.

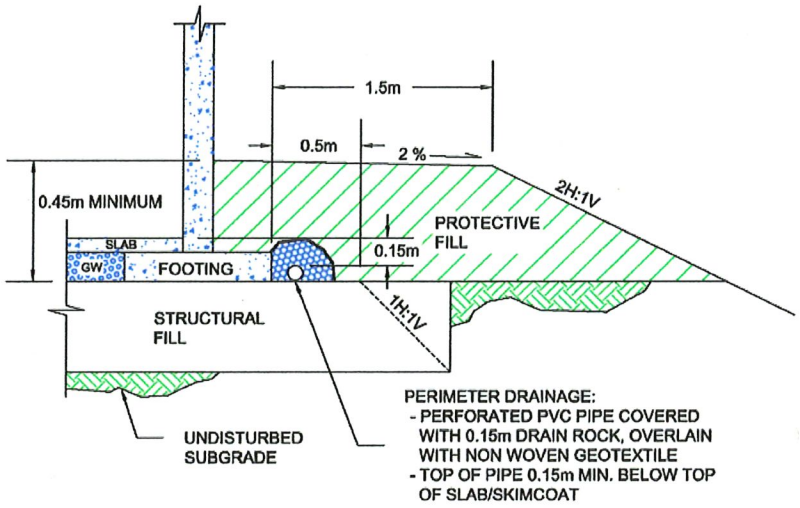


Figure 5.2 – Typical section for structural fill

e. Compaction of fill should include moisture conditioning as needed to bring the fill to the optimum moisture content and compacted using vibratory compaction equipment in lift thicknesses appropriate for the size and type of compaction equipment used.

f. A general guideline for maximum lift thickness is no more than 100mm for light hand equipment such as a "jumping-jack," 200mm for a small roller, and 300mm for a large roller or heavy (>500 kg) vibratory plate compactor or a backhoe mounted hoe-pac or a large excavator mounted hoe-pac, as measured loose.

g. It should be emphasized that the long-term performance of foundations and slabs is highly dependent on the correct placement and compaction of underlying structural fill. Consequently, we recommend that structural fill be observed and approved by the Geotechnical Engineer. This would include approval of the proposed fill materials and performing a suitable program of compaction testing during construction.

5.3 Foundation Drainage

a. Our assessment did not identify any abnormal groundwater conditions that would necessitate special

foundation drainage measures outside of Part 9 of the 2024 BCBC. Conventional requirements of the 2024 BCBC pertaining to building drainage are considered suitable at this site.

b. In addition to BCBC requirements, a layer of non-woven geotextile with a minimum weight of 140 g/m2 shall be placed between the 150mm thick drain rock layer and the foundation backfill in order to prevent the migration of fine-grained soil particles into the drainage system.

c. Where below grade living space is present, a HDPE dimpled drainage membrane shall also be installed against the exterior of foundation walls. The drainage membrane shall be installed as per manufacturer specifications (with the membrane's fabric layer facing out / facing the backfill).

d. Alternatively, clear gravel fill could be used as foundation backfill, as approved by the Geotechnical Engineer. Clear gravel fill is typically specified as having less than 10% fines content (i.e., <10% passing the #4 / 4.75mm sieve).

e. The final site grades shall be sloped to direct surface water away from the building and foundation areas.

f. The Geotechnical Engineer is to confirm the correct installation of foundation drainage during construction.

5.4 Stormwater Management

a. We understand that runoff from roof drains and perimeter foundation drains will be collected and piped to the municipal storm sewer system.

6.0 CONCLUSIONS

6.1 Local Government Conformance Statement

a. From a geotechnical point of view, and provided the recommendations in this Report are followed, the land is considered safe for the use intended (defined for the purposes of this Report as a new single-family residence), with the probability of a geotechnical failure resulting in property damage of less than:

   i. 2% in 50 years for geotechnical hazards due to seismic events, including slope stability; and

   ii. 10% in 50 years for all other geotechnical hazards.

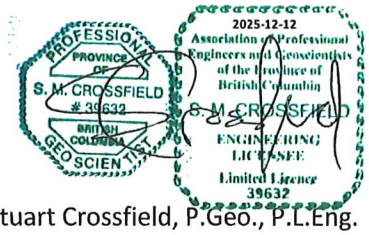
6.2 Geotechnical Quality Assurance

a. The ToLC may request a Geotechnical Engineer to provide professional assurance services during the course of construction. Geotechnical assurance services include review of the geotechnical components of the plans and supporting documents, and responsibility for field reviews of those components during construction.

7.0 CLOSURE

a. Lewkowich Engineering Associates Ltd. appreciates the opportunity to be of service on this project. If you have any comments, or additional requirements at this time, please contact us at your convenience.

Respectfully Submitted,
Lewkowich Engineering Associates Ltd.



Stuart Crossfield, P.Geo., P.L.Eng.
Engineering Geologist

Reviewed By:

December 12, 2025

Chris Hudec, M.A.Sc., P.Eng.
Senior Project Engineer

8.0 ATTACHMENTS

1. Polaris Land Surveying 2024 Inc., "Site Plan of Lot 3, Section 6, Renfrew District, Plan EPP109124", PID: 031-582-745, Dated November 14, 2025.
2. 2020 National Building Code of Canada Seismic Hazard Values.
3. EGBC, Landslide Assurance Statement.

9.0 REFERENCES

1. Town of Lake Cowichan, Official Community Plan, Bylaw No. 1097-2023, adopted March 26, 2024.
2. Town of Lake Cowichan, Zoning Bylaw No. 1055-2021, consolidated November 26, 2024.
3. EGBC, Landslide Assessments in BC, Ver 4.1, dated March 1, 2023.
4. BC Ministry of Environment, Soils of South Vancouver Island British Columbia, Soil Survey Report No. 44, Sheet 2, 1986.
5. Province of BC, interactive GIS web-map, iMapBC, accessed August 2025.
6. Ebbwater Consulting, with geohazard analysis by Palmer Environmental Consulting, Geotechnical Risk Assessment North Slope of Cowichan Lake, Proj No. P099, dated May 7, 2019.
7. Palmer Environmental Consulting and Stantec Consulting, Debris Flow Runout Model: North Shore Cowichan Lake, dated April 14, 2020.
8. Province of British Columbia, Ministry of Water, Land, and Air Protection, Flood Hazard Area Land Use Management Guidelines, amended by the Ministry of Forests, Lands, Natural Resource Operations, and Rural Development, dated January 1, 2028.