Form S1 – Geotechnical Report
Acknowledgement and Consent Form (to be completed by Qualified Professional)

This submission form must be completed by a geotechnical engineer in good standing with Engineers and Geoscientists BC and accompany the Geotechnical Report. The Applicant's geotechnical consultant is encouraged to discuss the geotechnical requirements relating to their proposal with the Development Department prior to submitting an application and ensuring their consulting engineer is aware of or familiar with the minimum standards.

Note: The Geotechnical Report must follow the *Guideline for Geotechnical Requirements in Steep Slope Areas of Delta* outlined below. The guideline is intended to provide a minimum standard for geotechnical engineering professionals preparing reports for lands in Delta. By having geotechnical engineers follow the guideline, applicants can avoid unnecessary delays.

See the Sloped Lands Development Permit Areas Interpretation Guide for clarification on which activities trigger the requirement for a development permit. Please note that under Division 8 of the *Community Charter*, the Building Official reserves the right to require a Geotechnical Report to determine whether land, that is subject to or is likely to be subject to flooding, mud flows, debris flows, debris torrents, erosion, land slip, rockfalls, subsidence or avalanche can be used safely for the use intended.

Guideline for Geotechnical Requirements in Steep Slope Areas of Delta
February 2000 (updated November 2013) (Updated in October 2023)

INTRODUCTION:
The purpose of this guideline is to describe Council policy for slope protection for development in Delta. This policy applies to all development in areas of Delta on or near a steep slope such as the many ravines and bluffs common to both North Delta and Tsawwassen. While not all inclusive, Schedule E of Delta's Official Community Plan provides a guide to some of these slope sensitive areas of the community as defined by the following development permit areas: English Bluff (Tsawwassen Escarpment) (SD2); Fraser River Escarpment (ND1); and Cougar Creek Headwaters (ND10). The guideline below was approved by Council on November 2, 1999. The guideline was subsequently updated in October 2023 to remain consistent with the BC Building Code.

PROJECT SCHEDULING & CONSTRUCTION LIMITATIONS:
It is important to carefully consider construction schedules when working in steep slope areas. Demolition, excavation, tree removal, slope alteration or any other work that increases the risk of slope instability, may only be conducted under the defined conditions provided by the applicant's Geotechnical Engineer and have been accepted by Delta. The Engineer is to outline the limitations of the construction conditions (ie. weather, setback, drainage, monitoring requirement etc.), in the respective report and is responsible to ensure the conditions are being met. The Engineer is responsible to advise the applicant of these conditions and to review these conditions in context of the proposed development to ensure applications are submitted well in advance, in order to complete activities that increase risk of slope instability within the identified construction conditions.

MUNICIPAL ACCEPTANCE:
The Development Department will review and comment on geotechnical report submissions in support of applications in steep slope areas. Once the Department is satisfied with the submissions, appropriate recommendations will be incorporated into application approval.

GUIDELINE PROVISIONS:

1. **A detailed geotechnical engineering review must be undertaken by the Qualified Professional as define by the Engineers and Geoscientists British Columbia.**

2. **The geotechnical report must be signed and sealed and is to be in compliance with the Engineers and Geoscientists BC Professional Practice Guidelines – Landslide Assessments in British Columbia.**

3. **The geotechnical report must include a complete signed and sealed Landslide Assessment Assurance Statement as outlined in the Engineers and Geoscientists BC Professional Practice Guidelines – Landslide Assessments in British Columbia.**

4. **Development must take place in a manner which maximizes the retention of existing vegetation and retains all vegetation outside of the developed building area.**

5. **Slope stability shall be addressed such that:**

   a. **There is no net decrease in overall slope stability resulting from the development.**

      Development should only occur if it does not adversely impact the stability of the slope, including that of the site and adjoining properties and roadways. While a no net decrease in slope stability is required, there may still be a need to increase slope stabilities of the site and neighbouring lands in order to safely accommodate the proposed development.

   b. **A 1 in 2475 probability of a slope instability, in any given year, must be the minimum acceptable protection against failure and meet the requirements outlined in the BCBC, as amended from time to time.**

      A probabilistic risk assessment of the site and surrounding lands affecting and/or being affected by the proposed development is required. The minimum standard for protection against failure is a 1 in 2475 probability against failure for both static and dynamic (including seismic loading) conditions in any given year with acceptable safety factors. Under dynamic loading conditions, deformations in structures should be limited so that serious structural damage which leads to building failure or collapse does not occur. This will necessitate specific attention to this issue by the design team, including the geotechnical engineer, architect and structural engineer.

      The 1 in 2475 year probability of failure is proposed to be a minimum, therefore, Council, the Approving Officer, staff or the geotechnical engineer may set or recommend higher standards or requirements as determined by the proposed development.

   c. **Off-site slope instabilities which could adversely impact the safe occupation and enjoyment of the proposed development, of adjacent or nearby lands should be mitigated by the applicant**.

      Critical to the safe use and enjoyment of the developed lands can be the stability of surrounding lands. A geotechnical review in support of an application needs to consider this issue. Where slope stability issues arise due to concerns on neighbouring lands or roadways, which are not part of the applicant's property, the following options may be considered:

i) The applicant may be required to stabilize the adjoining property or road. This approach should be reviewed on a case by case basis; or (Any use of soil anchors must be submitted to City for review and approval, no permanent soil anchors are permitted within City legal corridor including all right of way and dedication, unless with written approval by the City.)

ii) The development may be designed through acceptable clustering, siting or physical design features to limit the potential impact to human safety and property damage on the subject property in the event of an off-site failure.

d. The Geotechnical Engineer must outline the construction conditions and any necessary monitoring requirements to ensure the activities adhere to the necessary conditions. (ie. weather limitations, setback, site grading, erosion protection, drainage, inspection frequency etc.). The specific conditions are to be proposed by the Geotechnical Engineer and accepted by Delta.

e. The respective Geotechnical Engineer is required to review the construction management plan the plan must include the conditions, monitoring and construction limitations stated in the accepted Geotechnical report.

f. The Geotechnical Engineering Consultant is encouraged to review Delta's Geotechnical Report Library prior their geotechnical report submission.

An inventory of geotechnical reports received in support of development applications has been established by Delta. In support of continuing to build this resource, applicants and their consultants should be aware that geotechnical submissions in support of development applications will become public documents and may be used in the reference library.

6. The Developer and their agents are held accountable:

a. Through the provision of specific geotechnical assurances.

The applicant's geotechnical engineer must provide a signed and sealed copy of Landslide Asseement Assurance Statement as outlined in the Engineers and Geoscientists BC Professional Practice Guidelines – Landslide Assessments in British Columbia to Delta, which indicate, in the engineers' professional opinion the site is suitable for the proposed development and will not adversely impact neighbouring properties if certain specified works are undertaken. These assurances assist in clarifying Delta's expectations of the professional geotechnical engineer. In addition, the geotechnical engineer is made aware of how the information being submitted on behalf of their client will be used and relied upon.

b. Through restrictive covenant registered against the property title.

Terms of Delta's acceptance of a development application should be incorporated into a covenant and registered against the property title in order to limit the use of the land. Provisions of such a covenant are outlined in the Land Title Act and Community Charter and would commonly include limitations on the removal and disturbance of site vegetation, all geotechnical provisions including reports submitted in support of the application and indemnification of the City. These covenants assist in clarifying the basis for Delta's acceptance of an application and convey this information to future owners of the land.

Enforcement of the covenant provisions through the construction phase are the responsibility of the owner and the geotechnical engineer through the owners' commitments and engineers' assurances provided to Delta. Delta has the ability to utilize security deposited in support of the application, as outlined in section d) below, to rectify deficiencies.

c. Through the provision of insurance which names Delta as an additional insured.

General liability insurance naming Delta as an additional insured and in a form acceptable to Delta as defined by the Delta Highways Bylaw 6922, as amended should be provided by the applicant. Delta is named as an additional insured due to its role in approving the application.

The applicant's geotechnical engineer of record should provide proof of a minimum of occurrence based professional liability coverage which does not lapse. This insurance should also name Delta as an additional insured. This may disqualify some geotechnical engineering consultants who cannot obtain this insurance.

d. Geotechnical Report peer reviews be commissioned as necessary.

In most cases, Delta requires a geotechnical engineering consultant peer review which will look for conformance with good engineering practice and adherence to these guidelines for development in steep slope areas of Delta. Where a peer review is deemed necessary by Delta, the applicant will be notified. The applicant can expect a significant time delay of approximately 8 weeks, dependent on the availability of an acceptable consultant and the scope of the development project. In order to avoid this additional requirement, applicants and their consultants are encouraged to submit comprehensive thorough geotechnical reports to support their development application.

SUMMARY:

☑ Please check off which of the following has been included in the Geotechnical Report:

- ❑ A signed and sealed geotechnical report prepared by a qualified professional in compliance with Engineers and Geoscientists BC Professional Practice Guidelines – Landslide Assessments in British Columbia to determine if the lands may be used safely for the use intended and if the proposed development may proceed in a safe manner in accordance with the Guideline.
- ❑ Inclusion of a construction management plan including monitoring and outlining the construction conditions and limitations and had been reviewed the applicants' geotechnical engineering consultant in accordance with the Guideline.
- ❑ Address slope stability in accordance with the Guideline.
- ❑ Provision of insurance in accordance with the Guideline.
- ❑ Once the Geotechnical Report has been reviewed, subsequent revisions to address comments by supplementary geotechnical consultant peer reviews, as deemed necessary.

☑ **Please confirm each of the following standard assurances have been included in the Geotechnical Report:**

- ❑ The geotechnical report is prepared by a qualified professional in compliance with Engineers and Geoscientists BC Professional Practice Guidelines – Landslide Assessments in British Columbia
- ❑ The geotechnical engineer is aware and reviewed the proposed construction activities on this application and had outlined site specific construction limitation, monitoring requirements to ensure these activities
- ❑ The geotechnical engineer has carried out all necessary surface and subsurface investigations which that engineer considers necessary to provide the design and supervision undertaking being given.
- ❑ The engineer will provide the design and supervision such that, in the engineers opinion, the development does not and will not compromise in any way the stability of the soil on site or soil on lands which are adjacent or nearby, and will not cause or contribute to such soils becoming susceptible to land slip, land slide, rock fall, mud flow, debris flow, debris torrent, erosion, slumping, settling or other such occurrence.
- ❑ The engineer's undertaking that he is retained to fully supervise design and construction of the development, and that on completion of the work he will confirm in writing that he has fulfilled his design and supervision undertakings. In the event his retainer is terminated for any reason by his client, the engineer would be obliged to immediately notify the City in writing of that fact.

If any of the above has not been included, please explain below:

Acknowledgement and Consent Form

When drawings, documents or reports are submitted to the City of Delta as part of the application process, the owner/author of these submissions (e.g., surveyors, consultants, etc.) must acknowledge they have met the minimum submission requirements and consent in writing to allow their work to be reproduced (e.g., photocopied, scanned, etc.) by the City of Delta and the Land Title Office.

1. The undersigned warrants that they are the owner(s) (the "Owner") of the copyright for the Geotechnical Report (the "Work") prepared for:

   _____
   SITE ADDRESS

   _____
   CLIENT NAME

2. The Owner acknowledges and consents to the reproduction of the Work by the City of Delta for the purpose of inclusion of the Work in Council reports and/or information packages prepared for any Public Hearing held pursuant to requirements of the *Local Government Act*, as amended, or any bylaw or policy of the City of Delta, and to the provision of copies to interested members of the public prior to or at the Public Hearing.

3. The Owner also acknowledges and consents to the reproduction of the Work and attachment of the reproduction to any document where such document may be required for filing in the Land Title Office.

4. The Owner understands it may, in writing, request the City of Delta that any reproductions made of the Work be stamped that it not be further reproduced or used without permission of the author.

5. The Owner also acknowledges and understands that the Work may also be made subject of a request under the *Freedom of Information and Protection of Privacy Act*, as amended, and that the reproduction by the City of Delta of the Work pursuant to such a request is not a breach of copyright.

_____ _____

ENGINEER SIGNATURE (Signed and Sealed) DATE

_____

ENGINEER NAME (Please Print)