

BULLETIN 2016-005-BU

Revised June 28, 2017

## Geotechnical and Shoring Design - 1-2 Family Homes

The purpose of this Bulletin is to clarify that additional design and for excavations in peat, liquefiable soils, and deep excavations is required. Professionals carrying out work in these challenging conditions are to provide a detailed geotechnical report, impact statement, and shoring design for work in these soil conditions, and must carry appropriate insurance for such work.

All professionals are required to follow the best practice guidelines "Housing Foundations and Geotechnical Challenges - Best Practices for Residential Builders in BC" by the Homeowner Protection Office, the Provincial Government, APEGBC, and AIBC. Furthermore, the Chief Building Official may require third party review for conditions that are of unusual complexity or concern or for permits that are deficient.

There has been an increase in the number of deeper excavation for properties in soil types that have typically been utilizing shallow foundation design principles, as well as an increasing number of deeper basement designs for single family homes or deeper excavations adjacent to areas that have already been excavated. This has resulted in concerns over soil movement, slope stability and the impact on adjacent properties and City infrastructure.

While the City relies on professionals for the geotechnical and foundation design of homes, the City is increasing the submission requirements for Professionals undertaking this work. This applies to areas containing peat, liquefiable soils, or excavations to accommodate a deep basement (greater than 8'-0") or adjacent to sites where previous excavation can compromise stability of the excavation (the amount of native untouched fill is limited or unknown - see diagram).

All geotechnical and foundation design work will be required to follow the "Housing Foundations and Geotechnical Challenges - Best Practices for Residential Builders in BC".

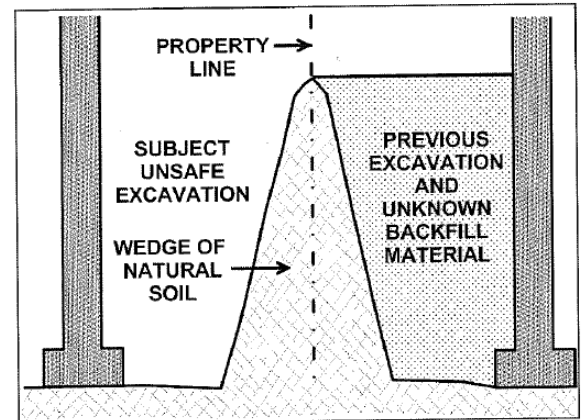


Figure 1. Deep Excavations

Additional design submittals for building permits in the affected areas shall include:

- A detailed Geotechnical Report covering geology, soil and groundwater conditions, soil stability and movement potential;
- Detailed design(s) of shoring and associated construction details;
- Requirements for fill type, quality and how it is installed;

Furthermore, in areas containing peat, the Geotechnical report shall include:

- A signed and sealed impact statement assessing the potential impact of the excavation, and proposed new materials and structure being added;
- Identification of all necessary mitigation measures; and

- A review of drainage and any impacts on adjacent properties, especially in peat conditions.

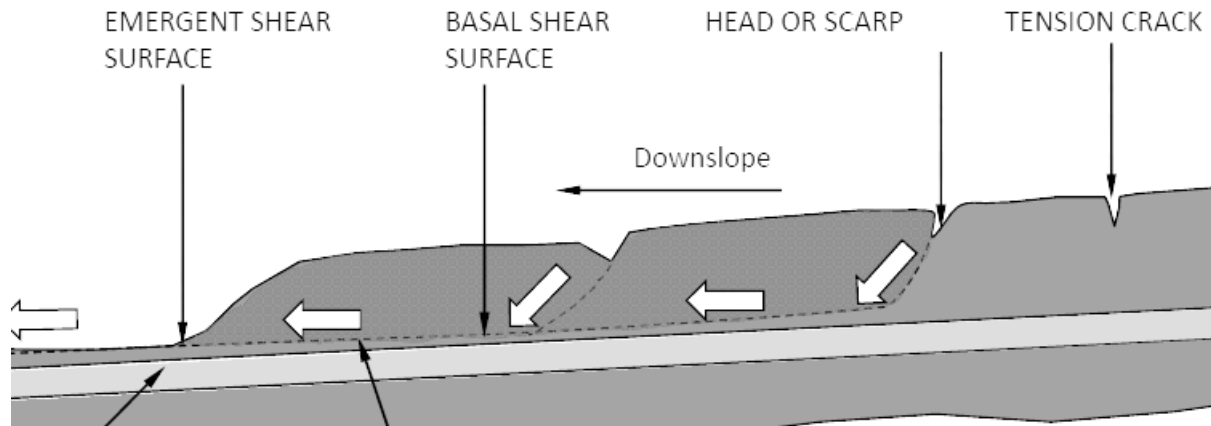


Figure 2. Failure Modes in Peat Excavation

Site supervision by the registered professional is also required for excavation work and shoring construction, including but not limited to:

- A Pre-Survey of adjacent properties and additional follow-up surveys as required where movement may occur;
- Notification to neighbors of work and potential issues and mitigation;
- Mitigation details for any potential damage that may occur;
- Groundwater Management during and after construction to avoid impact on adjacent properties; and
- Final review and inspection to ensure minimal impacts.

In addition to the foregoing and due to the elevated level of risk associated with deeper excavations and challenging geotechnical conditions, the City may also require an independent conceptual review of the geotechnical report and may further require that the registered Professional of Record provide Professional Letters of Assurance where work is being carried out in support of a required permit.

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