Geotechnical Study

The purpose of this document is to provide a term of reference for the preparation of a Geotechnical Study, which may be required as part of the submission of an application for Official Plan Amendment, Zoning By-law Amendment/Community Planning Permit, Draft Plan of Subdivision/Condominium, Site Plan, Consent and Minor Variance.

A Geotechnical Study is an objective, science-based sub-surface investigation study, prepared by a qualified expert (Geotechnical Engineer/Consultant) that analyses soil and bedrock composition to determine its structural stability and its ability to accommodate development.

The report provides recommendations for construction including but not limited to earthworks, drainage works, landscaping, sewers and other below grade utilities, road and pavement design to ensure that works constructed by others are built to municipal and other applicable standards.

The study will be used to guide the design and construction of buildings, municipal roads, and services as well as to determine feasibility for infiltration of groundwater, if it is part of the proposal.

Required by Legislation

The Ontario Planning Act.

Who should prepare this study?

A Geotechnical Study and drawings shall be prepared and stamped by a professional engineer licensed in the Province of Ontario and has suitable experience in the field.

Why do we need this study?

A Geotechnical Study is required to provide an assessment if there may be significant challenges in the conceptual designs, land requirements, detailed design, and construction stages of a development and to supplement Stormwater Management Reports or Hydrogeological Studies.

How should this study be prepared?

A Geotechnical Study should at a minimum contain:

Introduction

- Address of the subject property
- General site location of the subject property
- Project Name (if applicable)

- Applicant and owner's contact information
- Author name, title, qualifications, company name and appropriate stamp
- Brief description of the proposed development
- Overview of the study area
- Purpose of the study
- Location and context map

Proposal Description and Context

- A description of the existing on-site conditions as well as surrounding areas, roads, natural areas, buildings, parking areas
- Concept Plan for the development including building location, parking, access, amenity area, grading, natural features and any natural hazards

Investigation/Evaluation

Identification of subsurface conditions including:

- Geologic setting
- Soil, bedrock (if required), and groundwater characteristics
- Locations of investigation on site and servicing plans
- Factors of safety, feasibility and risk assessment

Impacts and Mitigation Measures

- Discuss the suitability of the site's soils for the proposed development and its planned structures, proposed municipal roadways and infrastructure or grading alterations
- Provide a rationale for any recommendations of soil excavation, importing of soil materials, trenching, or backfilling
- Identify recommended construction methods and materials, including those related to backfilling and the placement of fill materials
- Provide recommendations on foundation design and construction based on the site's subsurface conditions
- Identify any concerns or recommendations for the site's drainage, considering pre, during, and post construction conditions
- Mitigation measures and monitoring programs where necessary
- Recommendations regarding below grade watertight structure(s) and/or requirement of PWDS Environmental Compliance Approval (ECA) from Ministry of Environment and Climate Change (MOECC) where applicable

Recommendations

- Summary and conclusions of the studies and how they support the development and any special considerations or conditions that should be imposed
- Any recommendations or conditions that should form part of the development approval

Drawings and Supporting Information

- Concept plans
- Location and context maps

What else should we know?

- The scope of the study should be discussed with the district and/or area municipal planning staff and or other staff or agencies as part of the consultation process.
- Geotechnical Studies are required for the design and construction of municipal roads and all developments
- The detailed design of any infiltration facilities will be based on site specific percolation tests
- The number of tests will be dependent on the size of the facility and the different types of soils conditions found within the proposed facility footprint zone of influence
- Additional studies such as Slope Stability studies or investigations may be required if the proposed work involves or is influenced by the existing presence or proposed construction of a slope or watercourse
- In addition to a Geotechnical Study a Hydrological Review is also required

Additional Terms

To be identified by the District and/or Area Municipality where proposed development is located.

Study Submission Instructions

To be identified by the District and/or Area Municipality where proposed development is located.

What other resources are there?

Ministry of Natural Resources and Forestry Technical Guide – River and Stream Systems: Erosion Hazard Limit
Professional Engineers of Ontario
District Municipality of Muskoka Design Criteria and Standards Manual
Ontario Professional Planners Institute (OPPI) – Hire an RPP
Ontario Planning Act, R.S.O. 1990
Provincial Planning Statement 2024 (PPS)
Muskoka Official Plan (MOP)
Applicable Area Municipal Official Plans:
Town of Huntsville Official Plan
Town of Bracebridge Official Plan
Town of Gravenhurst Official Plan
Township of Lake of Bays Official Plan
Township of Muskoka Lakes Official Plan
Township of Georgian Bay Official Plan

About these Terms of Reference

The need and scope for this study will be decided by the District and/or Area Municipality during initial pre-consultation process with input from partner agencies. This pre-consultation process may include:

- Determination if this study is applicable
- Confirmation of criteria within these Terms of Reference that are appropriate for your development project
- Identification of specific technical components that need to be addressed
- Identification of detailed standards to be met

Notes:

If the proposed development is revised, the study/report shall reflect the revisions by an updated report or letter from the author indicating the changes and whether or not the recommendations and conclusions are the same (Note: this is subject to the extent of the revisions).

A peer review may be required. The cost of the peer review will be borne by the applicant.

If the submitted study is incomplete, is authored by an unqualified individual or does not contain adequate analysis, the applications will be considered incomplete and returned to the applicant.