

Geotechnical Study

Terms of Reference

WHO SHOULD PREPARE THIS STUDY?

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 works, road and pavement design works, sewers and other below grade utility works 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.

WHEN IS THIS REQUIRED?

- Draft Plan of Subdivision / Condominium.
- Detailed Subdivision Engineering Review.
- Site Plan Control.
- Other process as may be required or identified by the Town.

WHY DO WE NEED THIS STUDY?

A Geotechnical Study is required to provide an assessment to identify any potential challenges in the conceptual designs, land requirements, detailed design, and construction stages of a development and to supplement Stormwater Management Reports.

HOW SHOULD THIS STUDY BE PREPARED

A Geotechnical Study should, at a minimum, contain the headings and respective information as follows:

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 proposal, development stats (such as number of units, site area) type of development proposed, height, parking areas, access points, location of amenity areas, proposed phasing.
- 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 areas, grading and natural features and any natural hazards.

Investigation/Evaluation

Identification of subsurface conditions, including:

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

Geotechnical Study

Terms of reference

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.
- Provide recommendation on hardscaped surface make-up based on site soil conditions.
- Identify recommended construction methods and materials, including those related to backfilling and the placement of fill materials.
- Assess soil percolation rates for feasibility for their feasibility for use in Low Impact Development (LID) applications.
- 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 water proofing methods.
- Requirement of Permanent Water Drainage System (PWDS) Environmental Compliance Approval (ECA) from Ministry of the Environment, Conservation, and Parks (MECP) 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 a decision on the matter.

Drawings and Supporting Information

- Concept plans.
- Location and context maps.
- Borehole and groundwater logs.
- Dewatering zone of influence maps.

WHAT ELSE SHOULD WE KNOW?

- The scope of the study should be discussed with the Growth Services Department and other relevant agencies as part of the pre-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 soil 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. If the proposed work is within areas regulated by Conservation Authorities Slope Stability studies must also meet Conservation Authority geotechnical engineering and design submission requirements for slope stability studies.
- In addition to a Geotechnical Study a Hydrogeological Review is also required.

ADDITIONAL TERMS

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 the recommendations and conclusions are the same (Note: this is subject to the extent of the revisions).

A peer review may be required, and all costs associated with the peer review may be the responsibility of 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 may be returned to the applicant.

STUDY SUBMISSION REQUIREMENTS

- Follows the Digital File Naming Convention.
- All submission materials shall be submitted through an FTP site.

WHAT OTHER RESOURCES ARE THERE?

- LSRCA Technical Guidelines for Stormwater Management Submissions.
- Other Conservation Authority Geotechnical Engineering and Design Submission Requirements as applicable.
- Lake Simcoe Protection Plan (LSPP).
- Simcoe County GIS Portal.

Geotechnical Study

Terms of reference

About these Terms of Reference:

These Terms of Reference were developed by the Town of Bradford West Gwillimbury based on the Terms of Reference prepared by York Region.

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 the recommendations and conclusions are the same (Note: this is subject to the extent of the revisions).

A peer review may be required.

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 may be returned to the applicant.