



CLARK COUNTY
WASHINGTON

COMMUNITY DEVELOPMENT
BUILDING SAFETY

Geotechnical Engineer Responsibility and Requirements in a Geotech Report

Rev 4.27.20

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SCOPE

The purpose of this document is to define requirements for geotechnical engineers who are hired by permit applicants to analyze surface and subsurface conditions on a site as required by the Building Code or as directed by the Building Official. The geotechnical engineer hired to perform this work must comply with the duties and responsibilities included in this document.

GENERAL REQUIREMENTS

A geotechnical engineer experienced in geotechnical engineering and a licensed Professional Engineer (Civil) in the state of Washington shall prepare the geotechnical report in accordance with generally accepted geotechnical practices and the General Geotechnical Report Guidelines contained in this document. The geotechnical engineer shall attend a pre-construction conference when requested by the Building Official. The geotechnical engineer is also responsible for developing a program for monitoring the site during construction (to ensure compliance with the recommendations in the geotechnical report and conditions of the permit) and for performing such monitoring. The geotechnical engineer shall conduct or direct all subsurface explorations.

CONTENTS OF GEOTECHNICAL REPORT

The geotechnical report shall discuss all applicable items listed in the General Geotechnical Report Guidelines contained later in this document. Specific recommendations concerning stability of the site shall also be made, if applicable.

The opinions and recommendations contained in the report shall be supported by field observations and testing, e.g. site reconnaissance, appropriate explorations such as borings or test pits, literature review, and laboratory testing of soil characteristics conducted by or under the supervision of the geotechnical engineer in accordance with the American Society of Testing and Materials or other applicable standards.

If required by the Building Official, evaluation involving significant geologic issues shall be reviewed by a Washington State licensed geologist.

The geotechnical engineer shall submit a statement that in the engineer's judgment, site under review and the affected areas that are impacted by the proposed development will be stable during and after construction.

POTENTIALLY CONTAMINATED SOILS

If potentially contaminated soils are identified (i.e. by unusual color or smell or prior knowledge or any other source) by the geotechnical engineer during subsurface investigation, then this information needs to be included in the geotechnical report so an appropriate action by the applicant can be taken or for direction from the County on appropriate action that needs to be taken to evaluate and/ or mitigate soil contamination..

ADDITIONAL REQUIREMENTS FOR A GEOTECHNICAL REPORT IN LANDSLIDE-PRONE AREAS

A geotechnical report required for a site located within a landslide-prone area as determined by the County maps or as established by the geotechnical engineer shall comply with the following additional submittal requirements:

1. An evaluation of the erosion potential on the site during and after construction shall be submitted. It shall include recommendations for mitigation including retention of vegetation buffers and a revegetation program. The geotechnical engineer shall provide a statement identifying buffer areas at the top or toe of a slope based on geotechnical site constraints and the impacts of proposed construction methods on the stability of the slope.
2. The geotechnical engineer shall submit a statement in the soils report that the geotechnical elements of seismic design have been evaluated in accordance with the criteria and ground motions prescribed by the current version of the Building Code for new structures or ASCE-31/41 for existing buildings. Slope stability analyses for landslide prone areas shall be evaluated in accordance with pertinent design standards using a minimum factor-of-safety of 1.5 for static loads and 1.1 for seismic loads. The plan set for the project shall be reviewed by the geotechnical engineer for consistency with these design criteria.
3. The geotechnical engineer shall make a recommendation as to which portion of the site are the most naturally stable and the preferred location of the structure. The limits of the area of grading activity shall be identified in the recommendations. Recommendations by geotechnical engineer shall also be provided for drainage control, limitations on excavations and net new fills.
4. In general, no excavation will be permitted in landslide-prone areas during the typically wet winter months. When excavation is proposed, including the maintenance of open temporary slopes between November 1 and March 31, geo-technical analysis shall be provided to assure that no slope instabilities would result. The technical analysis shall be submitted for approval by the Building Official and shall, at a minimum, consist of plans showing mitigation techniques and a letter from the geotechnical engineer.
5. The geotechnical engineer shall provide recommendations on the management, conveyance and discharge of surface water and groundwater collected by the project facilities (roof gutters, subsurface drains, etc.) to assure that it does not discharge onto or into landslide prone slopes and neighboring properties.

The Building Official may require supplements or amendments to the report when needed to develop a reasonably comprehensive understanding of the soil conditions on the site.

PRE-CONSTRUCTION CONFERENCE

The geotechnical engineer shall attend a pre-construction conference with the applicant, the lead design professional, the contractor, and building department representatives when requested by the Building Official. The purpose of this conference is to discuss the most difficult, challenging, or important aspects of the construction that may pose particular risks or need special attention. The conference may include discussions of excavation and shoring plans, phasing of work, monitoring requirements, geotechnical recommendations, stability risks, weather considerations, disposal of excavated soils, surface and groundwater conditions, fill materials, erosion control, non-disturbance areas, and other matters the Building Official deems relevant. The geotechnical engineer shall highlight the most critical geotechnical issues during the pre-construction conference.

CONSTRUCTION MONITORING

The geotechnical engineer shall monitor the site and provide special inspection as required by the Building Official during the construction phase to ensure compliance with the recommendations of the geotechnical

report and the geotechnical aspects of the approved plans. The construction monitoring shall meet the general requirements for special inspections.

Unless otherwise approved by the Building Official, the specific recommendations contained in the geotechnical report shall be implemented by the owner. When site visits are made, the geotechnical engineer shall provide a daily field report on the progress of the construction. The daily field reports shall be provided to the Building Official on a weekly basis at a minimum or at such timely intervals as shall be specified by the Building Official.

Omissions or deviations from the approved plans and specifications and significant geotechnical construction issues shall be immediately reported to the Building Official. It is not sufficient to notify only the Building Inspector and/or Site Inspector or to provide notification of significant geotechnical issues only via field report.

The final construction monitoring report shall contain a statement from the geotechnical engineer that based upon his or her professional opinion, site observations, and testing during the monitoring of the construction, the completed development substantially complies with the recommendations in the geotechnical report, approved plans, and all permit requirements. The final report shall be stamped by the geotechnical engineer. Occupancy of the project will not be approved until the final report has been reviewed and accepted by the Building Official.

CHANGE OF GEOTECHNICAL ENGINEER/SPECIAL INSPECTION AGENCY

If a new geotechnical engineer is retained by the owner, the owner shall notify the Building Official of the change in writing in addition to following the protocol established by the Washington State Board of Engineers. The notification shall be accompanied by a letter to the Building Official, signed and sealed by the new geotechnical engineer, expressing his or her agreement or disagreement with the recommendations of the original geotechnical engineer and stating whether existing plans and specifications conform to his or her recommendations. The letter shall also contain any further recommendations, as well as additional exploration, analysis and testing as applicable, should there be additions or exceptions to the original recommendations. Work relating to the further recommendations shall not proceed until the Building Official has approved them; in some cases, revised plans may be required. Review and approval of any further recommendations will not be granted during the pre-construction conference. In case a Special Inspections Agency is retained for geotechnical inspections, this will be treated at par as change of geotechnical engineer and the Special Inspections agency will need to follow above process.

GENERAL GEOTECHNICAL REPORT GUIDELINES

The following are general geotechnical report guidelines, these guidelines are not intended to be all inclusive. Depending on the scope and scale of the project, some of the information below may not be required. It is the responsibility of the geotechnical engineer to address all factors, which in their opinion, are relevant to the site.

I. PROJECT INFORMATION AND REPORT PURPOSE

- A. Site Address
- B. Vicinity map
- C. Purpose (e.g., feasibility, permit application, final design)

II. SITE AND PROJECT DESCRIPTION

- A. Site plan showing existing and proposed structures and site improvements, property lines, and existing contour lines if available
- B. Surface conditions, including adjacent properties, structures, and rights-of-way

- C. Description of existing and/or proposed sewer drainage facilities (sanitary and storm-water) on or adjacent to site when these facilities affect or are affected by the proposed work
- D. Description of proposed structural and site improvements
- E. Floor and foundation grades
- F. Anticipated excavation depths

III. GEOLOGY AND GEOLOGIC HAZARDS

- A. Review of available literature, geologic maps
- B. Preliminary geologic hazard assessment (e.g. landslide-prone areas, peat settlement prone areas, liquefaction hazard areas)
- C. Landslide history

IV. FIELD EXPLORATIONS AND LABORATORY TESTING

- A. Exploration logs, soil as a minimum needs to be explored at depths deeper than the planned building foundations or deeper than the calculated slide planes (in case of a slope stability evaluation being performed).
- B. Field and laboratory testing results

V. SUBSURFACE DESCRIPTION

- A. Subsurface conditions
- B. Geologic profile and site development cross-sections (in case the report pertains to a sub-division or a site development)
- C. Groundwater evaluation and levels
- D. The management, conveyance and discharge of surface water and groundwater collected by the project facilities (roof gutters, subsurface drains, etc.) to assure that it does not discharge onto or into slopes and neighboring properties.

VI. ANALYSES

- A. Include soil properties, layering, and geometry
- B. Describe assumptions, analysis methods, results and interpretation.

VII. CONCLUSIONS AND RECOMMENDATIONS

- A. Conceptual siting of structures and general recommendations
- B. Earthquake engineering (e.g. Building Code seismic parameters)
- C. Slope stability assessment including (1) existing conditions, construction phase, and post-construction phase and (2) global and local stability
- D. Foundation support recommendations (e.g. type, allowable bearing pressures, deep foundation capacities, settlement estimates)
- E. Temporary excavation and/or shoring recommendations, impacts on adjacent properties including utilities and ROW
- F. Lateral earth pressure and resistance recommendations
- G. Grading and earthwork including site preparation, compaction requirements, fill specifications, sequencing of earthwork operations, wet weather considerations

- H. Temporary and permanent surface and subsurface drainage requirements, temporary and permanent dewatering, off site effects
- I. Temporary and permanent erosion control.
- J. Other recommendations as needed

VIII. PLAN REVIEW STATEMENTS

- A. In landslide-prone critical areas, the following will be required with all permit applications: A statement that the most recent plans and specifications have been reviewed and conform to the recommendations of the analysis and report and, provided that those conditions and recommendations are followed during the construction and use, the areas disturbed by construction is expected to be stable and not increase the potential for soil movement.
- B. In other areas designated by the Building Official as having high risk potential, the following shall be submitted: A statement that the most recent plans and specifications have been reviewed and conform to the recommendations of the analysis and report, and provided that the conditions and recommendations are followed, the construction and development is expected to not increase the potential for soil movement.
- C. In liquefaction-prone critical areas, the statement required under section B will be required when the Building Official determines the risks are still sufficiently high after consideration of any proposed mitigation.