



CLARK COUNTY
WASHINGTON

COMMUNITY DEVELOPMENT
BUILDING SAFETY

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This handout is general and intended only as an informational guide. For more information, refer to International Building Code and International Residential Code.

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Soil Investigations and Geotechnical Reports

General Code Requirements

The following are the **minimum** requirements in the currently adopted building code. Geotechnical reports are required to be specific to the project site. A report for a nearby site and/or similar project cannot be substituted. A geotechnical report may exceed the minimum requirements listed below.

When is a geotech report required?

When any of the following conditions exist:

- Strength, compressibility of the soil, or classification of the soil is in doubt;
- Load bearing value higher than that specified in the code is claimed;
- Expansive soils (clay);
- Mapped landslide area;
- Steep slopes - where setbacks other than those required by section 1808.7 are desired;
- Backfill area greater than the depth of footing bearing;
- To establish ground-water table level when the lowest floor elevation is lower than the finished ground level adjacent to the foundation;
- For the construction of new or additions to essential facilities such as hospitals, fire stations, etc.;
- Foundations generally deeper than 18 inches are proposed;
- Variations are found in the rock sub-surface upon which foundations are supported;
- Excavation is proposed near existing foundations;
- Shallow foundations are proposed to bear on controlled low-strength material (CLSM);
- Foundations on or adjacent to slopes are proposed unless the setbacks meet the minimums required in the code for sloped situations;
- Lots have been over excavated;
- Subdivisions;
- As required by the Chief Building Official.

What is the **Basis of Investigations** in a geotechnical report?

A soils investigation per 2015 IBC Section 1803 shall be based on observation and any necessary tests of the materials disclosed by borings, test pits or other subsurface exploration made in appropriate locations. Additional studies shall be made as necessary to evaluate slope stability, soil strength, position and adequacy of load-bearing soils, the effect of moisture variation on soil-bearing capacity, compressibility, liquefaction and expansiveness. 2015 IBC Section 1803.

1803.3.1: Scope of Investigation. The scope of the soil investigation, including the number and types of borings or soundings, the equipment used to drill and sample, the in-situ testing equipment, and the laboratory testing program shall be determined by a registered design professional meeting the registration requirements of Washington state per RCW 18.43.

1803.4: Qualified Representative. The investigation procedure and apparatus shall be in accordance with generally accepted engineering practice. The registered design professional shall have a fully qualified representative on the site during all boring and sampling operations.

1803.6: Reporting. Where geotechnical investigations are required, a written report of the investigations shall be submitted to the building official by the permit applicant at the time of permit application. This geotechnical report shall include, but need not be limited to, the following information:

- 1) Plot plan showing location of boring and excavation
- 2) Complete record of soil samples
- 3) Record of soil profile
- 4) Elevation of water table, if encountered
- 5) Recommendation for foundation type and design criteria including but not limited to:
 - a. Bearing capacity natural or compacted soils
 - b. Provision to mitigate effects of expansive soils
 - c. Mitigation of effects of liquefaction
 - d. Differential settlement and varying soils strength and effects of adjacent loads
- 6) Expected total and differential settlement
- 7) Deep foundation information in accordance with Section 1803.5.5.
- 8) Special design and construction provisions for footings and foundations founded on expansive soils as necessary
- 9) Compacted fill material properties in accordance with section 1804.5.8
- 10) Controlled low-strength material properties and testing in accordance with 1803.5.9
- 11) The potential for liquefaction and soil strength loss evaluated for site peak ground acceleration, earthquake magnitude and source characteristics consistent with the maximum considered earthquake motions.
- 12) Dynamic seismic lateral earth pressure on foundation walls and retaining walls supporting more than 6 feet of backfill height.
- 13) Slope instability
- 14) Surface displacement due to faulting or seismically induced lateral spreading or lateral flow.

Related links

2015 IBC Section 1803

codes.iccsafe.org/public/document/IBC2015/chapter-18-soils-and-foundations

2015 IRC Section R401

codes.iccsafe.org/public/document/IRC2015/chapter-4-foundations