



City of Laguna Niguel

Building Division

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GEOTECHNICAL REPORT AND MINIMUM FOUNDATION REQUIREMENTS

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INTRODUCTION:

The topography, development history, and geotechnical conditions within Laguna Niguel present some unique and challenging development conditions by which a geotechnical and/or geology report may be required to address and mitigate the identified conditions. These conditions, along with the new requirements of the 2013 California Building Code (CBC), the 2013 California Residential Code (CRC) and the City of Laguna Niguel local ordinances necessitate the need for certain minimum foundation standards.

A review of past developments, both in the City of Laguna Niguel (prior to and after incorporation) and the surrounding hillside communities has led the city to establish the following policies in regard to when a geotechnical and/or a geology report is required and for certain construction requirements.

When the geotechnical report is not part of a grading permit, and a geotechnical report is otherwise required, a separate review fee will apply.

When submitting a geotechnical report, three (3) copies are required. Submittal of less than 3 will cause a delay in the review process as reports must then be shared by reviewers.

The geotechnical report should be prepared and be signed by a registered Geotechnical Engineer. If the interpretation of geology is integral to the site in determining engineering parameters for design then the report should also be signed by a Certified Engineering Geologist. Under certain cases an Engineering Geologist may submit a report with "code level" engineering parameters.

All concrete in contact with soil shall be Type V cement and have a water/cement ratio of 0.45 and an $f'_c = 4,500$ psi with or without a geotechnical/geologist report.

GEOTECHNICAL REPORT REQUIRED

A geotechnical and/or geology report is required when **any** of the following conditions exist:

1. Any new construction (not an addition or alteration of an existing building).
2. Additions to a single-family dwelling with any one of the following conditions:
 - a. Addition is closer than 10' to top or toe of slope.
3. Any new construction solely based on section 23 of the 2013 California Building Code or the 2013 California Residential Code:
 - a. Conventional light-frame construction.
 - b. A design based on a specified soil bearing pressure of $f'_c > 1500$ psf.
4. Retaining walls greater than 4 ft. high measured from the bottom of the footing, supporting any surcharge.
6. Any construction (new, additions, and alterations) in the following areas:
7. Any construction or repair where any type of soil failure(s) or structure failure(s) has occurred.
8. When required by the Building Official.
9. Existing slope conditions within the building footprint or the graded area exceeds a 5:1 slope.
10. When a grading plan is required.
11. When a non-conventional foundation system is used such as piles, caissons, deepened footings, pre-stressed/post-tensioned slab, etc.
12. When slope-setback conditions exceed the Laguna Niguel grading ordinance.



13. New Swimming Pools:

- a. Ungraded Lots – Swimming pools built on ungraded lots.
- b. Special construction– Swimming pools built within 10' of top or toe of slope.

Exception:

- i) Existing Flat Lots – Pools proposed on existing, flat, non-hillside lots may not require a geotechnical report if the terrain/topography is indicated on the plan and can be verified and the Engineer of Record provides a letter indicating that the pool construction is compatible with the site. A site pre-site inspection and/or specific approval by the Building Official may be required.
- ii) Graded Lots – Graded lots that are part of a subdivision should provide the tract geotechnical and/or geology reports.

These reports should specifically address the requirements for pool construction. If no reference is made, then a geotechnical report is required addressing pool construction. The applicant can check with the original developer or obtain a current (new) report.

STANDARD CONSTRUCTION REQUIREMENTS

For residential additions and renovations where any of the above conditions **do not apply**, in lieu of a geotechnical report, the following minimum construction requirements will be acceptable. When using this alternative, foundation plan must show and note the following conditions:

- 1. Depth of foundations below the natural grade shall not be less than 24 inches for foundations.
- 2. Exterior walls and interior bearing walls shall be supported on continuous foundations. (Interior bearing walls on raised floor systems require a continuous footing).
- 3. Foundation construction shall be reinforced with at least four #5 reinforcing bars. 2 #5 reinforcing shall be placed within 4 inches of the bottom and two #5 reinforcing bars within 4 inches of the top of the foundation.
- 4. Slab construction shall be a minimum 5" thick, reinforced with #4 bars @ 18" on center each way, over 2" of sand over a minimum 10 ml. poly-ethylene vapor barrier, over 2" of sand (2" below + 2" above moisture barrier). Alternatively, you may submit a soils investigation as described above.
- 5. Isolated footings shall be tied with at least a 12" x 12" grade beam with 1-#5 T&B per the CBC Section 1808.6.1.
- 6. Type V cement shall have a water/cement ratio of 0.45 and an $f'_c = 4,500$ psi for all concrete in contact with soil.
- 7. Doweling of the new foundations and slabs into the existing foundations and slabs to resist the movements of expansive soils is required. Dowels shall be a minimum of 6" into the existing concrete and shall extend a minimum of 24" into the new concrete with #3 bars @ 18" on center.

In some cases, the use of this standard may not apply. Detail all site conditions that may affect the foundation system on the foundation and/or site plan.

SPECIAL INSPECTION REQUIRED

- 1. When the Structural Design of the footing is based on a concrete compressive strength, f'_c , no greater than 2500 psi and is specifically noted and shown on the plans as such, deputy inspection is not required. However, a copy of the batch plant trip ticket is required for verification.
- 2. Grading > 25 yds. or over 12" deep total cut or fill.