

# COUNTY OF PLACER Community Development Resource Agency

## BUILDING

Administrative Policy Soils Investigation Reports (Revised)

TO:

**Building Department Staff** 

From:

Bob Martino, Chief Building Official

Approved:

Chief Building Official, Bob Martino

**Effective Date:** 

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## **ISSUE:**

This policy is developed to clarify and establish definitively when and under what conditions a soils investigation report will be required for Occupancy Category I & II Buildings per Table 1604.5 including single family dwellings and 2 unit residential buildings no more than 2 stories in height.

#### BACKGROUND/HISTORY:

In general, to determine when soils reports are required for residential and "in-fill" residential construction. This interpretation is intended to address only one and two family residential construction, associated additions, related accessory buildings, and associated appendages such as decks, porches, etc.

2007 California Building Code (CBC) Sections 1802 (Foundation and Soils Investigation) and Sections 106.1 (Submittal Documents) both grant the Building Official the authority to require the classification of soils and to require such reports be prepared by an engineer or architect licensed by the state.

While it may be appropriate to require a foundation soils investigation, an engineered foundation design, and a soils engineering report for new detached structures, one must consider many older existing buildings were built under the prescriptive designs contained in the previous codes and have functioned well. Additions to existing engineered and non-engineered structures also require this special consideration. It is also questionable as to whether detached uninhabitable structures need these extra design precautions.

The issue has arisen as to when should a comprehensive soils analysis and report be required. At what point is it appropriate to mandate a full geotechnical investigation and soils report when such a decision might be better left to the judgment and experience of a registered and licensed design professional.

# **ANALYSIS:**

Placer County issues single family residential permits and residential room additions, sheds and other associated structures. In general Placer County's Seismic Design Categories Range from C to F. Upon initial review of Section 1802.2 it appears that the exception that is part of that section does not apply to any structure in Seismic Design Category D, E, or F.

The statement above interprets the 2007 CBC to require a soils report for any single family dwelling and improvement associated with a single family dwelling unit (e.g. sheds, room additions, decks, etc).

In the 1802.2 Exception, and more importantly the 1802.2.7 Exception wording, the entire code must be read with the intent in mind. The 1802.2 exception states:

"Exception: The building official need not require a foundation or soils investigation where satisfactory data from adjacent areas is available that demonstrates an investigation is not necessary for any of the conditions in Sections 1802.2.1 through 1802.2.6."

What must be studied carefully is that section 1802.2.7 says that the soil report requirements shall be per 1802.2.6 (i.e. SDC C). This is an important distinction because the SDC C soil report requirements are in turn regulated by the Exception. 1802.2.7 is indirectly, but clearly, included in the 1802.2 exception, the only reason it is not explicitly stated is because 1802.2.7 wants two (2) new things that are not required for SDC C. Those two things are 1) A determination of lateral pressures on basement and/or retaining walls due to earthquakes; and 2) An assessment of the potential consequences of liquefaction.

With Respect to item 1) lateral pressures on basement and/or retaining walls, this does become an issue within Placer County due to our terrain and past experience. However, if basement and/or retaining walls are proposed then an addendum to any existing soils report, if available, is sufficient to meet the requirements of 1802.2.7. If an existing soils report does not exist then a soils report would be required for significant retaining walls (those retaining more than four (4) feet of soil).

With respect to item 2) bearing pressure/potential consequences of liquefaction, found in 1802.2.7, those items are identified in any existing SDC C soils report typically found for "in-fill" projects. The wording found in 1807.2.7 regarding bearing pressure and liquefaction implies it's only an issue if the bearing pressure is suspect. This issue alone would not preclude the department from requiring a soils investigation if the above is suspect. Typically, this issue is identified in the previous code requirements and is included in geotechnical reports in Placer County. Therefore, any soils report for the area regardless of its SDC would have identified questionable soil bearing pressure and/or liquefaction. There is no need to require redundant information. If the issue is suspect an addendum to any existing soils report that sufficiently addresses the issue

would suffice. Liquefaction is only an issue in areas where there is ground water, such as low areas adjacent to bodies of water. On hillside locations or locations sited on rock, it is very unlikely that there is sufficient ground water to allow the liquefaction of liquefiable soil regardless of the type of soil.

In other words for anything other than <u>lateral pressures on basement and/or retaining</u> walls and <u>spectral acceleration analysis</u> the Building Official has full authority to include 1802.2.7 under the 1802.2 exception and not require a soils report.

Therefore, although the code requires a soils report for SDC D per 1802.2.7, the county can reasonably justify that one is not required for structures with insignificant retaining walls and where there is not a potential for liquefaction because there is no anticipated ground water at the site. Regarding the requirements of 1802.2.6, the county can omit these per the exception of 1802.2.

Soil testing also is necessary when it is likely that existing soil has shifting, expansive, compressive, or other unknown characteristics. Local officials and staff are often aware of such conditions in locations where previous buildings have been constructed. In these cases the department is not precluded from requiring soils testing in suspect areas. When existing soil data is not available, such as on previously undeveloped sites, it is prudent to obtain soils testing to validate bearing capacity and to determine if expansive soils are present, or in the case of light frame residential construction, require the engineer or architect of record to certify they have visited the subject property and confirmed soils characteristics found in their design.

It is Placer County's opinion that the intent of 1802.2.7 is not to require a soils report for every single family dwelling and small development (i.e. room additions and sheds) for SDC D. Instead the code suggests that local officials have discretion when they know about local characteristics. At its discretion the Building Department can require a soil report on previously undeveloped sites, request a statement from the architect or engineer as to soils characteristics or, where the soil is suspect and/ or where no soil information is present, require a soils report.

# **POLICY:**

This policy is established to develop and maintain consistency for interpretation and application of this provision of the code.

Generally, a soils report or geotechnical report is required for single family dwellings, multi-family projects, and commercial projects.

It is determined that the exception found in Section 1802.2 applies to SDC D with relation to single family residential improvements on "infill" lots, where the design does not include lateral pressure on basement and/or retaining walls (defined as those retaining four (4) feet of soil), or where the conventional framing requirements are applied as when allowed by the 2007 CBC Chapter 2308 (Conventional Light-Frame Construction – Not applicable above 5,000 ft. elevation)) Where conditions of Section

1802.2.7 cannot be met, an addendum to an existing soils report addressing those specific issues is adequate.

Additionally, on undeveloped sites for buildings of residential dwelling construction, that do not exceed 2 living units per building, do not exceed 2 stories in height and 4,000 square feet total area, the engineer may default to SDC D when a site visit is done by the individual responsible for the design and the building department is provided with a wet signed and stamped letter stating that based on their observation the site has been visited and has been found to be suitable for the proposed project.

In areas below 5,000 ft. elevation, the foundation for minimal additions and minor projects, to existing engineered or non-engineered foundation systems, may match the existing design, provided it complies with the minimal prescriptive design requirements of Chapter 18 of the CBC for SDC D and the following is met, and provide a letter of the following:

- The area contained within the footprint of the addition is less than 50% of the existing footprint and no more than 1,000 square feet.
- There are no signs of settlement, differential movement or other signs of distress or problems attributed to the existing foundation.
- The site has been visited and has been found to be suitable for the proposed project.

In areas above 5,000 ft. elevation, the foundation for minimal additions and minor projects to existing engineered foundation systems, would be exempt from a soils report provided the following is met:

- The area contained within the footprint of the addition is less than 50% of the existing footprint and no more than 1,000 square feet.
- Site Class D and a maximum bearing capacity of 2,000psf shall be used.
- A statement shall be provided from the design professional in charge that includes:
  - The site has been visited and has been found suitable for the proposed project.
  - There is no evidence of excessive differential movement or settlement of adjoining structures.
  - o In their professional opinion there is satisfactory data from adjacent areas that demonstrate that an investigation is not necessary.
  - That in their opinion questionable soil, expansive soil, high ground water table, pile and pier foundations or varying rock strata does not exist.
  - No soil retaining condition exceeding 48 inches exists.

Single story detached U-1 Occupancies and other described below shall not require a soils report when design defaulted to SDC D or constructed under the prescriptive

provisions of 2308 and Chapter 18, and a site visit is performed by the engineer for the project.

- Where ground slope does not exceed 3 units horizontal to 1 vertical.
- The structure is considered an Occupancy Category I or II per Table 1604.5.
- Building built under the conventional light-frame construction provisions as outlined in department's separate "Conventional Construction" policy. (<u>for below</u> 5,000 ft elevation)
- Accessory structures not exceeding 1000 square feet.
- Basement and/or foundation walls that do not retain over 48 inches of soil.
- Decks that are associated with residential use
- Private in-ground swimming pools (unless expansive soils are known to exist)
- Ground mounted photovoltaic systems.
- Mobile/Manufactured home foundations.
- Patio covers and porches
- Pre-manufactured sunrooms.

This does not prevent the Building Department from, upon further review, requiring a soils report based on other specific conditions or known questionable soils characteristics. This policy shall not be interpreted as to prevent the Building Department from requiring a soils report on a case-by-case basis regardless of the above if site conditions warrant its necessity.

In circumstances where a soils report will be required or provided to the building department as part of the project submittal, a preliminary report shall be sufficient for the purposes of plan checking the project. Any changes to a checked set of plans that requires additional plan review, as a result of information provided in the final soils investigation report will be charged on an hourly basis. That rate shall be as prescribed in the current Building Department Fee Schedule.