



**RESIDENTIAL CODE MANUAL
COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUILDING AND SAFETY DIVISION
Based on the 2011 LACRC**

**#1004
R401.4
Article 3
02-13-2012
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POLICY ON FOUNDATIONS ON COLLAPSIBLE SOILS

ISSUE:

Collapsible soils, also known as, soils susceptible to hydroconsolidation, are geologically young, unconsolidated, low-density, loose, dry soils commonly present in arid to semi-arid regions. These soils generally occur within the top 10 to 15 feet of wind deposited sands or silts (loess), alluvial fans, colluvial soils, stream banks or residual mudflow soils. Collapsible soils have granular particles that are supported by clay or silt and can be chemically cemented in place creating a porous structure. The bonds supporting this porous structure generally has enough shear strength to support loads however once water is introduced the porous structure collapses and the granular particles are re-arranged. Soils susceptible to hydroconsolidation within County of Los Angeles are generally found in the Antelope Valley and some areas of Santa Clarita Valley.

Foundation systems on collapsible soils condition shall be constructed in a manner that will minimize damage to the structure caused by hydro-consolidation settlements. The effects of collapsible soils is usually evidenced in the form of cracks in perimeter footings, separation between footing and slab, cracks in slabs and minor stucco cracks.

POLICY:

Section R401.4 of the 2011 County of Los Angeles Residential Code requires collapsing soils, categorized as "questionable soil" condition to provide a soil test (soil investigation) to determine the soil's characteristics at a particular location where few data is available. Such requirement will minimize possible damages to buildings built on collapsible soil.

When a building plan checker determines that a project site is in a Category 1 (hydro-consolidation) zone based on the Agricultural Map by U.S. Geological Survey Book, such construction of a new, addition, or alteration of a building involving new foundations on collapsible soils shall comply with either Options One, Two, or Three as indicated below. A note shall also be added in this regard to the building permit application.

Category 1 shall consist of the following soil symbols – AaE, AcA, AdE, AnE, ApF, CyA, CyC, GoD, GoD2, GoE2, GoF2, GsA, GsC, GsC2, GsD2, HaS2, HbA, HbC, HbD, HcA, HcC, HeC, HgA, HgA2, HgB, HkA, HkB, HmA, HnA, LeF, Me, OaC, ObA, ObC, OcC, OdA, OdC, RcA, RcB, RcC, RcD, RdE2, Rm, Rm2, Ra, Rp, Rr, Rs, Rt, Ru, ScE, ScF, ScF2, ShE, ShE2, ShF, ShF2, Su, Sv, Sx, Sy, Tt2, Tu, Tv, Tw, VsD2, VsE, VsE2, VsF, VsF2, WgC, WgD, and WoC.

The Agricultural Map on Land Information Website (LIW) System of the County of Los Angeles Intranet site may be turned on when the box labeled "Soil Survey" is checked. Upon loading the "Soil Survey" information, a series of two to four letters and numbers (symbols) as shown above are specified in regions with known data, which is generally in the Antelope Valley and unincorporated Santa Clarita Valley areas.

- **Option One** (for Attached / Detached Non-Habitable Structures and Habitable Additions \leq 50% of the existing gross area of structure with a maximum of 400 ft² only)
Submit a soil investigation (hardcopy and pdf format) addressing the collapsing soil condition with recommendations to mitigate the impact of soil consolidation below areas where new foundations are proposed. Included with the submittal is an additional fee of two hours minimum for the review of such report by a building plan checker. Once approved, the building plan checker shall forward a pdf copy of the soil investigation to Geotechnical and Materials Engineering Division (GMED) for their record.
- **Option Two**
Submit a soil investigation (hardcopy and pdf format) addressing the collapsing soil condition with recommendations to mitigate the impact of soil consolidation below areas where new foundations are proposed. Included with the submittal is a fee for the review of such report by GMED.
- **Option Three**
Pay a “Geotechnical Site and Plan Review” fee and contact our GMED to schedule a site inspection. Note that this may require a soil investigation and additional review fees if GMED staff deems it necessary to address this and other possible issues of concern.

Other soil conditions such as expansive, liquefaction, etc. shall be address by the designer, in addition to this policy.

New RCM.

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