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Code Interpretation: 2012 IRC Interpretation 14

Date: 1/13/2014

Code/ Edition: 2012 International Residential Code (IRC)
2012 International Building Code (IBC)

Section(s): IRC Section R401 Foundations General; IBC Sections 1803.5.3 and 1808.6

Subject: Clarification of the definition of "Expansive Soil" to be used in the determination of suitable soils (e.g. in situ and structural fill) for building pads and foundation backfill.

Question: Can expansive soil (e.g. clay, silty clay) be used as fill material under a foundation?

Answer: Yes, conditionally; however, in most cases: No.

Commentary: Expansive Soil is defined by the International Building Code (IBC) Section 1803.5.3 as:

> "Soils meeting all four of the following provisions shall be considered expansive, except that tests to show compliance with Items 1, 2 and 3 shall not be required if the test prescribed in Item 4 is conducted:
>
> 1. Plasticity index (PI) of 15 or greater, determined in accordance with ASTM 4318.
>
> 2. More than 10 percent of the soil particles pass a No. 200 sieve, determined in accordance with ASTM D 422.
>
> 3. More than 10 percent of the soil particles are less than 5 micrometers in size, determined in accordance with ASTM D 422.

4. Expansion index greater than 20, determined in accordance with ASTM D 4829."

IRC Section 401.4.2 states expansive, compressible and shifting soils (e.g. clay, silty clay) shall be not used as fill material unless stabilized within each active zone by chemical, dewatering or presaturation.

IBC Section 1808.6 states "foundations for buildings and structures founded on expansive soils shall be designed to resist differential volume changes, removed or stabilized by chemical, dewatering, presaturation or equivalent techniques."

Note: Foundations in areas of expansive soils and/ or found to be with an allowable bearing capacity of less than 1,500 psf, determined by a soils investigation; are likely to be removed, redesigned, installed and tested in accordance with accepted engineering practices capable of accommodating all loads according to IRC Section R301 or IBC Section 1801.2.

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