



U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
WASHINGTON, DC 20410-8000

OFFICE OF HOUSING

April 11, 2016

MEMORANDUM FOR: All Manufactured Housing Stakeholders

FROM: Pamela Beck Danner, Administrator
Office of Manufactured Housing Programs

A handwritten signature in black ink, appearing to read "Pamela Beck Danner".

SUBJECT: Interim Guidance on use of Frost-free Foundations or Frost Protected Shallow Foundations

Background

The Department of Housing and Urban Development (HUD) has received numerous questions and requests for guidance regarding how to comply with its Installation Standards for foundation systems in freezing climates. In response to those inquiries, HUD has been reviewing the acceptability of various foundation designs in manufacturers' installation instructions for placement in freezing climates.

The desire to use frost free or frost protected shallow foundations has increased as a cost-effective means of installing manufactured homes in freezing climates. However, there are key variables and site investigations required to ensure the long-term success of these foundations.

Under the HUD Installation Standards in 24 CFR § 3285.312, foundations in freezing climates must either be installed:

- a. With conventional footings below the frost line depth; or,
- b. As a monolithic slab system in accordance with accepted engineering practice or in accordance with the SEI/ASCE 32-01, 2001 Standard, Design and Construction of Frost Protected Shallow Foundations; or,
- c. As an insulated foundation system to prevent the effects of frost heave in accordance with accepted engineering practice or in accordance with the SEI/ASCE 32-01, 2001 Standard, Design and Construction of Frost Protected Shallow Foundation.

In general, there are three types of foundation systems that can be used to prevent the damaging effects of frost heave: Conventional footings below the frost line depth, Frost-free Foundations and Frost Protected Shallow Foundations.

The frost-free foundation relies exclusively on the presence of non-frost susceptible subgrade materials (soil or fill) as defined in section 3.2 of SEI/ASCE 32-01, 2001 edition to at least the frost depth on a well-drained site that encompasses both surface and subsurface drainage to daylight, with soil conditions verified by a geotechnical engineer or soil engineer as required in section 4.2 of the SEI/ASCE 32-01, 2001 edition.

The other type of foundation system, the Frost Protected Shallow Foundation, relies on the use of below ground insulation to protect frost susceptible soil under the foundation from freezing.

HUD's review to date has identified issues with both manufacturers' installation instructions and installers' adherence to requirements that ensure the long-term success of these systems. Upon completion of its review, HUD will be issuing further recommendations regarding the safe installation of foundations in freezing climates. During the interim period, the following guidance is offered:

Interim Guidance

During the interim and until HUD's additional guidance can be issued, it is recommended that installers of homes in freezing climates do one of the following:

1. Install all footings and piers below the frost line depth; OR
2. For Frost Free Foundations, have a site investigation performed by a soils engineer or geotechnical engineer to verify if the soil condition at each home site is of a non-frost susceptible classification and is well drained. In lieu of a site soil investigation, a layer of washed gravel, or crushed stone, or course or dense sand may be provided to the frost line depth. For either of these alternatives, subsurface drains need to be provided; OR
3. Use a Frost Protected Shallow Foundation system that utilizes below ground insulation to protect the soil from freezing with subsurface drains provided at each site.

If you have any additional questions, please contact Angelo Wallace of HUD at (202) 402-3848 or Michael Henretty of SEBA at (703) 407-1094.