

## WHAT ARE FROST PROTECTED SHALLOW FOUNDATIONS?

Frost Protected Shallow Foundations, or FPSF's, are alternatives to deeper and more costly conventional foundations that are used in regions that experience seasonal ground freezing and the potential for frost heave. FPSF design allows footings to be founded above the traditional design frost depth, by insulating the foundation and ground in a manner that prevents the ground freezing below the foundation.

In the Nordic countries, well over a million FPSF's have been constructed successfully over the last 45 years. In Scandinavia, the FPSF is commonly used on both residential and commercial buildings, such as houses, townhouses, apartments, shopping malls, schools, low-rise office buildings, restaurants, gas stations, and so on. FPSF's have been the standard practice since the 1970's.

The earliest documented use of the FPSF concept in the United States was by Frank Lloyd Wright in the 1930's. In 1994, the US Department of Housing and Urban Development conducted several demonstration and monitoring projects, to verify the performance of existing European design practices. As a result an FPSF Design Guide was developed, to serve as a basis for building code acceptance and standardization in the States by the National American Home Builders Research Center.

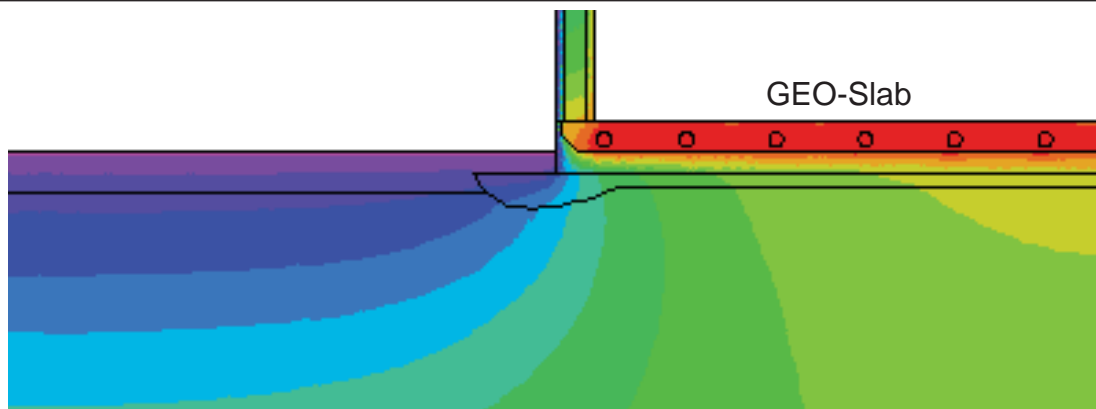
## LEGALETT - THE FIRST AND ONLY COMMERCIAL FPSF (GEO-Slab)

Traditional FPSF's are cumbersome to build with their thickened edges and skirting details, and require careful attention to detail to ensure satisfactory performance. Traditional FPSF's generally require extensive skirting, since they are designed as unheated slabs.

Legalett takes the unique approach of designing an FPSF (GEO-Slab) by incorporating a heating system specifically designed to be part of the GEO-Slab. By combining the foundation and the heating system, Legalett shifts the bulk of the concrete away from the edge, and spreads it evenly through the slab, maximizing the thermal mass of the slab for heating, and spreading out the load applied to the soil. This simplifies the installation of the Legalett GEO-Slab, compared to other FPSF's, in two ways - the GEO-Slab is the same thickness from one side of the building to the other, reducing installation time by eliminating thickened edges and multiple concrete pours, and secondly, by reducing or eliminating the need for skirting.

The GEO-Slab is simpler to install, and more energy efficient than traditional FPSF's.

## STATE OF THE ART FROST LINE BEHAVIOUR MODELING



Legalett engineers use state of the art Finite Element Modeling for heat transfer to predict the frost line.

## FROST PROTECTED STRUCTURAL FOUNDATIONS - (GEO Slabs)

What this means ....

You are now no longer limited to building below the local frost depth, saving you both money and time.

No more guessing about soil problems or rocks when excavating, because you do not have to excavate.

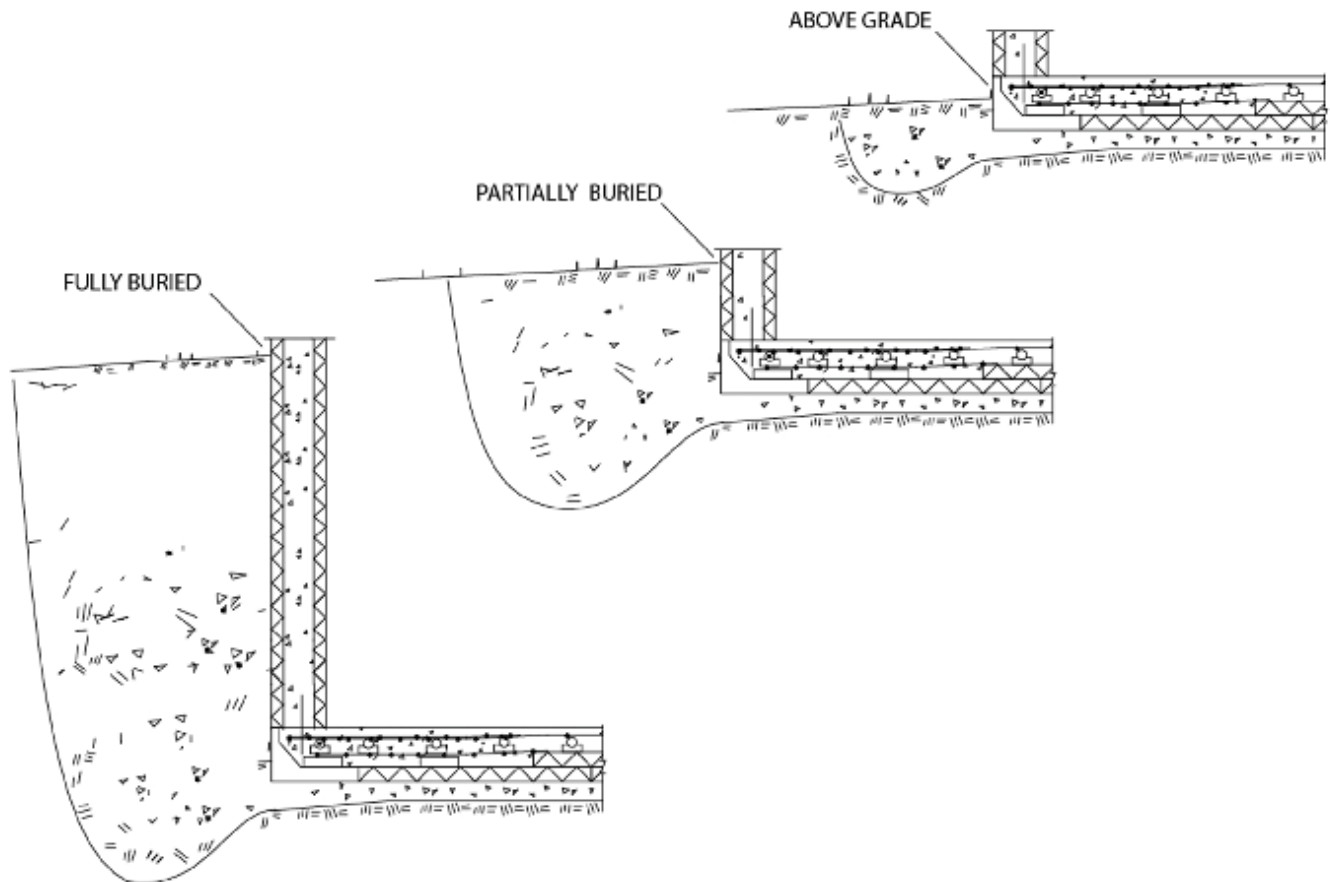
No more floods from sump pump power failures.

No separate concrete pours for footings, foundation walls and slab(s). All concrete pouring is completed at once with the Legalett structural slab - Reducing construction time and costs.

The LEGALETT frost protected structural foundation (GEO-Slab) is ideal for back walk-outs, poor soil conditions, lots with high water tables. NOTE: It is recommended that the top of the slab be a minimum of 20" above the ground water table.

From a slab on grade to fully buried - Legalett supplies heated and non-heated structural slabs for both heated and non-heated buildings.

**DEPTH OF BURY CAN BE YOUR CHOICE - NO FROST WALLS REQUIRED !**



TYPICAL 5" SLAB - 2" PIPE EDGE SECTION - with ICF WALL