



My home is on a post-and-pad foundation because I live on spongy ground. I notice some changes the floor in my home over the winter and summer each year.

Most Fairbanks homes using post-and-pad construction were built in anticipation of some degree of seasonal movement, or in an attempt to cope with ground instability due to permafrost. A home's foundation changes with the seasons as the soils underneath the pads expand and contract in reaction to yearly freeze-thaw cycles. For example, entry doors may consistently stick all winter, and then work fine in the summers, year after year. This can happen whether your home is situated on permafrost or not.

The layer of ground directly under a home that freezes and thaws with the seasons is called the active layer. In some cases, the active layer can extend down 10 feet or more depending on the types of soils and seasonal conditions. Autumns with heavy rain followed by cold winters with little snowfall particularly affect soils, sometimes creating what is known as a "frost heave." For this to happen, soils have to be of a fine enough particle size to trap or "wick" water, and enough moisture must be present to cause the soil to expand when it freezes. Unfortunately much of Interior Alaska is covered with fine silts, which tend to drain poorly and can expand aggressively if they contain too much water when winter hits.

Removing these soils and replacing them with non-frost susceptible material is typically unrealistic for an existing house, however there are a few relatively minor improvements that can help curb the severity of the problem. Good site drainage can make a big difference. The ground should be sloped away from the post-and-pad foundation, and large roof overhangs with gutters will help divert water away as well. The downspouts on the gutters should extend along the ground horizontally, to divert water away from the pads and soil that bears weight.

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