

Prefab form kits for frost-protected shallow foundations

First published at Ecohome.net, which has a guide and videos for slab-on-grade construction.

A slab-on-grade is a great alternative to a basement if you've got the space. Building with prefab kits make them easy and affordable.

Rather than building wooden forms and taking them apart afterwards, a prefab slab-on-grade form kit uses shaped foam as the form itself. Once the top-rail metal fasteners are in place, no further bracing is required. This makes the installation much quicker by eliminating the steps of building forms and bracing them, then taking all that apart afterwards. Since prefab kits rest unsecured on the surface, they are also very easy to adjust for level and square.

With a typical slab-on-grade [either kit or hand-built forms], the load of exterior walls is carried by the footing alone. An alternative option is a 'raft-slab' which has a uniform thickness.

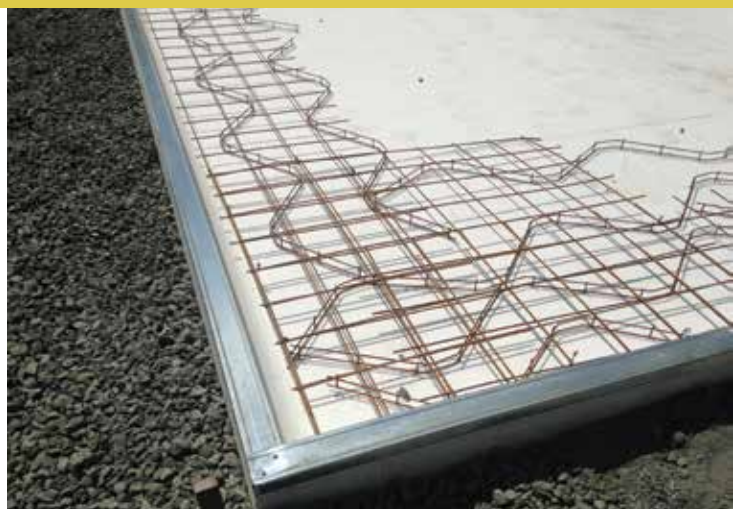


Don't be put off by the higher cost of a kit over raw materials; the speed at which you can put these together offsets that to the point where it can easily be cheaper than building from scratch. With some soil conditions the raft-slab is likely the cheaper option of the two designs due to the uniform distribution of weight.

Sites with high water tables or soil with poor bearing capacity may incur significant additional costs in drainage, soil replacement and compaction before an engineer will approve a project where the load rests only on a footing. By distributing the weight evenly, a raft-slab acts a bit like a snowshoe and can effectively 'float' on terrain that would otherwise be unsuitable for building.

Some builders remain skeptical about frost-protected shallow foundations, but these concerns are unfounded. Any such failures are a result of poor engineering only and are not a fault with the concept. As with any foundation, they simply need to be designed for their climate. When space allows for them, a slab-on-grade can be a better performing and more affordable alternative to building a basement.

LEFT : SECURING REINFORCEMENT STEEL IN A RAFT-SLAB WITH AN AIR-HEATING SYSTEM. TOP: A METAL FASTENER ON THE TOP RAIL HOLDS THE FORMS IN PLACE. ABOVE RIGHT: INTERIOR AND EXTERIOR CORNER ELEMENTS.



Canadian form kit suppliers:

Iso-Slab is a Quebec-based company that distributes slab kits across Canada. They provide EPS insulation forms, metal locking rail fasteners for the exterior edge, EPS board insulation for under the slab and exterior skirt insulation, all customized to each building design. Clients need to provide a soil sample and the company can provide stamped engineering documents if required.

Legalett is based in Cornwall, Ontario, and distributes EPS raft-slab kits across Canada and the U.S. Stamped engineering documents and detailed construction and shop drawings are provided; all assemblies are inspected before pouring concrete. Due to the even distribution of weight and the ability to be built on much softer ground, soil samples are not generally required for engineering except in extreme cases.

Polyform is another Quebec manufacturer with a product called Isomax, an EPS footing form only. Isomax is a 4" thick form that includes skirt insulation. Soil samples and engineering documents must be provided by clients, as well as all additional materials for the interior of the slab. What Polyform offers is a bit of a hybrid between a full kit and hand-built forms.

Watch for more players getting into the game in the future as this type of construction gains in popularity, but be careful of going with knock-offs. There have been cases of builders trying to go it alone on this and coming up with poorly-engineered designs or the wrong density of foam that have led to building failures. Ask about warranties before signing any contracts.