

## FOUNDATIONS - THE NEXT GENERATION

PROFESSIONAL BUILDER - APRIL 2010

Build time and cost are always two key project considerations, with the main objective being to keep these to a minimum while maximising quality and performance. Although advances in modern methods of construction can help reduce overall build time, setbacks to site programmes and budget sometimes occur before a site is ready for construction. In response to this, innovative manufacturers have developed fully integrated foundation systems, which provide a cost effective and time-saving alternative to traditional groundwork and foundation methods. Mark Gray, technical manager, Insulslab SFRC, discusses the relative benefits of these systems, and offers advice on when and how to use them.

There are a number of fully integrated foundation systems on the market, which have been specifically designed to simplify the foundation construction process and offer time and cost savings. The main benefit of most systems is that they will deliver the foundation up to ground floor slab level, helping to reduce the time required on-site and streamlining project progression from foundation to exterior envelope.

In light of ever stringent standards imposed by Part L of the building regulations as well as the Code for Sustainable Homes, manufacturers have taken system innovation a step further, with the development of super-insulated systems. Offering superior performance and significant time and cost savings, these advanced systems are fast growing in popularity as a preferred construction method over traditional techniques.

### Modern versus Traditional Techniques

Traditional beam and block/raft foundations require insulation to be laid on top of the concrete slab, with the final floor screed cast on top. In contrast, super-insulated and integrated systems cast steel fibre reinforced concrete (SFRC) directly over specially developed expanded polystyrene (EPS) pods, delivering the foundation up to ground floor slab level in just one or two pours.

Moreover, standard foundation techniques demand intensive ground preparation and excavation, leaving the developer with the challenge of either re-using the spoil on-site, or incurring the cost of removal. Fully integrated systems help overcome this issue, as the ground only needs to be excavated to a depth of approximately 600mm below finished floor level, before hardcore is laid and without the need to dig any trenches. The EPS pods, which interlock in a 'waffle' shaped slab, are then positioned with the relevant formwork prior to the SFRC being poured.

Where piled foundations are required, integrated foundation systems can be used as an alternative capping method. In contrast with standard ring beam details, integrated systems require only minimal ground preparation without the need to excavate trenches, install cage reinforcement and substructure brickwork. As well as minimising the labour time required, this modern technique also reduces material purchase costs.

Fully integrated and super-insulated foundation systems are generally suitable for any site where raft, beam and block or piled foundations are being used, offering a cost effective alternative that also delivers superior performance.



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## FOUNDATIONS - THE NEXT GENERATION CONT'D

### Superior Performance

As super-insulated integrated systems take the foundation up to ground floor slab, thermal performance and sustainability are key considerations. With some systems shown to comply with Part L, when correctly specified and constructed, developers can expect to achieve typical U-values of approximately 0.10 – 0.12 W/m<sup>2</sup>K.

From a sustainability perspective, these systems help reduce waste disposal, minimise site traffic and require less volume of concrete. Overall, their thermal and sustainable performance makes a significant contribution to the Code for Sustainable Homes and BREEAM credit scores.

With regard to performance, equally important is the availability of BBA recognised systems. There is currently one super-insulated integrated system that is covered by a BBA certificate from the steel fibre reinforced concrete manufacturer – offering peace of mind when adopting this new technique.

**PRESS RELEASE**