INSULSLAB FOUNDATION SYSTEM

INSULSLAB
HIGH QUALITY FOUNDATION SYSTEM

EVOLVING FOUNDATION TECHNOLOGY

ESTABLISHED IN 2010 AND BASED IN BURY, INSULSLAB ARE AN INNOVATOR IN THE DEVELOPMENT OF COMPLETE CAST, IN-SITU FOUNDATION SYSTEMS. WE HAVE MADE ADVANCES IN FOUNDATION TECHNOLOGY WHICH SIGNIFICANTLY IMPROVE GROUND FLOOR THERMAL PERFORMANCE WITHOUT INCREASING INSULATION DEPTH.

Our team are committed to supporting you throughout your project to ensure you receive the complete solution which is tailored to your requirements.

As part of the SIG plc group we have the support of a nationwide branch network to guarantee that your system can be delivered exactly where and when you need it.

CONTENTS

Visit our website and download our Best Practice User Manual for the full technical details on the Insulslab system.

WWW.INSULSLAB.COM

Alternatively you can contact our technical team on:

Telephone: **0844 5766 726**
Email: **sales@insulslab.com**

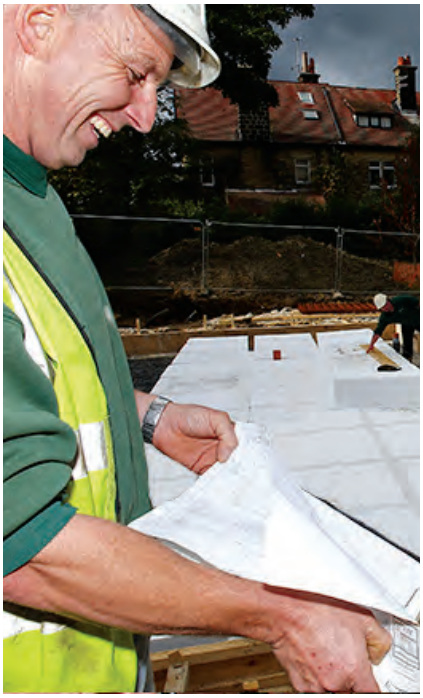
INSULSLAB FOUNDATION SYSTEM

SIMPLE TO DESIGN AND CONSTRUCT

General arrangement drawings, i.e. layout for the foundations are designed by Insulslab structural engineers. Our consultants provide a plot specific engineered solution in order to minimise risk, whilst maximising any potential savings.

A FULL SERVICE SOLUTION

A complete specification and installation support service is available from Insulslab's specialist technical team, including engineering, U-value calculations and on-site technical support, information provided includes: General arrangement drawings, structural calculations, U-value calculations, Bill of Quantities and Schedule of Materials. Warranties can also be provided if required.



A COMPLETE SYSTEM

Insulslab is a complete cast in-situ system, based on a foundation which comprises a series of interlocking expanded polystyrene pods, forming a substantially rigid 'waffle' shaped slab. Steel fibre reinforced concrete (SFRC) is poured over the top to form the finished foundation. The steel fibres are manufactured in the UK by ArcelorMittal. The steel fibre reinforced concrete, when installed in accordance with the Insulslab Best Practice User Manual, provides many benefits;

BENEFITS

- Excellent impact strength
- Maximum edge protection
- Improved fatigue endurance
- A higher level of shrinkage and crack control
- Greater bearing capacity
- Steel fibres do not damage power floats or concrete pumps

CERTIFICATION

Insulslab, using ArcelorMittal Steel Fibres, is BBA certified (visit www.insulslab.com for full details) and is accepted by the NHBC/LABC and Premier Guarantees.

BBA APPROVAL INSPECTION TESTING CERTIFICATION
CERTIFICATE 12/4894

ARCELORMITTAL

ArcelorMittal is the only steel fibre manufacturer with a production facility in the UK and the world's largest steel producer, with a total of 116 million tonnes of crude steel produced annually.

ArcelorMittal

COST SAVINGS & BENEFITS

INSULSLAB OFFERS SUBSTANTIAL BENEFITS FOR THE DEVELOPER, ARCHITECT, STRUCTURAL ENGINEER AND GROUND WORKER

COST SAVINGS

This simple foundation solution provides:

- Typical savings of around 25% over a cap on piles foundation or raft replacement
- Savings vary depending on depth of trench for beam and block or suspended slabs
- No trenches required
- Minimal excavation, less disruption, reduced waste disposal
- Increased speed of construction/quicker completion times
- Reduction in labour costs

THERMAL PERFORMANCE & SUSTAINABILITY

Insulslab complies with Part L (Section 6 Scotland) Building Regulations when correctly specified and constructed, providing:

- Typical U-values of around 0.10 – 0.13W/m^{2}K, depending on P/A ratio
- Approved construction detail
- Significant contribution to Code for Sustainable Homes and BREEAM credit scores
- Greater flexibility within the overall design of the thermal envelope
- 'Future-proof' – low U-values facilities further code level upgrades
- Reduced cart away and site traffic
- Less intrusive system; perfect for brownfield sites
- Less volume of concrete and steel required
- Provides consistant performance during the life of the building

HEALTH AND SAFETY

- The system contributes positively to health & safety requirements:
  - Insulslab is safer to install as no trenches are required, eliminating associated risks
  - Insulslab pods are lightweight so manual handling is minimised throughout construction
  - Fewer components helps minimise site traffic
  - Less risk of injury due to minimal reinforcing requirement
  - No heavy blocks to lift

TRAINING

We provide training* to a member of any and all contractors who are directly involved in the placement or finishing of concrete incorporating ArcelorMittal steel fibres for such projects.

Successful trainees will be issued with a certificate upon completion.

*The training is a prerequisite and formal condition prior to installations taking place and is offered by and carried out by a delegated ArcelorMittal representative.

(Successful trainees may be required to offer proof of completion and certification at any time by the NHBC or other third parties. The responsibility for providing this proof lies with the successful trainees and their respective entities). The issuance of the certification must be completed and received by the trainee(s) prior to the occurrence of the first installation for that individual, group, entity, or company. If in the event there are multiple individuals who have been previously trained and certified by ArcelorMittal, then those individuals may be deemed appropriate in the oversight of other people or groups within that entity for such installations.

BEAM AND BLOCK/SUSPENDED SLAB FOUNDATION

BENEFITS OF USING INSULSLAB FOUNDATION SYSTEM IN PLACE OF TRENCH FOUNDATIONS

- Cost savings when compared to deep trench or reinforced trenches
- No trenches – reduced risk of 'over and above' charges. The parameters for Insulslab are man-made, unlike trenches which collapse or may need to be deeper or wider than initially planned
- Improved health and safety
- Quicker to construct
- Engineered solution
- Cleaner site build process
- Less intrusive on site
- Improved thermal performance as standard
- Contributes positively to SAP/SBEM calculations

RAFT REPLACEMENT FOUNDATION

BENEFITS OF USING INSULSLAB FOUNDATION SYSTEM IN PLACE OF A TRADITIONAL RAFT

- Cost savings
- Quicker to construct
- Less concrete required
- Less excavation
- Less steel required than in a semi rigid raft foundation
- No 'tumps' or mounds that can wash away and result in more concrete being required
- Lower design cost
- Improved thermal performance as standard
- Contributes positively to SAP/SBEM calculations

PILED FOUNDATION/VIBRO FOUNDATION

BENEFITS OF USING INSULSLAB FOUNDATION SYSTEM IN PLACE OF A TRADITIONAL PILED/VIBRO FOUNDATION

- Significant cost savings
- Quicker to construct
- Ability to build off piling/vibro matt, therefore minimising the depth of foundation
- Less excavation
- Simple build process with less steel work
- Cleaner site conditions
- Reduced design costs
- Better thermal performance as standard
- Contributes positively to SAP/SBEM calculations

CONTAMINATED SITES

BENEFITS OF USING INSULSLAB ON CONTAMINATED SITES

Even on more challenging sites where gas protection is required, Insulslab can provide a cost effective and rapid build solution.

The partnership between Insulslab and gas protection specialists means that a site can be value engineered to comply with all the regulatory requirements (Eg. CS3/Amber 2).

The coordination of the gas protection measures with the Insulslab design helps simplify the design process as well as providing a very cost effective and simple construction method.

CASE STUDY 1: WESTLEIGH DEVELOPMENTS

WESTLEIGH DEVELOPMENTS PILOTS INSULSLAB FOR AFFORDABLE HOMES

Insulslab has provided an innovative solution to poor ground conditions at a new affordable homes scheme in Nuneaton.

Led by Westleigh Partnership Homes for Leicester Housing Association (LHA), Insulslab was a key building block in the conversion of the brownfield site into a £5 million residential development.

As a negotiated design and build fixed price contract, Westleigh Developments was faced with the challenge of preparing the sloping brownfield site for construction with maximum efficiency and minimum cost. Easily accommodating stepped profiles and delivering the foundation up to ground floor level, Insulslab provided a more cost effective and efficient solution than traditional foundation techniques, such as beam and block or raft.

Giovanni Corbo, Westleigh Developments, comments: *"We used Insulslab for the first time at this development as it offered a less intrusive and more economical system than other foundation methods – a high priority when working on a brownfield site. We were particularly impressed with the time and cost savings Insulslab helped us to achieve, especially given the sloping profile of the site."*

Comprising of 36 houses and a three storey apartment block, the affordable homes development was targeted with meeting Level 3 of the Code for Sustainable Homes. With all plots constructed of timber frame, Insulslab offered a thermally efficient and complementary ground system. Delivering typical U-values of 0.10 – 0.12W/m^{2}K (depending on P/A ratio).

Mark Gray, technical manager for Insulslab, concludes: *"The decline in the availability of land to develop means that brownfield sites will continue to be a target for new schemes. Insulslab is increasingly being adopted by developers for these developments as the system is proven to deliver cost and efficiency savings – two key factors as the construction economy looks to recover."*

CASE STUDY 2: DAVID WILSON HOMES – SOUTHERN

David Wilson Homes – Southern adapts Insulslab as a preferred technique for all new suitable sites.

Following a successful pilot of the system at its Chatsworth Park development in Winnersh, David Wilson Homes – Southern will now use Insulslab wherever site conditions allow.

Recognising the time and performance benefits which Insulslab could deliver, David Wilson Homes – Southern piloted the system on two plots at Chatsworth Park. During construction site access was restricted and wet weather conditions caused a two day delay to the two week foundation programme.

In spite of the adverse conditions, Insulslab proved quick and easy to install – resulting in the programme completing three days ahead of schedule.

Richard Palmer, Commercial Director, David Wilson Homes – Southern, comments: "As an innovator ourselves, we are constantly seeking out new methods of construction that will deliver increased efficiencies and performance. The pilot of Insulslab proved that the system will stand up commercially, even under difficult site conditions."

Richard continues: "The minimal ground preparation proved a key success factor during the pilot. If we had been using traditional techniques, we not only would have had a lot of soil to remove from site, the wet weather conditions would have made the soil moist and heavier – which would have increased the cost of removal. Cost and performance-wise, Insulslab is now our preferred foundation system, wherever a site will allow."

CASE STUDY 3: THOMAS ARMSTRONG CONSTRUCTION

INSULSLAB SPECIFIED FOR REGENERATION OF WHITEHAVEN BUNGALOWS

Insulslab has been specified by White Young Green Engineering for a new timber frame development of 30 bungalows in Whitehaven, Cumbria. Constructed by Thomas Armstrong Construction, the regeneration project has been designed to meet Level 3 of the Code for Sustainable Homes without the use of renewables.

Steve Pollington, Associate Director, White Young Green Engineering, comments: *"We specified Insulslab based on its high insulation performance, ease of construction and speed of build. As the system incorporates steel fibre reinforced concrete, we can also be confident in its robustness over time. Finally, with the development creating affordable homes, low U-values were a key consideration – which Insulslab could easily satisfy."*

Gary Killip, Contracts Manager, Thomas Armstrong Construction, explains:

"Insulslab is an extremely easy system to use. As it significantly reduces the amount of reinforcement required, Insulslab was easier to manage on-site than traditional systems and the lightweight pods could be lifted by one man. The technical team clearly explained the installation procedure and provided excellent support when we needed it. We will definitely look to use Insulslab again."

Mark Gray, Technical Manager, Insulslab, concludes: *"Insulslab is increasingly being recognised as a cost effective and practical solution to the Code for Sustainable Homes challenge. By using Insulslab in conjunction with timber frame or other highly insulated wall constructions, developers can achieve compliance simply through intelligent building design."*

CASE STUDY 4: HEALTH AND SAFETY A KEY FACTOR FOR SKIPTON PROPERTIES

Skipton Properties, has adopted Insulslab for its flagship Grove Mills development in Keighley.

Replacing a traditional raft foundation system, the Insulslab system has delivered a number of benefits for the site team, including efficiency gains, performance enhancements and improvements in health and safety best practice.

Initially piloted on seven plots of phase one of the scheme, Insulslab enabled Skipton Properties to complete the foundation programme in half the time a traditional raft system would have normally taken. This significant time saving was facilitated by the simplicity of system installation and ease with which the Insulslab system can be managed on-site.

Alan Massie, Site Manager, Skipton Properties, comments: *"As a forward thinking developer, we are always looking for innovative techniques that will help reduce the environmental impact of our projects and improve the efficiency of operations. The Insulslab system helped us to do this from the ground up, providing a revolutionary alternative to traditional foundations. While the time savings were significant, the health and safety benefits really stood out from a site perspective. It was easy to train the team to install and there were no issues with manual handling or challenges of navigating rebar and mesh around the site. We are now using the Insulslab system for the entire second phase of Grove Mills, and wherever possible, will be using it on all of our developments in the future."*

Mark Gray, Technical Manager, Insulslab, concludes: *"To ensure maximum return on investment and sometimes to make construction viable, developers need to increase on-site efficiency and minimise build cost. Insulslab offers an ideal solution to this, and importantly, also delivers enhanced performance benefits. As more developers realise these benefits, we expect traditional approaches to be left behind in favour of this modern method of foundation construction."*

CASE STUDY 5: COUNTRYSIDE PROPERTIES

COUNTRYSIDE PROPERTIES USES INSULSLAB TO DRIVE CARBON REDUCTION AT AFFORDABLE HOMES DEVELOPMENT

Having been targeted to achieve an additional 25% carbon reduction on top of the Building Regulations, Countryside Properties turned to Insulslab, to increase energy efficiency at Saxon Park – a new affordable homes development in Warrington.

At the time of plot registration, the development was required to meet Level 3 of the Code for Sustainable Homes, with specific employer requirements mandating that it must also significantly improve on the current Building Regulations for carbon reduction.

As a system that integrates insulation into its design using lightweight expanded polystyrene (EPS) pods, Insulslab achieves very low U-values, typically 0.10 – 0.12W/m^{2}K (depending on P/A ratio). With steel fibre reinforced concrete poured on top of the pods, Insulslab delivers the foundation up to ground floor level, contributing to the overall thermal performance of the building envelope.

Used in conjunction with a standard open panel timber frame system at Saxon Park, Insulslab offered increased speed of construction, improved airtightness and the virtual eradication of thermal bridging at ground-level due to the two systems efficiently integrating together. As the site was also a former steelworks, there were additional challenges with regards to ground preparation and foundation construction. Requiring minimal ground excavation and no trenches, Insulslab provided an efficient foundation technique that could also easily accommodate sloping parts of the site. This included a stepped construction of 2.2 metres in one area, which would not have been possible with a traditional raft.

Andrew Fox, Technical Standards Manager, Countryside Properties' comments: *"Given the challenges facing us on the site and the stringent energy efficiency criteria set by the client, we needed a solution that would deliver the required performance without significantly impacting on build cost. The flexibility of the Insulslab system and its proven thermal insulation credentials made it the best specification for Saxon Park, as the higher levels of insulation in the floor made it easier for us to meet the required performance without having to increase floor depth or insulation in the wall cavities."*

Although Countryside Properties originally looked to Insulslab as a solution to help achieve the specified carbon reduction, the system also proved a key factor in increasing on-site efficiency. While ground-workers Caldwell Construction originally anticipated one week per plot based on traditional raft techniques, using Insulslab the team was able to construct a plot foundation in just three days.

"We have been extremely impressed with the speed of installation because in spite of a late start on-site, we were able to make the time back by using timber frame in conjunction with the Insulslab system – two very efficient and modern methods of construction."

The simplicity of Insulslab system installation is facilitated by the components being easy to manage. For example, the expanded polystyrene pods minimise manual handling as they are sufficiently light for a one-man lift, while the use of steel fibre reinforced concrete removes the need for traditional steel reinforcement, which can often prove difficult to manoeuvre on-site.

Mark Gray, Technical Manager, Insulslab, concludes: *"The Insulslab system is specified for three reasons – time saving, cost saving and enhanced thermal performance. The installation programme at Saxon Park demonstrates how the system can simultaneously deliver on all three counts, even under the most challenging of site conditions or timescales."*

CASE STUDY 6: REDROW

REDROW HAS BECOME THE LATEST NATIONAL HOUSEBUILDER TO BENEFIT FROM SIGNIFICANT TIME AND COST SAVINGS BY USING INSULSLAB IN PLACE OF TRADITIONAL FOUNDATION TECHNIQUES.

Piloted on the Eliot's View development in Nuneaton, Redrow moved from a standard raft foundation to Insulslab part way through construction, after the potential cost savings became apparent.

Eliot's View is a development of approximately 120 houses, with a mixture of two, three and four-bedroom homes. Under presssure to deliver the site to programme and budget, Redrow adopted Insulslab as an alternative to traditional raft foundations.

Stuart Walker, Senior Quantity Surveyor, Redrow Homes (Midlands), comments: *"Changing construction techniques part way through a project is not a decision we take lightly, but the financial case for moving to Insulslab from a traditional raft on this development was definitive.*

The best way to describe Insulslab is that it is like a raft – only quicker and more cost effective. Given a similar situation in the future, where site conditions allow, we would definitely use the system again."

Importantly for Redrow, the cost savings of using Insulslab did not come at the expense of performance, with the super insulated foundation system providing superior thermal insulation as compared with a standard raft. By integrating high levels of insulation into its design, Insulslab can achieve U-values around 0.10-0.13W/m^{2}K (depending on P/A ratio), while keeping floor depth to a minimum. The commercial benefits and performance credentials of Insulslab are underpinned by an expert techical team, on hand to support housing developments from planning through to foundation construction. Stuart continues: *"The techical service provided by Insulslab is excellent. They are extremely efficient with the supply of technical drawings and were there exactly when we needed them to be on-site during the first phases."*

A suite of technical support materials are available to assist with the specification and installation of Insulslab, all of which can be accessed at www.insulslab.com.

Spencer Robinson, Operations Director, Insulslab, concludes: *"Redrow's development at Eliot's View is a prime example of how Insulslab offers real cost advantages over traditional raft, even where the ground conditions are not particularly challenging. By evaluating total cost of build as opposed to material costs in isolation, Insulslab is consistently more favourable commercially."*

CASE STUDY 7: BARRATT HOMES

BARRATT HOMES ACHIEVES COST SAVINGS 'FROM THE GROUND UP' WITH INSULSLAB

Barratt Homes has benefitted from both time and cost savings at 'The Elms', a new build development in Stockton on Tees, after replacing a traditional raft foundation structure with Insulslab.

Delivering the foundation up to ground floor level, Insulslab has been used to construct a mixture of 18 detached and two semi-detached homes on the site to date, with a further 11 due for completion by the end of the year.

Overall project cost savings have been realised through the significant reduction in labour time and simplicity of installation procedure, which also offers benefits from a health and safety perspective.

Craig Gilhespie, Site Manager, Barratt Homes, explains: *"Although cost is inevitably a driver in any development these days, Insulslab has gone beyond this by offering improvements on thermal insulation. The installation process is extremely quick and it is one of the safest systems to manoeuvre on-site – we have been very impressed."*

While Barratt Homes has adopted Insulslab on a number of previous developments nationwide, 'The Elms' is the first time the system has been used by the current site team and groundworker, Lee Construction.

Commenting on his experience of Insulslab, Lee Green, Managing Director, Lee Construction, said: *"Using Insulslab enabled us to save approximately three days per plot, which makes a major difference in terms of project progression. The system also helped us keep to the site programme because the absence of trenches meant there was no risk of collapse – allowing us to carry on working even in adverse weather conditions."*

Andrew Orriss, Insulslab, concludes: *"Insulslab is now widely accepted as a cost effective and higher performing alternative to traditional foundation techniques. The system is increasingly being adopted by housebuilders who are faced with challenging ground conditions where standard methods would be cost prohibitive, yet Insulslab can provide a competitive and efficient solution."*

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V1 – 2015