Expanding possibilities

Case Study

Passivehaus Foundation Smethwick, Passivehaus Foundation Modular System

Project: Residential New Build Housing
Location: Crocketts Lane, Smethwick, West Midlands
Sector: Civil Engineering
System: Stylite Passivehaus Foundation Insulation
Size: Phase 2 (20 Houses / 800m2 approx.)

The Stylite Passivehaus Foundation system offered the following key benefits to our client:

- ☑ Excellent thermal performance 0.010 W/m2K
- ☑ Underfloor heat loss reduced from 65% to 12%
- ☑ No specialist installation skills required
- ☑ Save on materials, labour and time!
- ☑ 60% less concrete required

Background

The former Sandwell college site at Crocketts Lane was identified within the Windmill Eye Neighbourhood Plan as a priority site for new housing. All the College's post-1950s buildings had been demolished leaving three listed buildings on the site to be refurbished and sufficient space on the remainder of the site to build 96 new houses.

Client Requirement

The developer wanted to provide new high quality housing that would be super insulated in order to future proof them from any changes to Building Regulation thermal requirements and to minimise energy usage throughout the life of the buildings.

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“We’ve used the Stylite Passsivehaus Foundation system on a few smaller Passivehaus projects and were impressed with it’s simple but effective design. So we decided to specify the system on this much larger project in order to bring a unique selling point to these high quality homes.”
Director, Specialist Installer

Design Solution

An Insulating Concrete Formwork (ICF) system was specified for the main elements of the houses along with the Stylite Passivehaus Insulation system for the foundations.

Our client worked closely with an engineer to modify the standard Passivehaus Foundation Insulation system by designing the perimeter units as “T” rather than an “L” shape. This bespoke solution provided insulation under the concrete foundation from which the outer brick skin walls of the houses were to be built off, further enhancing the energy performance of each home.

The Stylite Passivehaus Foundation system comprised of lightweight Expanded Polystyrene (EPS) units contour cut off-site and delivered to site ready to lay. The bespoke “T” shaped high density EPS300 units were positioned around the perimeter of each plot, whilst flat EPS250 flooring sheets at 130mm thick were used to create the first layer of insulation over the compacted and levelled plot floor areas. A second layer of EPS250 flooring sheets were then laid in a break bonded pattern to create a channel ready for the concrete to be poured in, to form the ring beam.

Result

Due to the high compressive strength of the Stylite Passivehaus Foundation system it was more than capable of supporting the loads from a two-storey dwelling. Add to this it’s excellent thermal properties which prevented any cold bridging at the ground and wall junction and the system was a success. The super low U-values that were achieved met the clients requirements to provide super insulated homes with reduced energy usage and low energy bills.

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