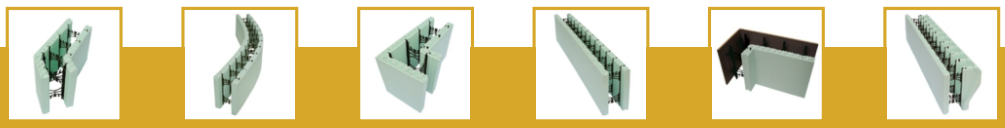
NUDURA ICF chosen above and below ground for new build farmhouse

Landmarks (UK) Ltd, a Yorkshire based developer, has used insulated concrete form (ICF) technology both above and below ground in the construction of a traditional two-storey farmhouse. The property sits on a natural gentle slope, so the basement is fully buried to the rear with a raised patio area to the front.

The property was built using the market leading, NUDURA ICF where polystyrene forms are used to contain the wet concrete when casting in-situ concrete walls – and are left in place as insulation.

NUDURA ICF forms consist of two stay-in-place panels of expanded polystyrene which are connected with an innovative folding web which minimises wastage and offers maximum flexibility. The forms are transported flat to site, opened and stacked, reinforcement placed, propped and then filled with concrete; creating a solid monolithic concrete wall.

Blocks are typically installed to a lift height to suit requirements and concrete is then poured into the forms. To ensure that no air remains within the void, the concrete is consolidated by means of a mechanical internal poker vibrator. As soon as the floor/roof is installed, wall building continues. The system is delivered to site folded flat to reduce distribution costs and allow for easy handling and storage. A sturdy four-way reversible interlock enables the forms to lock together and waste is almost eliminated.



Using a number of Triton waterproofing products, the lower slab to the farmhouse was made waterproof by the installation of a membrane beneath it and the inclusion of an additive in the mix. This waterproofing agent contains active chemicals that react with fresh concrete to generate a non-soluble crystalline formation that seals the concrete itself against the penetration of water or liquid.

A pre-formed water bar, which swells by up to 350% when in contact with water, was placed into all joints. The shuttering around the slab had made provision for the concrete groove in the face of slab and the bar was fixed into the groove using a mastic expansion sealant. The hydro-swelling and lasting adhesive properties of the mastic allow it to swell up to 100% when in contact with water. The bar was also placed in the centre of the wall on top of the slab so that the joint between the wall and the slab was protected.

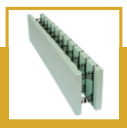
The waterproofing additive was incorporated in the concrete mix used to form the basement walls. The walls were filled in one day, with over 60m^3 of concrete being pumped and consolidated with the mechanical internal poker vibrator.

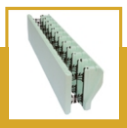
All joints between the polystyrene panels were protected with a width of reinforcing fabric to give extra tensile strength. A fillet seal trowelled into a wedge shape to the external toe of the concrete slab to ensure that any water flowed away from the joint which was also protected with the fleeceband.

Externally, the basement walls were treated with two coats of vapour membrane, a ready blended, single component acrylic modified coating that provides a primary waterproof and gas proof barrier. The membrane layer membrane provided a drainage and protection layer, which as well as working as a traditional cavity drain membrane to allow air movement between its face and the formwork, was then draped down the walls to connect to the land drain. The geotextile layer of the membrane was extended over the land drain to ensure that fines are kept out of the system. The external walls were then back filled.

Jon Rowlands, a director at Landmarks UK Ltd., explained that although his company enjoys a rich heritage of building with traditional skills, they are actively utilising complementary modern methods of construction to build





energy efficient housing in order to deliver low maintenance and low running costs. He said; “As NUDURA is suitable for both below and above ground applications, speed of build really comes into its own. ICF buildings also offer limitless design possibilities, unbeatable energy efficiency, acoustic performance, strength, minimal maintenance and repair plus fire and disaster resistance”.

For further information contact Jean Marc Bouvier, Director of Sales and Business Development – International on 07766 118711 or visit www.Nuduraicfs.co.uk