

The Floating House

Marlow, United Kingdom

Cementaid Everdure CALTITE System

Hydrophobic Pore-blocking Ingredient (HPI) for



Membrane-Free, Truly Waterproof Structural Concrete

The first ever “amphibious” or Floating House in the UK was built on the flood banks of the Thames River in Marlow and completed in 2014. The amphibious performance of the house is made possible by the use of Cementaid’s time-proven “Everdure CALTITE” Hydrophobic Pore-blocking Ingredient (HPI), the world’s first truly waterproof reinforced structural concrete.

In addition to many other sustainability advantages, use of HPI concrete avoided reliance on built-up levees or other intrusive barrier structures that radically change the natural environment and associated ecosystems. The Floating House - which is situated in its own “Dock” - is designed to allow the natural movement of rising floodwaters over the site, while the house structure itself floats harmlessly on the surface.



This required that the Dock as well as the basement level and retaining walls of The Floating House be constructed using completely waterproof, dry & corrosion-proofed concrete. This was achieved by incorporation of “Everdure “CALTITE” Hydrophobic Pore-blocking Ingredient (HPI) into the concrete mix.

Developed by the Cementaid International Group and in use since 1962, Everdure CALTITE is a liquid additive included in the mix during concrete batching. The resulting hardened concrete does not get wet inside - or transmit moisture or dampness - even when fully submerged in water. This unique performance eliminates the old need for waterproofing membrane barriers applied to the outside of the concrete slab and walls, which would have greatly complicated or even negated the project’s design intent. The built-in waterproof performance of this type of concrete also protects it against corrosion for design-life and significantly reduces construction time and costs.

The impermeable “CALTITE” concrete Dock structure was constructed in an excavation extending up to 5 meters below mean river-level. Four tall galvanised steel Dolphins were installed around its perimeter, to guide and stabilise the house structure during floating. The “CALTITE” concrete basement slab and retaining walls of the house structure itself were then constructed *inside* the Dock.

The Dock structure is designed to permit rising flood-waters to enter into the approx. 600mm space between the Dock and retaining walls of the basement structure. This allows the entire house to rise and float when sufficient water has entered into the Dock.



The tall Dolphin structures around the perimeter of the Dock act as vertical guideposts. These allow the house to slide up and down when it needs to move, and to rise in a stable, even fashion without any tilting



The below-water, basement level of the house includes a Games and Cinema Room as well as Study and Utility rooms. The fully waterproof “CALTITE” concrete means that interior floor and wall finishes of these basement living areas remain dry and completely immune to the effects of rising dampness as well as any other moisture transmission that would otherwise occur through normal or ordinarily waterproofed concrete elements.



The photo above shows the already-cast “CALTITE” concrete base slab and pump-placement of the impermeable “CALTITE” concrete into the formwork for the retaining walls of the house. The completed house is bone dry and performing to the satisfaction of all parties.



The Floating House was designed by **BACA Architects**. The use of Everdure CALTITE HPI to waterproof the house slab and retaining walls was specified by **Teckniker Structural Engineers**. The contractor was **Greenford Limited**. Completed cost was approximately £1.2m.



Left; The Floating House completed at a cost of around £1.2m.

The Floating House was featured on the well-known Channel 4 documentary “Grand Designs”, and can be viewed by entering the following URL into your browser; <https://www.youtube.com/watch?v=sEyzRjamQyw>

For further information and service to get the advantages of Everdure CALTITE HPI concrete working for you in your projects, contact the nearest Cementaid Technical Service Centre in your World region now.