

Style & substance

Basements are known for requiring technical expertise in engineering, waterproofing and material specification, but this does not need to limit the design and aesthetic of exposed concrete, as Claire Ackerman of The Concrete Centre and The Basement Information Centre explores.

The technology and detailing necessary to create a basement also apply to partially submerged properties – for example, on a sloping site or tucked deep into the landscape with a green roof, or spaces below a podium deck. Some waterproofing techniques used for basement design can also be a useful part of a flood-resistance strategy for properties above ground or an appropriate means of managing ground gases and contaminants.

As the following projects show, basements are undeniably useful spaces, especially where available space above ground is limited. Since building uses change, it is also prudent to consider how to upgrade the basement during the design. The client and designer may wish to opt for additional waterproofing or vapour control at the outset to future-proof the property and in doing so reduce other risks of failure.

Basements also benefit from the thermal properties of their surrounding ground. Therefore, the amount of insulation needed

to reduce heat loss through a basement wall is less than that required on upper floor levels. The thermal mass of the construction and surrounding soil can help to naturally regulate the internal temperature. When coupled with an appropriate ventilation strategy, this has the potential to help regulate the temperature of the whole property. The homogeneous construction and lack of wall penetrations ensure minimal heat loss through air leakage. The mass of the earth and concrete also combine to provide excellent acoustic insulation, especially with a concrete ground floor above. Basements can therefore accommodate particularly noisy activities, which might prove difficult elsewhere.

Ghost House, Warwickshire

Ghost House is a largely concealed, partially submerged home in Moreton Paddox, Warwickshire, designed by BPN Architects and inspired by Tadao Ando. The concrete is exposed on all internal and external walls and the sloping site is bounded on three

Above: Ghost House, Warwickshire.
(Photo: Felix Mooneram.)

sides by retaining walls. The structural slab and retaining side walls are 350mm thick, the latter backed by a 120mm layer of low-absorbency, extruded polystyrene insulation and a tanking membrane.

The Concrete House, East Sussex

With its recent appearance on Channel 4's *Grand Designs*, The Concrete House of self-builder Adrian Corrigan and architect Graeme Laughlin of RAW Architecture Workshop, working closely with the CEMEX Research Group in Switzerland, showcased a range of innovative concrete.

The house consists of a series of in-situ concrete spaces, including sunken spaces, that all surround a large central space. The ground slab used a fibre-reinforced concrete and a high-performance, self-compacting version of the mix was used for the structural walls and horizontal elements. In addition to the use of Resilia, other special concrete technologies were adopted, such as Insularis for eliminating thermal bridges, Permatite to enhance watertightness of the structure, and Evolution's self-compacting admixture technology.

21 Caroline Place, London

21 Caroline Place in London was extended into the roof and the basement by Amin Taha Architects. The soffit of the in-situ concrete basement was left exposed and bush-hammered to create an unusual, rough texture. The concrete combined a pale cement with 50% GGBS and a specially sourced pale aggregate. Lightwells from the patio garden provided daylight to the underground spaces. ■

Further information:

Visual Concrete guidance is available from The Concrete Centre at: www.concretecentre.com

Basement guidance and case studies are available from the Basements Information Centre at: www.basements.org.uk



21 Caroline Place, London. (Photo: Timothy Soar.)



The Concrete House, Lewes, East Sussex. (Photo: seanpollock.com.)

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