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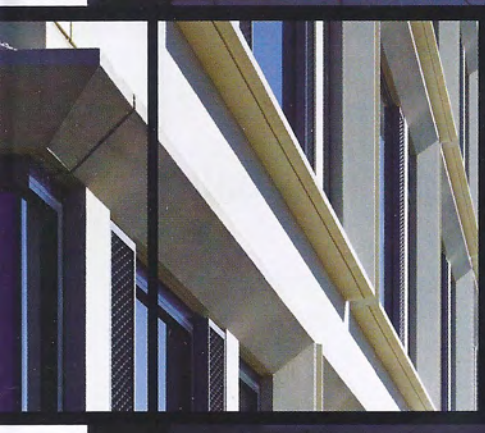
concrete

Incorporating

The Concrete Society AWARDS 2013



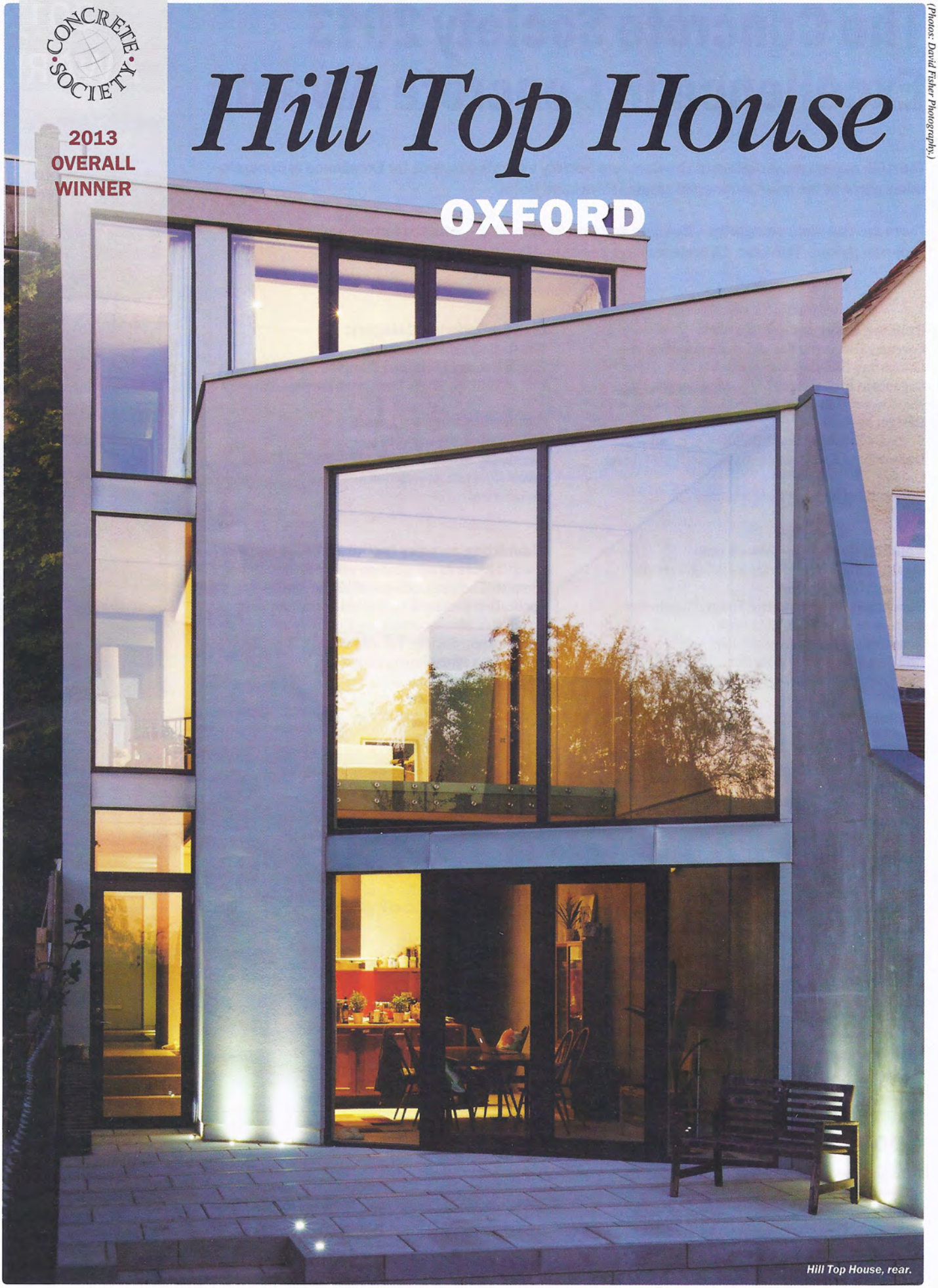
The Awards ISSUE 2013

CONCRETE SOCIETY

2013 OVERALL WINNER

Hill Top House

OXFORD



(Photos: David Fisher Photography.)

Hill Top House, rear.

Hill Top House is a modern private dwelling slotted in between two older properties in a residential part of Oxford that has a variety of architectural styles. The project is described by the architect as "a small but exemplary essay in the use of concrete to create the complete structure and interior of a house".

The house is unremittingly thorough in its use of concrete, exploiting prefabrication technology with its inherent advantages of standard of finish, dimensional precision, ease of build, speed of build, safety and – crucially – cost.

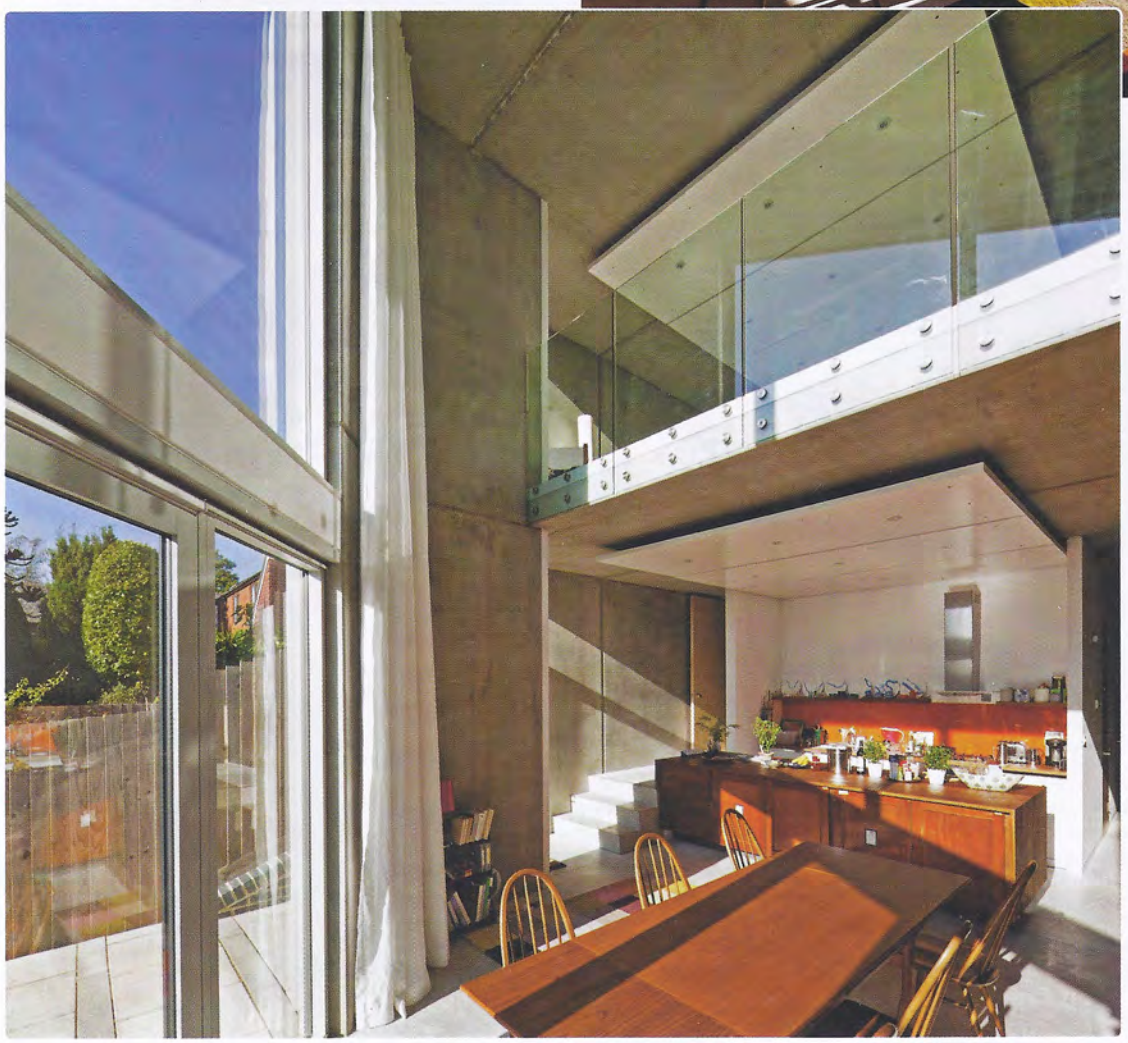
This house demonstrates that concrete is a sensible, sustainable material to build one-off houses on tight urban sites within a normal budget.

The house has been carefully designed to eliminate the clutter of services so that there is purely the material, defining space and shaped with natural light.

Design approach

The clients wanted a building where the structural fabric was also the interior finish: raw construction honed for living. And yet, it also needed to fit on a tight site in a terraced street and within a tight budget to match a conventional build.

The solution was to use concrete prefabrication technology for the complete structure and interior finish all in one. The crosswall construction system developed by Cornish Concrete achieved this, and more. It offered the advantages of precast concrete in quality



Above and left: Completed interior living space.

"The solution was to use concrete prefabrication technology for the complete structure and interior finish all in one."

Above: Hill Top House, front.

First-floor stairwell.

Above: View from rear during construction showing the concrete frame.

Above: Precast stair installation.

Right: Due to tight tolerances either side of the house, lowering the precast walls into place required precision crane operating skills.

of workmanship and reduction in programme. It offered the advantages of panellised construction over frames with their downstands, shear issues and infill messiness.

The concrete includes Cornish white sand, which lightens the tone. The finish is how it comes out of the mould: no acid wash, just a fine grout to fill blowholes and then a clear coat of Keim. The result is smooth but with a variety of colour and texture: it still has that quality of serious weight.

The concrete isn't unblemished. It has occasional marks, rougher chamfered edges and grouted lifting eyes, but there is no clutter: the jointing mechanisms between the panels are invisible and the joints themselves are admirably tight. Cornish Concrete's system has been refined over the years in the construction of hotels, flats and prisons. The panels – walls, floors, stairs and the curved and trapezoidal panels at roof level – were cast in Cornwall and then transported north and installed on-site in a few days.

Services

Making sure the design was not compromised by poor detailing, unsightly joints, exposed service runs etc, required serious forethought and design co-ordination. At the macro level the house plan is very ordered with services contained within central duct zones and suspended ceilings, which are clearly segregated from the concrete walls and floors. At the micro level, the party walls and crosswalls around the stair chasm are kept completely clear of all clutter – no sockets or switches. The enfilades down both party walls allow light to fall on smooth concrete right through the house.

This house sits in a terraced street of varied architectural character. The local authority's planning officers were supportive of the principle of a new house and of a contemporary design but they required it to relate to its neighbours with their bay windows and pitched roofs. This led to the inclusion of the modern interpretation of the bay window, angling views up and down the street. In addition, the light angles to the neighbours' windows led to the rear wall being facetted.

Value for money

Without the use of the precast panel system, this house would never have met both the clients' brief and budget. The house was designed to be built for £2500/m^2 and tenders came back at this level. In the end the house did cost more but that was largely due to other factors such as the first contractor going bankrupt. The total cost came in at just over £500,000 – not bad for a bespoke, spacious three-storey townhouse.

Sustainability

With every project the sustainability target must be achievable and appropriate. In this case, the client was very keen to build a house with excellent sustainability credentials and a low-carbon footprint but it is an ongoing tightly costed self-build project and the renewable energy measures are not yet installed. Nonetheless, the building as it stands is an example of sustainability in its location, construction, use and longevity:

- The house is in the city centre; there is no car; all movements from the house are by foot or bike
- It shares two party walls.
- The south façade has large expanses of glass for solar gain.
- The house is designed to accommodate solar water panels on the roof.
- It was constructed using off-site prefabrication as described above to reduce contract length and local disturbance, and improve build quality and site safety.
- The house is designed as a lifetime home.
- It is constructed of sturdy zero-maintenance materials not just for longevity but also to age gracefully.
- All the service runs in the house are located in accessible service zones.

This house demonstrates how precast concrete is viable, flexible, sustainable and economical not just for large projects but also for single one-off houses. ●

Hill Top House, Oxford

Architect	Adrian James Architects
Consulting engineer	Price & Myers
Main contractor	WG Carter
Precast concrete	Cornish Concrete Products
Polished concrete flooring	EJ Lazenby Contracts
Concrete sealant	Keim Mineral Paints
Flat roof system	RoofKrete
Material supplier	Cotswold Metal Roofing
Material supplier	Airseal Insulation

Judges' Comments

This is an excellent use of precast concrete in a domestic application to produce a simplistic uncluttered construction, which highlights the benefits of concrete. There is a very high ratio of visible concrete to square footage. The owners are extremely satisfied with the form and function of their new house, which has maximised the available plot of land and content within the agreed budget.

The desire to maximise the floor plan, in particular the width as well as providing the necessary thermal and sound insulation with the adjacent properties, drove the design to a precast option. The foundations, ground floor and floor screed were laid in-situ, with the external walls, floors, stairs and shear walls formed in precast units.

The front façade attempts to replicate the features of the adjoining dwellings in a modernistic interpretation of roof profile and bay windows. To the rear, large expanses of glass allow the natural light to penetrate deep into the property.

All services are contained within the central core, which also includes the three-storey single-flight precast stairs and lighting within partial false ceiling. There are practically no services attached to the exposed precast, giving the concrete high prominence.