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The tension mounts **Frei Otto interviewed**
Sweden's Museum of World Culture by **Brisac Gonzalez**
Touch wood: Hudson Architects' house on a flood plain
Pneumatic beams save the Cutty Sark



What lies beneath

Dramatic as Hudson Architects' Cedar

House appears, it's what's under the skin that counts. By Naomi Stungo. Photographs: Steve Townsend

- Key**
- 1 Cedar ridge cap over continuous ridge ventilator
 - 2 Prefabricated roof cassette
 - 3 Concealed metal eaves flashing
 - 4 Dowel pins set into folded metal soffit/gutter
 - 5 Folding sliding doors hung over internal face
 - 6 Prefabricated floor cassette (notched for trench heater)
 - 7 215 brookwork sleeper wall
 - 8 Oversite concrete
 - 9 Gravel rainwater soakaway perimeter, allowing omission of gutters



Architect Hudson Architects
Structural engineer Alan Conisbee & Associates
Quantity surveyor Roger Rawlinson Associates



The structure by Alan Conisbee Associates
 We have helped Framework develop the engineering potential of its parallelised timber building system.
 Using efficient sustainable engineered timber joists with steel plates at each end, the large floor, wall and roof panels are brought to site as factory-sealed cassette with insulation, vapour barrier, breather board and service ducts already installed.
 The Cedar House stretches the capabilities of the system to deliver a dramatic open living space with soaring, uprised roof planes, a frameless corner window of breathtaking proportions – and the ability to slide and fold away one of the external walls.
 Double parallel timber beams at the roof apex are concealed in the 240mm depth of the two roof plates, which act as diaphragms to transfer thrusts and lateral loads into the gable end wall and a cross-wall 9m away.
 Parallel beams at eaves level bind the structure together and perform the structural gymnastics over the 4m x 2m cantilevered corner window and the 8m opening in the west wall.

Huge openings puncture the building's reptilian skin. Windows have pronounced galvanised frames which "throw" water clear of the glazing.



The house is obviously barn-like. The architect grew up in rural Norfolk and the firm has done several barn conversions in the region.



Two ceiling panels have been left off in the living/kitchen area, above the door and diagonally opposite, to reveal the panel system beneath.



The house is only metres from the river, on a flood plain. Raised 1m above ground level, the first 1.5m of construction is 'sacrificial'.

**Key**

- 1 Ramp
- 2 Deck
- 3 Living
- 4 Dining
- 5 Kitchen
- 6 Bathroom
- 7 Cloakroom
- 8 Bedroom
- 9 Office
- 10 Darkroom
- 11 Studio
- 12 Garage with mezzanine above

Costs

Total costs	£246,644
Area	215m ²
Costs/m ²	£1147

Breakdown

Substructure	£15,480
Superstructure	£67,659
Cedar shingles	£24,430
Glazing	£21,546
Linings/fit out	£32,559
M&E	£25,928
External works	£11,672
Preliminaries	£35,120
Site fees	£12,250

In the words of the woodstain advertisement, Hudson Architects' Cedar House at North Elmham in Norfolk does exactly what it says on the tin. At first glance, its most striking feature is its cladding: 15,000 Washington State cedar shingles wrap the building from roof ridge almost to ground level, obliterating all difference between surfaces save for the windows and doors, which extrude like strange orifices from this reptilian skin.

The house has overtones of MVRDV's 2002 housing at Ypenburg on the edge of The Hague. Here, Winny Maas, Jacob van Rles and Nathalie de Vries (collectively known by their initials) designed a series of houses, each clad in a single, often vividly coloured, material – terracotta roof tiles, green or blue ceramic tiles, profiled aluminium panels or timber shingles. Like Hudson, they also pared the houses down, removing all external detailing, until they read like childish caricatures of 'home'.

MVRDV's design was a critique of Dutch developer housing and its tendency to over-load homes with materials and superfluous details. Hudson Architects also has a political agenda, but it is a quite different one.

The Cedar House is an experiment in low-cost housing. Although it is designed for a private client, the budget was limited: total building costs are about £245,000, which for a 215m² house works out just over £1,000/m².

This is something of a departure for the practice. Hudson Architects made its name in the 1990s with a number of highly site-specific houses (one thinks particularly of Baggy House in North Devon, which won the Sunday Times/Royal Fine Art Commission's Building of the Year Award in 1995). One-off houses continue to be part of the practice's repertoire, but Anthony Hudson says he is increasingly drawn to the challenges of designing low-cost

mass housing. The office has started to do some small-scale development and is working with Countryside Properties on a mixed tenure housing scheme in Norwich. The hope is that the lessons of the Cedar House can be applied to schemes such as Deputy Prime Minister John Prescott's recently announced competition for low-cost housing for first-time buyers.

Material choices at the Cedar House arose from pragmatic decisions about cost and performance. 'The house is all about the economics of structure. It is this that's the generator of the form,' Hudson says.

The cedar shingles, now such a part of the house's identity, could easily have been some other cladding shingles were just cheaper than weatherboarding or other options. The key to the Cedar House is not so much its dramatic skin as what goes on beneath.

The house is made from prefabricated timber panels, constructed off-site. Once the foundations had been laid, the panels were erected in a week using a design and build contract. Although it took time to understand the possibilities of the Framework system chosen, the reduction in on-site time was what enabled so large a house to be built to so tight a budget. Prefabrication always sounds like such a good idea but all too often the result looks like Portakabins bolted together (see Raines Dalry, RIBA J April 04). Not here. Framework is a panel system (see box page 48) as opposed to a modular system and Hudson says it did not limit the design, which was always going to be straight-forward given the limits of the budget. 'We were sure we could do something incred-

bly exciting but simple,' he says. 'It was a nice marriage of brief and intention.'

The other determining factor in the design was that the site is in a flood plain. After discussions with various agencies and a number of risk assessment reports, permission was granted for the building – with the proviso that it was constructed 1m off ground level and the first 1.5m of construction was water resistant. This, and the new disability discrimination legislation, accounts for the ramping walkway that leads you up to the raised front door (its galvanised hood is intended to throw water off the building). Once inside the only obvious indication of the 'sacrificial' datum is that all electrical sockets are raised above this point.

Otherwise you would have no idea that the house – which includes a large photographic studio, dark room and office – was hemmed in by these exigencies. The finishes are simple but the spaces are generous and uplifting, particularly the main living room with its huge east-west windows and soaring ceiling (at its apex, the roof is well over 5m). Careful thought has been given to the building's orientation and the location of windows that frame, rather than overwhelm, the view. The landscaping has yet to be started but when this is done it will further enhance the building's relationship with the river and the countryside around.

As a striking modern home for a client of limited means, the Cedar House is a considerable success. It will be even more interesting if the lessons learned here can be applied with similar panache to solve the crisis in affordable housing. ■

Specifications Timber frame by Framework Construction Design Management (Reader enquiry no 600), breathable building board by Hulton Bitroc (no 601), cedar shingles by John Braah Timber (no 602), ridge roll vent by Benjamin Obdyke (no 603), sanitaryware and tiles by Abouss (no 604), ironmongery by Lloyd Worrall (no 605). For more information on these products, visit www.riba-journal.co.uk/enquiries