Pride of Islington

A house in north London is being built in wall-to-wall in-situ concrete. With the building's marble smooth finish, seamless appearance and its flawlessly clean surface, could this be the start of a new trend in house building design? ***David Bennett*** takes a closer look.

Aberdeen Lane in Islington is not a location familiar to many people. It is down a dirt road, past a collection of single-storey warehouses, back gardens and drab garage lots.

So why would anyone opt for an in-situ concrete house – a structure that is ultra modern – down a long, uninviting, industrial lane and in the shadow of a 1920s brick-built mansion?

"For the clients, this site is perfect. It's in a very sought-after location. It's a five-minute walk from the tube station, 10 minutes by car into the City, but more to the point, it was a plot of land within their budget," explains Joyce Owens of Azman Owens Architects.

Neither was it the clients' intention to build a bespoke new home from scratch. Originally they only wanted to enlarge their existing terraced house in Hackney for their growing family.

"After we had proposed our ideas on how we could enlarge the clients' existing house, they decided it was still too small," says Owens. "They required at least five bedrooms as they both need office space to work from home."

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>
> Joyce Owens
> Azman Owens Architects

A six-month search for larger properties in the area proved fruitless, until an estate agent suggested that they might want to look at a plot of land for sale just off Highbury Grove.

The plot sits in the bottom half of the back garden of a 1920s brick mansion fronting plush Aberdeen Park and came with planning permission for two mews houses.

"The clients thought the site was interesting and quite private. As there were no buildings close by to relate to, the location gave us the opportunity to create something dramatic and monolithic in appearance. Instinctively our thoughts went to in-situ concrete and when we suggested it to the clients they were surprised, but not shocked," recalls Owens.

The thing that gave both architect and clients the greatest anxiety was finding a contractor that would price the job within budget and also execute the concrete to the standard required; a notion that many designers think are mutually incompatible objectives.

Varbud Construction in Perivale had previously worked for the architect on refurbishment projects. As well as making furniture, fitting out retail units, building handmade kitchens, plastering, plumbing and brickwork, casting concrete floors and walls, the architect felt the contractor was also competitive on its pricing.

"Varbud was keen to take on Aberdeen Lane and, knowing how carefully it works, we trusted its integrity. But fair-face in-situ concrete was going to be a new challenge for it," explains Owens.

Shaping up

The new house is in the shape of two cubes that have been offset from each other – the one facing the lane continues the building line of the existing mews houses along the lane.

The double-skin concrete walls of the box structure act as bookends, retaining the open glass elevations that will look westwards over the courtyard garden, the large ash tree, the iroko panelled timber garage and garden room. The concrete inner walls support the concrete first floor slab, the flat roof and staircase.

The living spaces are all on the ground floor – kitchen, lounge, TV room and dining area – with the bedrooms on the first floor. They are accessed via an open-plan precast staircase that runs along the double-height east wall, the roof light of which floods the staircase in daylight.

Single-skin blockwork walls divide the internal spaces of the house into their functional uses – bedrooms, bathrooms, walk-in wardrobes and so on. All the 200mm-thick inner load-bearing concrete walls and the floors have been cast, with the second lift of the 150mm outer skin of the concrete cavity walls being prepared for concreting.

The finished concrete surface is marble smooth to touch, light grey and full of subtle abstract flecks and variations depending on the angle of the light.

So, how was it achieved, and who supplied the concrete and the formwork?

"After we completed the sample panels to check the efficiency of different release agents, we machine cut the large birch-faced ply sheets in our workshops and prepared the surface by sanding it down, then coating it with two coats of lacquer," says Varbud Construction contracts manager Mavji Manji.

Once on site, the birch-faced panels were lightly oiled with a high-performance chemical release agent manufactured by Nufins, before they were screw fixed to the backing ply.

"We were not allowed to screw fix on the fair face side of the ply. Everything had to be screwed from the back of the panels. In addition, the strongbacks and waling to support the forms were designed with no tie-bolts over the body of the formwork," explains Manji.

A-Plant, which supplied all the props, had never designed temporary works with quite this degree of sophistication and control, but it appeared to have worked well.

The push-pull props in the mid-span, the close centred walings over the lower half and the double row of strong backs, kept the shutters rigid and true under the 3m head of liquid concrete.

Consequently, the concrete walls are as straight as a pole, perfectly plumb, with no lipping or bowing over their height.

"We used high-frequency, constant-amplitude electric internal vibrators for the compaction specified to minimise blow holes and to produce a uniform surface finish. Wacker arranged a training workshop to show us how to use its pokers effectively," recalls Manji.

"We were supplied with the best concrete we have ever seen for consistency of mix and workability by Hanson Premix. Its service to our site has been first class," adds Manji.

The remarkable thing about the Hanson concrete, according to Manji, is that it was economic on price, despite being supplied from Hanson's Stratford batching plant – at least a 40-minute journey from Islington.

The reason for this is that the Stratford plant had silos with single-size aggregates, so the coarse aggregate fraction could be proportioned to reduce all 5mm and smaller stone content to keep within the parameters specified for the architectural concrete mix.

"We have used a number of full loads of concrete over a four-month period and in that time the slump has only varied between 125mm and 135mm – which is astonishing. It is not as though Hanson was supplying the site every week with this special mix either," says Manji. "This is the kind of service and quality that can make or break a very keenly priced contract."

In the mix

All the mix constituents were kept constant from one batch to the next, particularly the cement content and water cement ratios, both of which dominate the finished colour.

The more water that is added to the mix, the lighter the shade of grey as a result; the less that is added, the darker the tone for the same cement content.

The formwork panels were removed 24 hours after concreting and came away effortlessly from the hardened concrete.

"There was hardly a trace of cement paste on the birch ply. Removing the forms from the concrete with the high performance release agent was as easy as opening a wardrobe door. The critical thing for us was to protect the finished face to ensure no rust from the starter bars or excess lime was carried down the wall from rain water, which could stain it," comments Manji.

The contractor used the birch-faced ply three times before it was scrapped. After each use, the shutters were lightly sanded, recoated with lacquer and then lightly oiled with the specified release agent. The outer 150mm wall was cast against the 75mm-thick cavity insulation panels fixed to the 200mm internal wall face.

It was poured in three lifts to reach the overall height of 6.5m. With all the internal concrete walls and roof slab and floors in place, work concentrated on laying the under-floor heating pipes, the under-floor insulation and electric cabling in readiness for the 55mm floor screeds.

"We had 12 personnel on site, carpenters, labourers, decorators, electricians and plumbers," says Manji, who expected to complete the fully fitted house by the end of 2002.

As it is a very tight site with a lot of double handling necessary, progress at times was understandably slow.

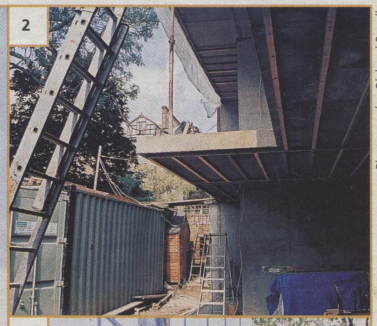
"We wanted a smooth-faced, light grey concrete that would not get dirt encrusted or stained," explains Owens.

"What has been achieved has come up to all our expectations. The surface is sensual, cool and very tactile and will make a strong contrast with the limestone ground floor tiles, the wooden framed windows, and the elm-covered first-floor panels," he says.

Could this be the first sign of concrete appreciation in the north London borough of Islington in the 21st century? □

Project Details

Architect:	Azman Owens Architects
Contractor:	Varbud Construction
Structural engineer:	Brian Eckersley
Services engineer:	Mendick Waring
Construction value:	£500,000



Photographs: Richard Beadle

1. External wall construction detail. 200mm inner skin, 75mm insulation and 150mm onto concrete skin.
2. Ground-floor open-plan living space, cantilever slab and glass façade elevation.
3. North end wall, showing lower half of external 150mm wall construction.
4. West and main open elevation of the house, which will overlook the courtyard garden.
5. Constructing the outer 150mm skin load of the double-skin wall construction, with 75mm insulation fixed in place.