Kids on the new block

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Pupils at Falmouth secondary school had a big say in the look of their rebuilt design and technology block – and the choice of prefabricated timber panels meant they soon saw the results.

By Jan-Carlos Kucharek

When head teacher Sandra Critchley took over at Falmouth secondary school in Cornwall, it was not only on Ofsted’s ‘at risk’ register, but in possession of a design and technology block that shamed that title. Positioned prominently near the main entrance, the single-storey concrete frame building had, like the school, seen better days. So when the Sorrell Foundation’s ‘Joinedupdesignforschools’ initiative rolled into town in 2004, it chose to concentrate its attention on this block.

The foundation is well known for successfully teaming schoolkids with designers to generate new approaches to educational design. It paired London practice Urban Salon with the teenagers to develop some theoretical schemes. Practice director Caroline Keppel-Palmer says the whole experience was enlightening and exciting for both parties. ‘Student groups were taken from different years and they used imaginative ways, such as writing plays, to draw attention to the shortcomings of the building as it existed,’ she says. ‘Space was cramped and there were discipline problems, as female teachers had to leave the block altogether to use the toilet. All in all, the building was seriously failing its users.’

Four months later, after some serious brainstorming, Urban Salon and the students presented their two-storey intervention for the old building to local councillors. Within two years, the school, Cornwall council and the Sorrell Foundation raised £0.25m and obtained match funding from the Department for Education and Skills. With that Urban Salon’s student-driven design was a serious proposition.

Budgetary constraints and access issues meant the initial proposals had to be rethought, and engineer Momentum was appointed to bring some reality to the structural approach. In the end it decided to refurbish the 600m2 old block, and add 100m2 at one end.

The choice of material, however, came out of the original discussions with the pupils. ‘It was clear from the outset that the kids were keen on using timber, for sustainability reasons, embodied energy, materiality and the look,’ explains Keppel-Palmer.

‘For us, it was about how we achieved it for the cost, which started directing us down the road of modular construction.’ There were other reasons too. ‘Timber is an unbelievably straightforward way of building, and the speed of construction and the hands-on nature of it seemed appropriate both for a design and technology block and in terms of being a visual education for the pupils themselves.’

The practice looked at structural insulated panels for the
construction, and also considered a timber stud system, but both options came in over budget. In the end, the team went for KLH’s cross-laminated solid timber panel system. Momentum project engineer Austen Cook was a keen supporter of the idea: ‘They are an excellent for structural strength,’ he says, ‘and their solidity also contributes to the wall’s insulation and the overall U-value, so there was a double benefit.’

For solid timber panels, increases in strength are proportional to the square of the thickness, so here loading criteria were satisfied using three panels of 90, 140 and 170mm. Cook explains that the great thing about this type of construction is that because it’s solid, every part of the system is used, making it highly efficient structurally. Connection details consist of laying roof panels over the wall ones, screwing down to form the shell and applying a strap detail on the outer faces to deal with uplift.

Although the whole structure is pinned back in the transverse direction to the concrete frame of the existing block to counter any racking or swaying, Cook considers this to be a formality rather than a necessity. ‘Because all the wall panels on the opposite side are slightly rotated relative to each other, I’m pretty certain that the structure is intrinsically stable,’ he observes.

U-value requirements were met by using plywood-bonded Diffutherm NK eco-friendly insulation, over which was fixed the Umicore VM lapped zinc cladding. But it wasn’t quite as easy as just fixing it on. The architects were keen on an internal exposed look to the timber, which entailed a lot of services co-ordination before the fixing of the cladding itself. There was a 12-week lead-in time for fabrication of the panels, which meant the architects needed to have a very clear and early idea of the lighting and data cable runs to ensure that the panels were drilled and routed in the correct positions. This was so that the wiring could be run through before the insulation was fixed.

Careful consideration of this has resulted in clear internal elevations, freed from the trunking and gubbins of the old building. And for those clear, uncluttered timber facades, there aren’t even any intumescent coatings, as the solid panels are designed to char, sacrificially protecting the remaining structure of the panels.

Keppel-Palmer points out that once the general design and panel detailing were resolved and the panels procured, the construction period only ran to 22 weeks, from casting of the strip foundations in March through to the installation of the cladding and glazing to the completion of the building last month, in time for the new academic year.

The success of the project lies not only in the creation of a new identity for the design and technology block, but in building up the confidence and pride of students. The project might be finished, but the aspirations of the pupils seem to have just begun. They’ve now taken it on themselves to start fundraising for a wind turbine. Not just half a million pounds to reinvent a failing school then, but some big thinking from young minds. And you can’t put a price on that.