

Case study 1: John Perryn Primary School, Buchan Concrete

Benefits

Time: reduced construction time on site

Sustainability: improved air-tightness, reducing energy in use

Quality: very high quality finish to precast concrete requiring only painting to finish

Client: London Borough of Ealing

The project

Buchan Concrete designed, manufactured and erected the precast concrete structural components for the new John Perryn Primary School, for main contractor Willmott Dixon.

The construction of the new school building replaces the Victorian school that, while still in use, was partly demolished to release space for the new school to be built, with minimum disruption to the school's curriculum and without the need for additional, temporary accommodation.

The two storey educational facility has eight classrooms, a staff room and toilets on the first floor. On the ground floor, there is open plan nursery provision, hall, dining room, IT suite, reception and a further six classrooms for three to six year olds including toilets, administration and plant room space.

The design of the school required flexibility and this has been facilitated by Buchan through the use of precast portal frames for the school structure. These were 6.5m long and some 3.6m in height, being delivered and installed as a single unit. Running at right angles to the main corridor at ground and first floor level, the portal frames, along with the 150mm thick outside walls and

180mm thick cross walls, carry the hollow core floor units.

The panels were lowered into position and carefully aligned with the aid of lasers, before the holding down bolts were finally tightened, and the series of wire loops set into adjoining ends were spliced with a reinforcing bar and grouted. The solidity of this solution not only offers aesthetic benefits but also contributes significantly to the airtightness of the building which is well below the current target figure of: 10 m³/m²/hr. **The official BRE air tightness test at John Perryn School achieved: 1.98 m³/m²/hr.**



Willmott Dixon asked Buchan to deliver a structure of such precision that the cast surface would predominate as the final finish internally. This was achieved by using Buchan's battery mould manufacturing process with steel face shuttering on all internal sides – a process producing a very high quality finish – enabling a straight paint finish to be applied directly onto the concrete surface.

A total of 479 units were erected by Buchan's own erection team at a total of 16 no. units per day during the erection period. A one week reduction on the contract programme was achieved (seven weeks instead of eight).

This precast school is considered innovative because it is all manufactured off-site, which:

- minimises the safety risks of constructing a new building a few metres from a live school environment and a live railway line

Getting the message across



- reduces waste and therefore costs
- reduces the number of deliveries to site (and associated traffic, noise pollution, safety risks etc, which is especially important in such a built up area as Acton)
- increases the speed of construction, enabling the project to be delivered in accordance with programme constraints, which is vital to school construction.

Contact

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