



Child Development Centre Hackney

Client: City & Hackney Teaching Primary Care Trust

Project: Child Development Centre – a centre of excellence providing children with disabilities with a range of health, education and social services all on one site.

Value: £6.4 million

Location: Cecilia Road, Hackney, London E8

Architect: Aedas AHR Architects, 5 Hardwick Street. London EC1R 4RG

Contractor: Balfour Beatty, Ludgate House, 245 Blackfriars Road, London SE1 9UF

Bricklaying subcontractor: Flahive Brickwork, Orbital 25 Business Park, Dwight Road, Watford, Herts WD18 9DA

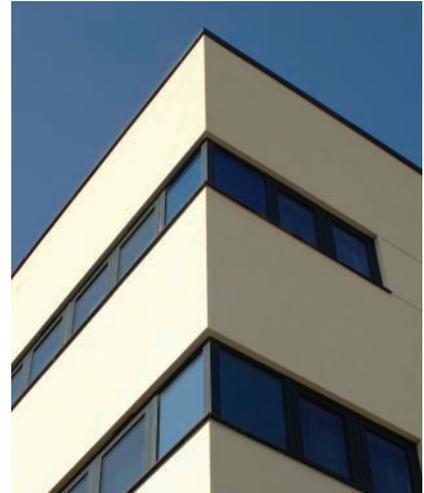
Product used/aircrete specification:

Celcon Plus blocks (610 x 215, 200mm thick) with the Thin-Joint System were used to infill the reinforced concrete frame.

Project description: The Centre is in the form of two L-shaped buildings in a '69' layout with a central courtyard. One building is two stories high with glass curtain walling. The other is four stories with solid, Thin-Jointed aircrete walls using Celcon Plus blocks 200mm thick. The two buildings take up the whole of the site; there is no landscaping. Half the ground floor is inhabited; the other half is car parking.

Build time (entire project): 12 months

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Reasons for choosing Celcon product:

Celcon blocks with Thin-Joint technology were chosen for ease of use. Balfour Beatty project manager Steve Penwill has used the system on an extension to his home and was very pleased with the results.

The original specification for the four-storey building in Hackney was to be dense block externally with a render finish. Internal lining was to have been a light gauge steel frame system with a dry-lined, plasterboard finish.

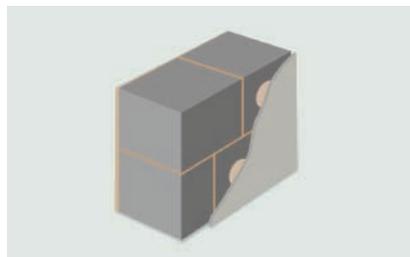
However, while the light gauge steel frame is quick to erect, lead times are lengthy and overall construction time would have been slow, due to the time required to build the dense block wall for the outer leaf.

The solid wall solution negated the need for the Metsec frame and Thin-Joint technology, using quick-setting Celfix mortar, ensured that the wall was built in much quicker time than the dense aggregate wall with conventional mortar. Masonry blockwork was also more flexible in use than the light gauge steel frame system.

The solid wall was finished with insulated render on the exterior and dry-lined on the inside.

Customer support: This was the first major project Balfour Beatty had used the Thin-Joint System on. H+H sales and technical staff attended two design meetings with the architect and project manager to help with the development of the design using Thin-Joint technology. H+H produced U-value calculations and advised on acoustic solutions. Detailed advice was given on the use of bed joint reinforcement which both reduced the amount of reinforcement being used and enabled the number of windposts used to be reduced, resulting in a significant reduction in costs.

Balfour Beatty was also trialing a waste management programme on site using the WRAP Waste Reduction Scheme. H+H provided advice on waste minimisation and the recycling of aircrete block off cuts.



Solid wall with insulated render on the exterior and dry lined on the inside.

“It’s a very good system and we will certainly be using it again. Overall, we reckon that using aircrete blockwork saved us something between £60,000 and £80,000 compared to a Metsec frame system and including the savings from fewer wind posts and bed reinforcement joints. The reduced amount of waste using aircrete and being able to recycle it is also a major benefit, especially for public sector projects.”
Steve Penwill, Project Manager, Balfour Beatty.



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Movement tie against steel columns



Aircrete is easy to cut



Thin-Joint technology gives an airtight construction

Thin-Joint System

The ThinJoint System combines the Plus range of high quality, accurately dimensioned aircrete blocks which come in 610 x 140 mm, 610 x 215 mm and 610 x 270mm face dimensions respectively (normal format is 440 x 215mm), with Celfix, a specially developed Thin-Joint mortar.

Thin-Joint blockwork enables walls to be built very quickly without having to wait the conventional 24 hours for the mortar to set before further loading can be applied.

Celfix Mortar is cement based and supplied as a dry, pre-mixed powder in 25kg bags. It has been designed to replace the traditional sand:cement mortar. Celfix Mortar starts to set within 10 minutes of application and approaches full design strength in just 1 to 2 hours. This enables blockwork to be built extremely quickly, and in the case of cavity wall construction independently of the outer leaf, which is normally brickwork.

Celfix Mortar is easily mixed on site by just adding the appropriate quantities of water. It is applied with a proprietary scoop or sledge, which will create a consistent joint thickness of 3mm.

The system enables the structure of a building to be built faster and to a better quality, allowing follow-on trades to start work sooner in a weatherproof environment, whilst retaining the flexibility of on-site construction. It is fully adopted as the preferred method of wall construction throughout most of northern Europe. This innovative and award-winning system is now firmly established within the UK.

Specific Product/system benefits:

The use of an insulated render allowed the structural engineers to design out a significant number of wind posts that would otherwise have been necessary to provide lateral support. By accepting this and understanding that the movement joint is not critical structurally, the engineers' design of the blockwork allowed any movement to be hidden behind internal and external finishes. This also enabled the structural engineers to 'value engineer' the wall – to save costs without compromising performance.

The use of a 200mm thick wall reduced the need for windpasts and so cut costs significantly.

But using a value engineering approach to design out expensive elements of the construction Balfour Beatty were able to make significant cost savings.

Other benefits included:

- The components for Thin-Joint blockwork are all available of the shelf, whereas the design and build period for a light gauge steel frame is very long and involved.
- Blockwork is highly adaptable and flexible at openings, if other design elements are not as they should be.
- An excellent U-value of 0.30 W/m²K was achieved.
- Thin-Joint technology gives an airtight construction.
- Insulated render gives a much better quality finish compared to rendered dense aggregate blockwork.
- Celfix mortar could be stored within the footprint of the building and small quantities mixed as required, a major advantage on a tight, urban site. There was no need for a large silo.
- The solid wall solution is thinner overall than the original specification – an important factor on some constricted, urban sites.

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The unique manufacturing process of H+H UK aircrete produces a micro cellular structure that sets the material apart from other types of masonry and offers the following characteristics:

- Strong - Supports up to 4 storeys without a structural frame
- Excellent thermal insulation - significantly contributes
- to satisfying Part L of the Building Regulations
- Thermal Mass - Provides an even temperature range in winter or summer
- Airtightness - Can be used to achieve excellent airtightness on site
- Excellent sound insulation - Useable in flats & apartments as well as housing aircrete comfortably satisfies Part E of the Building Regulations by Pre- Completion Testing or Robust Detail methods of compliance
- Fireproof -Fire resistant (100mm walls, up to 4 hours, 2 hours if load-bearing) Class 0 surface spread of flame, Non-combustible to Class A1 (the highest class)
- Lightweight -Easily meets CDM requirements for manual handling
- Sustainability & The Environment H+H UK Limited has received accreditation under the Energy
- Efficiency Accreditation Scheme (EEAS)



Bed-joint reinforcement

Contact details

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Further reading

H+H Thin Joint brochure
Building a sustainable future
The Excellence of Aircrete - the all round commercial and industrial building product
Fact sheet 9 Solid wall construction
Plus range datasheet
Building with aircrete

For further information about the subjects covered or the H+H UK products used in this case study please visit our website
www.hhcelcon.co.uk