



Carpenter's Place: Residential Development Knowle, Bristol

Developer: Eminence Property Developments

Clients: Flats for private sale

Project: A single block of 24 three storey one and two bedroomed apartments with secure parking facilities.

Value: Overall project value is £1.45 million.

Location: Carpenter's Place, Melvin Square, Knowle, Bristol, Avon.

Architect: Quattro Design Architects, 1 Great George Street, Bristol, BS1 5RR.

Type of contract: JCT

Contractor: Circle Construction, Treetops, Street End Lane, Blagdon, North Somerset, BS40 7TW. Circle Construction are an (H+H recommended contractor).

Project description: The first homes on the Knowle estate were built in the 1930s. It was built as a council housing estate, although nowadays almost half of the 5,500 or so homes are privately owned. Carpenter's Place is built on the site of a former public house and forms part of the urban regeneration of the Knowle area of Bristol. The three-storey building comprises 21 one bedroom and 3 two-bedroom apartments, as well as secure parking facilities with 17 car park spaces. Each dwelling is fitted out with all expected mod cons, access to bicycle and bin storage, as well as waste recycling facilities.

Build time: the building shell was completed from DPC in less than 12 weeks using some 16,000 H+H Aircrete Blocks.



Executive summary: A solid wall construction was chosen for the external walls, using the rapid setting Thin-Joint System, maximising the potential of the Rå Build method of construction.

The resulting benefits include increased speed of build and reduced costs. Level 3 in the Code for Sustainable Homes was achieved with ease. The interior was dry lined with plasterboard and a standard sand and cement floor was used. The entire project was insulated with 50mm PIR boards with three types of finishes to the exterior of the building; cedar wood, brick cladding and insulated render panels.

A maximum U-value of 0.24W/m²K was achieved.

Product used / aircrete specification:

Plus Blocks

610mm x 215mm, 215mm thick and 610mm x 215mm, 140mm thick used for the separating walls.

- **External walls** -
215mm solid wall aircrete construction using Plus Blocks with Celfix Mortar and the Celcon Thin Joint System
- **Separating walls** -
Cavity wall construction using two leaves 140mm Thin Jointed Celcon Plus Blocks with a 75mm clear cavity (no wall ties or insulation), parged and dry lined.
- **Separating floors** -
Robust detail E-FC-4

Reasons for choosing H+H aircrete products:

Circle Construction has more experience than most of using H+H products, having used them before on other developments. The main reasons for choosing a solid wall approach was how fast the shell of the building could be made weathertight. In days gone by, water penetration meant external walls could not be built like this. Thanks to their closed cell structure, Celcon Blocks offer excellent resistance to water penetration and easily conform to Part C of the building regulations. Eminence also wanted to have the option of different finishes to the exterior of the building. With the solid wall approach, render, brick slips or cladding systems were simply applied over the external insulation. With the insulation fitted externally (as opposed to insulated plasterboard), and 150mm PCC separating floors, the building benefits from a large degree of thermal mass. Thermal mass calms down the heating/cooling cycle, thus reducing energy use, and is now recognised as an important factor in controlling overheating in summer. The robust construction will provide residents with a solid, quiet and comfortable environment.

Summary of acoustic performance:

Walls; airborne, average 51dB DnT, w + Ctr
Floors; airborne, average 51dB DnT, w + Ctr
Impact, average 50dB L'nT, w

The measurements of airborne sound insulation (separating floors) and airborne sound insulation (separating walls) were all well within the required performance requirements.

H+H Recommended contractor comment

"We decided on solid wall due to the speed and cost advantages it offers. Only having one block to work with meant we had the shell of the building completed and weather-tight in excellent time. Being able to use the same method for exterior and interior walls contributed to a considerable time saving compared with other methods, whilst reduced onsite waste helped to lower costs".

Chris Linegar, Director, Circle Construction

H+H Case Study

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Product/system benefits:

- Speed of build increased by allowing the construction of walls to storey height in one lift
- Only having one leaf for the external walls contributed further to the time saving and provided immediate stability for landing the concrete separating floors
- A robust construction that easily meets or exceeds the requirements Part C and Part E of the Building Regulations
- The inherently insulative material contributed to the thermal performance
- Building process streamlined as solid wall construction means no wall ties or cavity closers, and only one lintel at openings
- Considerably less onsite waste

Other benefits included:

- The components for Thin-Joint Block-work are all available off the shelf
- Block-work is highly adaptable and capable of easily accommodating changes in a layout or design
- Thin-Joint technology provides an air tightness of around $1\text{m}^3/\text{m}^2/\text{hour}$ with 100mm blockwork, without any finish
- Celfix Mortar can be stored within the footprint of the building and small quantities mixed as required at the work area

Developer comment: "So pleased have we been with H+H products, we are now part of the nationwide recommended contractor network. Initially, we did not know much about aircrete, but after a demonstration of the Celcon Thin Joint System, we were immediately impressed with it and particularly interested as it is recognised as a Modern Method of Construction. We used aircrete construction on five other developments before Carpenter's Place, but this was our first time with solid wall and it has undoubtedly been a success".

Marcus Hasell,
Eminence Property Developments

build with ease

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H+H aircrete applications:

- Internal and external leaf in cavity walls
- Solid walls
- Separating / party walls
- Flanking walls
- Partitions
- Multi-storey
- Foundations

The system enables the structure of a building to be constructed 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.

Aircrete is an excellent all round commercial and industrial building material. Used in partition and external walls (both solid and cavity), fire walls and as infill to steel and concrete framed buildings it provides durability, fire resistance and superb thermal and acoustic insulation.

The speed of build and waste reduction that can be achieved using the Rå Build method with the Celcon Thin Joint System helps in meeting the stringent requirements of build schedules.

Added to this H+H aircrete has exceptional sustainability credentials: not only does it provide excellent thermal and acoustic insulation and contributes to air-tightness but, being manufactured from 80% recycled materials, it is sustainable both in manufacture and in use. Couple this with H+H's rigorous approach to pursuing the highest environmental standards throughout the whole of its business and it's easy to see why this innovative and award winning system is now firmly established within the UK.

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Further reading
 H+H Thin Joint brochure
 H+H Jumbo Blok Brochure
 H+H Multi Plate Brochure
 H+H Rå Build Brochure
 Building a sustainable future
 The Excellence of Aircrete - the all round commercial and industrial building product
 Fact sheet 9 Solid wall construction
 Building with aircrete

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