Nelson Project – Plymouth

Architect: Form Design

Principle contractor: Interserve

Client: Devon and Cornwall Housing/Community Self Build Agency/Plymouth City Council

Project: Construction of 24 one-bedroom homes as part of a three-storey block.

Cost of Build: £2.5million

Location: Plymouth

Type of contract: Social housing

Aircrete contractor: Interserve

Build time: 14 months

Executive summary:

H+H Celcon Blocks were specified for use on a 24-unit social housing development in Plymouth. H+H was chosen in part due to the lightweight properties and ease of use of the product as half of the units were constructed by veterans, many of whom had never worked on a construction site before.

Project Description:
Having undertaken a similar project in Bristol, the Community Self Build Agency (CBSA) recruited a team of veterans to help build their own homes on the site of a former centre for disabled people in George Place, Plymouth City Centre. A total of 24 one-bedroom apartments were constructed for Devon and Cornwall Housing and Plymouth City Council.

12 of the homes were allocated to the self-building veterans, six of the homes were allocated to those with learning disabilities and the remaining six were allocated for general needs affordable rent.

The site itself was particularly challenging, with change in levels of approximately 2.5 metres. The physical constraints of the site meant that standard articulated vehicles could not be used for delivering materials. This was overcome by H+H visiting the site beforehand and working closely with Interserve's site manager to review access and offer delivery of the product via a Draw Bar vehicle with a crane.

The walls achieve a U-Value of 0.14W/m^{2}K – significantly lower than for walls which use traditional masonry.

Nelson Project – Plymouth

"We were initially nervous about using the aircrete blocks on the outside leaf and needed to check compatibility with the specialist render system first. Once we were satisfied with the performance of the H+H Celcon Blocks, render was applied directly to the product, with support from the H+H Technical Department".

Phil Roberts, Senior Design Manager at Interserve

The veterans were able to gain recognised qualifications in 'Working at Height' and 'Safety in the Use of Abrasive Wheels'. They also completed training in carpentry, plastering, bricklaying and general labouring duties and two veterans were entered in the Site Manager Safety Training Scheme.

The Nelson Project was completed in July 2017 with the first residents moving in shortly afterwards. The scheme scooped 'Best Smaller Development' and the 'Abercrombie Award' (awarded to the best overall planning project) at the Plymouth City Council Abercrombie Awards in November 2017.

Reason for choosing H+H aircrete products:
Local architect Form Design specified the use of lightweight blocks in order to achieve 'Robust Details' for thermal and acoustic performance. Another product was initially considered, however H+H Celcon blocks were chosen in the end primarily due to the positive reputation of the company.

Further benefits of using H+H Celcon Blocks for the project included their low weight, weighing around a third of a traditional masonry block, and ease of use. Many of the veterans working on the site had no previous experience of construction, so it was essential to use a product that was easy to work with on site.

Products used / aircrete specification:
High Strength Blocks 7.3N (100mm) and Standard Grade Blocks 3.6N (140mm) were used for the inner leaf on the external cavity wall to meet Robust Details E-WM-23 and 24. Two leaves of the High Strength aircrete blocks were used with traditional mortar and a 100mm cavity in between. The fully filled cavity solutions, designed to address the thermal insulation requirements of Part L, have the added benefit of providing a high acoustic performance which exceeds the requirements of Part E of the Building Regulations.

Due to its versatility, H+H Standard Grade blocks can be used throughout a build, eliminating on-site confusion. H+H's Celcon Blocks High Strength Grade (7.3N/mm^2) are used principally where higher compressive strengths are required such as in the foundations and lower storeys of three storey buildings, piers under high vertical loads and in multi-storey buildings.

Foundations: Traditional strip foundations were used in the Nelson Project as this was the method main contractor Interserve were familiar with using. However, H+H Standard Grade blocks can also be used below DPC levels as they are fully load-bearing and capable of supporting buildings up to three storeys tall.

External walls: Designs for the external walls includes rendered finishes which blend closely with the architectural aesthetic within the existing residential areas.

Roof: Proprietary trussed rafters were combined with felt and natural slate for the roof of the building.

Floor: Precast concrete planks were used with a screed and battened floating floor for the interior. A carpet and vinyl interior finish was then applied.

Nelson Project – Plymouth

Product benefits:

- Easily meets or exceed Part L and Part E of the Building Regulations
- Simplifies the construction process
- H+H aircrete products use up to 80% recycled material
- Achieves A+ rating in the BRE Green guide

Other benefits included:

- Block-work is highly adaptable, easily allowing for any last minute design changes
- Aircrete achieves an air permeability of 0.12m³/hr/m²
- Has excellent fire resistance with a Class 0 rating for surface spread of flame

H+H aircrete applications

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

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.

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 up to 80% recycled materials, it is sustainable both in manufacture and in use.

We also have BES 6001:2008 accreditation for responsible resourcing of materials in addition we have an A+ rating under in the BRE green guide on both cavity and solid external walls Couple this with H+H UK'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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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**