

Stondonfield - Shalford, Essex



Executive summary:

Stondonfield is a contractor led social housing scheme whereby Collins and Beckett found the site and put together a complete package for the end client. It took a couple of years to get the project through planning due to objections by the local parish council that the land was outside allowed development areas. Permission was finally granted due to the existence of a local housing shortage.

Being a social housing scheme, all the homes had to be built to level 4 of the Code for Sustainable Homes. This meant thermal and air tightness qualities of the build method would have to be excellent. Robustness was another important consideration as was acoustic performance and speed of build.

Stondonfield was originally specified to use a 140mm timber frame wall system. However, bearing in mind the construction requirements, Collins and Beckett switched to the Rå Build method of thin-joint aircrete construction whilst still continuing with the original 140mm thickness of wall construction due to aircrete's diverse application and insulation properties.

Principle contractor: Collins and Beckett

Client: Circle Housing Group

Project: 8 brand new social homes for rent through Braintree District Council. The development comprises 1 x 2 bedroom bungalow, 3 x 2 bedroom houses, 2 x 3 bedroom houses and 2 x 1 bedroom flats

Build Method: Rå Build, Thin-Jointed solid external wall aircrete masonry shell with Celcon Foundation Blocks and externally clad with either through coloured acrylic render or linseed impregnated timber cladding

Value: £55,000 for all masonry Rå Build work and some traditional brickwork. The overall development costs total approximately £980,000

Location: Stondonfield, Braintree Road, Shalford, Essex, CM7 5FB

Type of contract: Design & Build

Architect: PHD Associates

Aircrete contractor: Collins and Beckett carried out all the blockwork themselves, including the inner Rå Build aircrete shell, via a specialist aircrete blockwork contractor.

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Property description:

The Stondonfield social housing development is made up of a mix of houses and flats, all now successfully allocated to tenants.

The ground floor external solid walls are built with Thin-Jointed aircrete Hi-Seven 7.3N/mm² Jumbo Bloks finished with either a LINAX timber board finish on 25x50 TSW battens or rendered with a through coloured white Weber.therm XP External Wall Insulation System. At edges where the two methods meet LINAX BERNINA external edges are installed.

Insulation above ground is 100mm thick Celotex board. The external walls are finished internally with a Lafarge Thermal Check K50 dry-lining system on dabs with other internal walls using 12.5mm thick Lafarge plasterboard also on dabs. U-values achieved for the external walls are 0.14w/m²K.

Internal party walls are constructed with 100mm thick aircrete blockwork, in particular Standard 3.6/mm² Jumbo Bloks. Partywall ties are Tackburn HRT4-200. There are 75mm insulated party wall cavities using Isowool party wall acoustic insulation.

Ground floors make use of a power floated finish on Cube6 Thermal Floor designed by a specialist with 282mm O/A thickness. This floor is designed to achieve a U-value of 0.14W/m²K.

All house foundations consist of 140mm thick Celcon Foundation Blocks on top of a concrete slab and insulation below ground level is Rocksilk DriTherm Cavity Slab.

Sandtoft Olympus and Redland Cambrian tiles finish off the houses and their pitched roof constructions.

“We saved in time about 4 weeks in comparison with a traditional masonry build, which was a key advantage for this particular project. Also, by using thin-joint and a solid wall approach we were able to build to extremely low U-values enabling us to install whole house ventilation using a Daikin Altherma heat recovery system.

This significantly reduces the amount of energy required to heat each dwelling, resulting in lower bills for the tenants. In fact, we needed no conventional boiler at all, each house requiring just 2 radiators, one in the hall upstairs and one in the hall downstairs.”

Mike Beckett, Managing Director, Collins and Beckett

Build time:

The Rå Build programme of aircrete wall construction took 9 weeks from start to finish. The total time taken to complete the entire development was 38 weeks.

Reason for choosing H+H aircrete products:

Collins and Beckett pushed to switch from timber frame to aircrete for a number of reasons, in the main because it represents a more economical solution whilst still offering advantages over timber frame.

By using Rå Build it is possible to get the entire internal structure of a building built and weather-tight extremely quickly prior to the external envelope. Also, masonry still has a better perceived build quality in some quarters, especially relevant for social housing projects such as Stondonfield.



“We have been delighted to work on this project, our Rå Build method has proved popular within the Affordable Housing sector. Using a 140mm block as an alternative to timber frame shows how flexible aircrete can be. Solid wall provides a fast build speed, enabling a quicker weather-tight masonry shell to be built allowing internal trades to start sooner.”

John Churchett, National Development Manager, MMC

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Product used / aircrete specification:

Solid wall construction using the H+H Thin-Joint System with Jumbo Bloks and Celfix Thin-Joint mortar.

- External and internal separating walls - Hi-Seven 7.3N/mm² Jumbo Bloks (610 x 270 face size and 140mm thick) The external walls provide average U-values of 0.14W/m²K.
- Internal partition walls - Standard 3.6/mm² Jumbo Bloks 610 x 270 face size and 100mm thick.
- Ground floors - Power floated Cube6 Thermal floors 282mm O/A thickness. Designed to achieve a U-values of 0.14W/msqK².
- Foundations - Standard Grade Celcon Foundation Blocks, 610mm x 140mm and 215mm thick 3.6N/mm².
- Roof - Trussed rafter type roof constructions Roofs provide an average U-value of 0.12W/m²K.

Air pressure testing produced results of 3.65 for the houses and 1.95 for the flats.

Acoustics:

Acoustic testing results proved how effective solid walled aircrete construction is at reducing sound travel.

The measurements of airborne sound insulation to separating walls and airborne and impact sound insulation (separating floors) are as shown in the table (right).



"I was sceptical at first with the solid wall thin joint aircrete solution as I am a bit of a traditionalist and usually design walls with a cavity. However, my scepticism has been proved wrong and I believe that, particularly for social housing developments, H+H aircrete solutions are an excellent choice. Being able to build such a thermally efficient shell quickly is invaluable in this day and age and this need will only increase in future."

**Edward Noad,
PHD Associates**

Comparison with Approved Document E (2003) to the Building Regulations 2000

Test No.	Rooms	DnT ,w + Ctr (dB)			L'nT,w (dB)		
		Measured	Required	Pass/Fail	Measured	Required	Pass/Fail
1	Unit 3 to Unit 2 – (Wall) Lounge Diner to Lounge Diner	51	≥45	Pass	N/A	£62	N/A
2	Unit 2 to Unit 3 – (Wall) Bedroom 1 to Bedroom 1	50	≥45	Pass	N/A	£62	N/A
3	Unit 4 to Unit 3 – (Wall) Lounge Diner to Bedroom 2	56	≥45	Pass	N/A	£62	N/A
4	Unit 4 to Unit 3 – (Wall) Bedroom 1 to Bedroom 3	54	≥45	Pass	N/A	£62	N/A
5&7	Unit 4 to Unit 5 – (Floor) Bedroom to Bedroom	47	≥45	Pass	52	£62	Pass
6&8	Unit 4 to Unit 5 – (Floor)	49	≥45	Pass	48	£62	Pass



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"It was a collective decision between all parties to move from timber frame to aircrete with the ultimate aim of meeting CfSH level 4. The Rå Build method of thin-joint aircrete construction proved the most cost effective option. This was actually our first time using this method and we are very pleased with how fast the site went up and the end results. The main structures were built during the worst winter in years, the system coping very well with this, better than traditional masonry and mortar would have done. Moving forward we would be happy to use Rå Build, thin-jointed aircrete masonry construction again."

"Residents have now moved in and they too are extremely happy with their homes. We have also spent time educating the incoming residents on how to live in CfSH level 4 homes, as it requires a change from the norm, including not opening windows on a hot sunny day as it will actually make their homes warmer."

Ian Christmas,
Development Manager,
Circle Anglia Housing Association



Product/system benefits:

- Speed of build increased by allowing the construction of inner shell, foundation and floor to be built by one contractor using the same method
- Easily met or exceeded Part L and Part E of the Building Regulations
- Simplified the construction process
- Collins and Beckett were in complete control of block-work; not dependent on outside agents for additional delivered supplies like mortar

Other benefits included:

- The components for Thin-Joint block-work are all available off the shelf
- Block-work is highly adaptable and flexible at openings, or if other design elements are not as they should be
- Thin-Joint technology gives an airtight construction
- Celfix mortar can be stored within the footprint of the building and small quantities mixed as required

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 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.

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 H+H UK Thin-Joint System helps in meeting the stringent requirements of build schedules.



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