



Batheaston Primary School, Northend, Bath

Main Contractor: H Mealing & Sons Ltd, The Yard, Northend, Bath, BA1 7ES.

Project: Batheaston Primary School has undergone refurbishment works to introduce a new hall, reception, classrooms and a kitchen facility. The renovations are part of a wider aim to create a sustainable school that prides itself on its eco credentials.

Client: Batheaston CEVC Primary School.

Build method: Standard trench fill foundations with aircrete Celcon Plus Blocks Standard Grade used for the foundations and for the inner leaves of all external cavity walls. All homes are finished with unusual sedum roof coverings on single ply membrane. Solar PV panels are installed to a solar fin. Traditional mortar was used throughout the development.

Value: The overall project value is £1.7 million which is part of a wider £2.15 million construction project overseen by Bath and North East Somerset Council's primary capital programme.

Location: School Lane, Northend, Bath, BA1 7EP

Type of contract: Schools project.

Architects: Concept design - Kendall Kingscott, Lime Kiln Close, Stoke Gifford, Bristol, BS34 8SR
Detail design - CMS Bath Ltd, 51-53 High Street, Corsham, Wiltshire, SN13 0EZ

Aircrete contractor: H Mealing and Sons carried out all blockwork themselves.

Build time: Developments at Batheaston Primary School began in July 2010 and the project was completed in September 2011.

Executive summary:

Batheaston is a 'Green Flag' awarded primary school and is part of the international 'Eco-Schools' programme guiding educational establishments towards sustainability by working various green principles into the everyday running of the school. The school was assessed to ensure it met the Green Flag checklist.

Further developments taking place include an area for wildlife and a straw bale building for additional teaching space. The school will also use their adjoining field as an outdoor classroom alongside an artificial badger sett, amphibian homes and a dormouse nest.

H+H aircrete blockwork was used for the external cavity walls in the new hall, reception, classrooms and kitchen facility. Six different wall types were used with

various decorative renders and locally sourced stone applied to the outside of the building. This demonstrates the variety of finishes that can be applied to aircrete walls.

The external cavity walls consisted of a variation of High Strength Grade 440mm x 215mm x 140mm and 440mm x 215mm x 100mm Aircrete 7.3N/mm² blocks for outer skins. All wall types included High Strength Grade 440mm x 215mm x 100mm Aircrete 7.3N/mm² blocks for their inner skins. Traditional mortar was used throughout.

Reason for choosing H+H aircrete products:

H+H was chosen primarily due to its reputation as sustainable manufacturer producing environmentally friendly building products. As much as 85% of the company's aircrete blocks are made from recycled material.

Bearing this in mind, H+H was an ideal partner as they share the school's commitments to sustainable production and operation.

The blocks were also chosen for their lightweight qualities which resulted in a quick construction time. The project aimed to achieve impressive U-value results and a 'Good' BREEAM assessment.

U value targets:

Walls - 0.26W/m²K.

Product used / aircrete specification:

High Strength Grade 440mm x 215mm x 140mm Aircrete 7.3N/mm² block.

High Strength Grade 440mm x 215mm x 100mm Aircrete 7.3N/mm² block.

"Our priority was to fulfil the school's ambitions and enhance their already well established eco credentials.

"To this effect we opted for as sustainable a block as possible, something better than dense aggregate. Aircrete was the only option that could deliver the required U-values whilst also being both robust and lightweight."

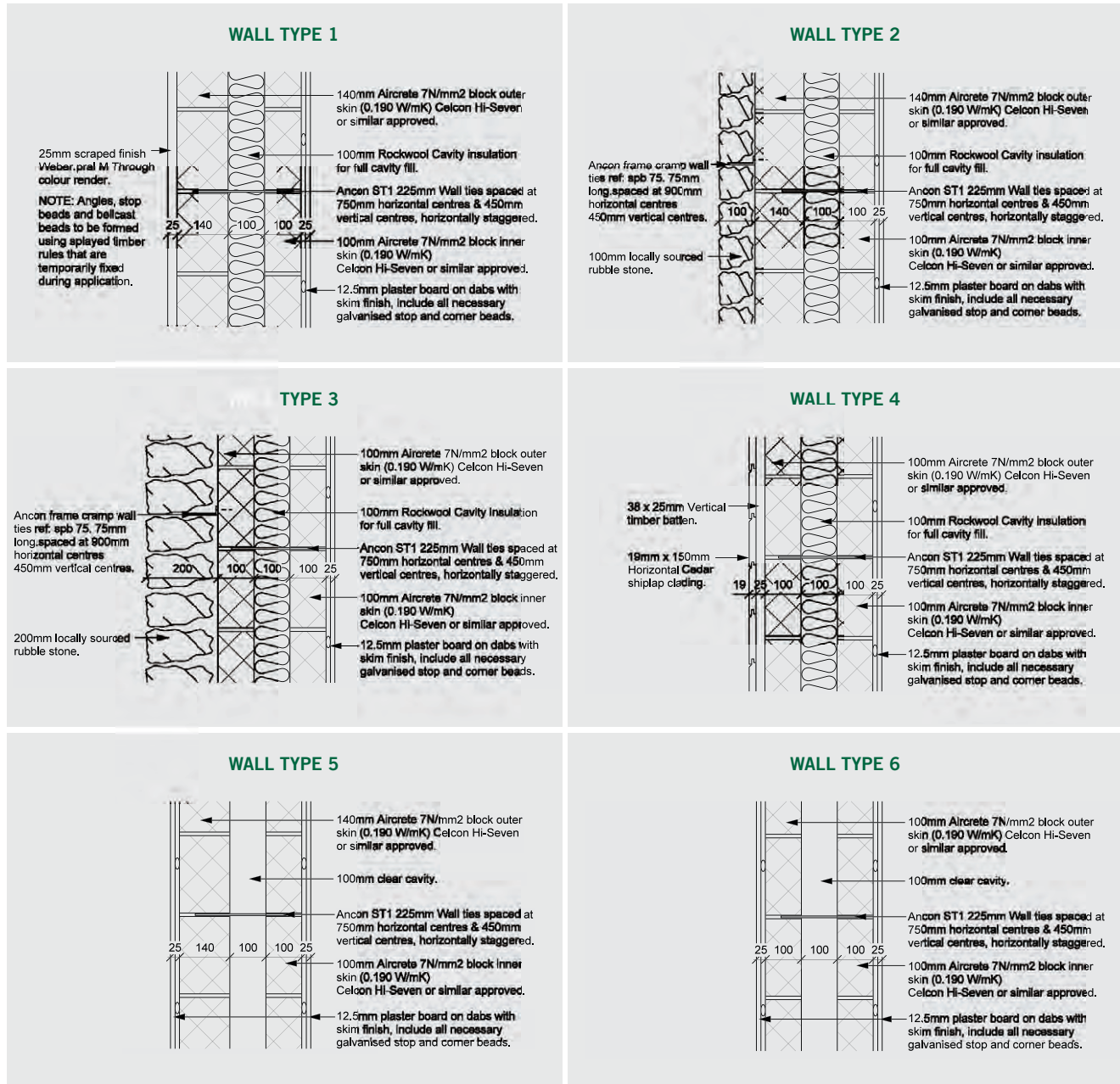
"BREEAM assessments will also be carried out and we aim to achieve a 'Good' rating. We are extremely pleased with the project's outcome and for choosing H+H to help us create such a sustainable school."

CMS Bath Ltd architectural technologist, Richard Helliar



Cavity wall constructions:

Six different wall types were used:



High Strength Grade 440mm x 215mm x 140mm Aircrete 7.3N/mm² blocks were used for the outer skin on wall types 1, 2 and 5.

High Strength Grade 440mm x 215mm x 100mm Aircrete 7.3N/mm² blocks were used for the outer skin on wall types 3, 4 and 6.

All walls used High Strength Grade 440mm x 215mm x 100mm Aircrete 7.3N/mm² blocks for their inner skins. Also, all walls were finished internally with 12.5mm plaster board applied on dabs with a skim finish including all necessary galvanised stop and corner beads.

Wall types 1, 2, 3 and 4 used 100mm Rockwool cavity insulation for a full cavity fill. Ancon ST1 225mm wall ties were spaced at 750mm horizontal centres and at 450mm vertical centres, horizontally staggered. Wall types 5 and 6 had a 100mm clear cavity.

External finishes:

Wall type 1 had a 25mm scraped finish Weber pral M Through colour render applied to the outside of the wall.

Wall type 2 had 100mm of locally sourced rubble stone applied to the walls, fixed with Ancon frame cramp wall ties, spaced at 900mm horizontal centres and 450mm vertical centres.

Wall type 3 had 200mm of locally sourced rubble stone applied to the walls, fixed with Ancon frame cramp wall ties, spaced at 900mm horizontal centres and 450mm vertical centres.

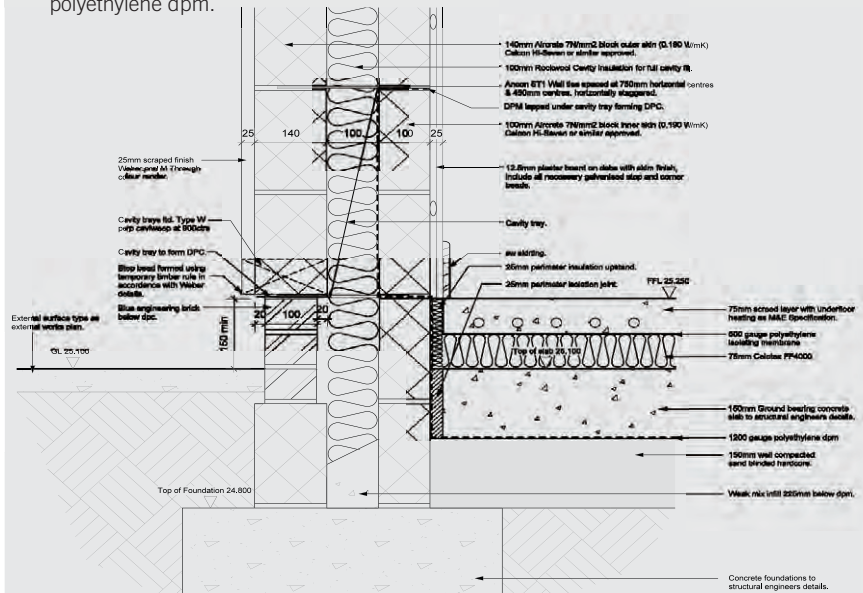
Wall type 4 had a 38x25mm vertical timber batten and on top of this was a 19mmx 150mm Horizontal Cedar shiplap cladding.

Wall types 5 and 6 were finished with 12.5mm plaster board applied on dabs with a skim finish including all necessary galvanised stop and corner beads.

Floors and Foundations:

75mm screed layer with underfloor heating was applied above a 500 gauge polyethylene isolating membrane with 75mm of Celotex FF4000 mineral wool.

150mm of ground bearing concrete slabs were installed above a 1200 gauge polyethylene dpm.

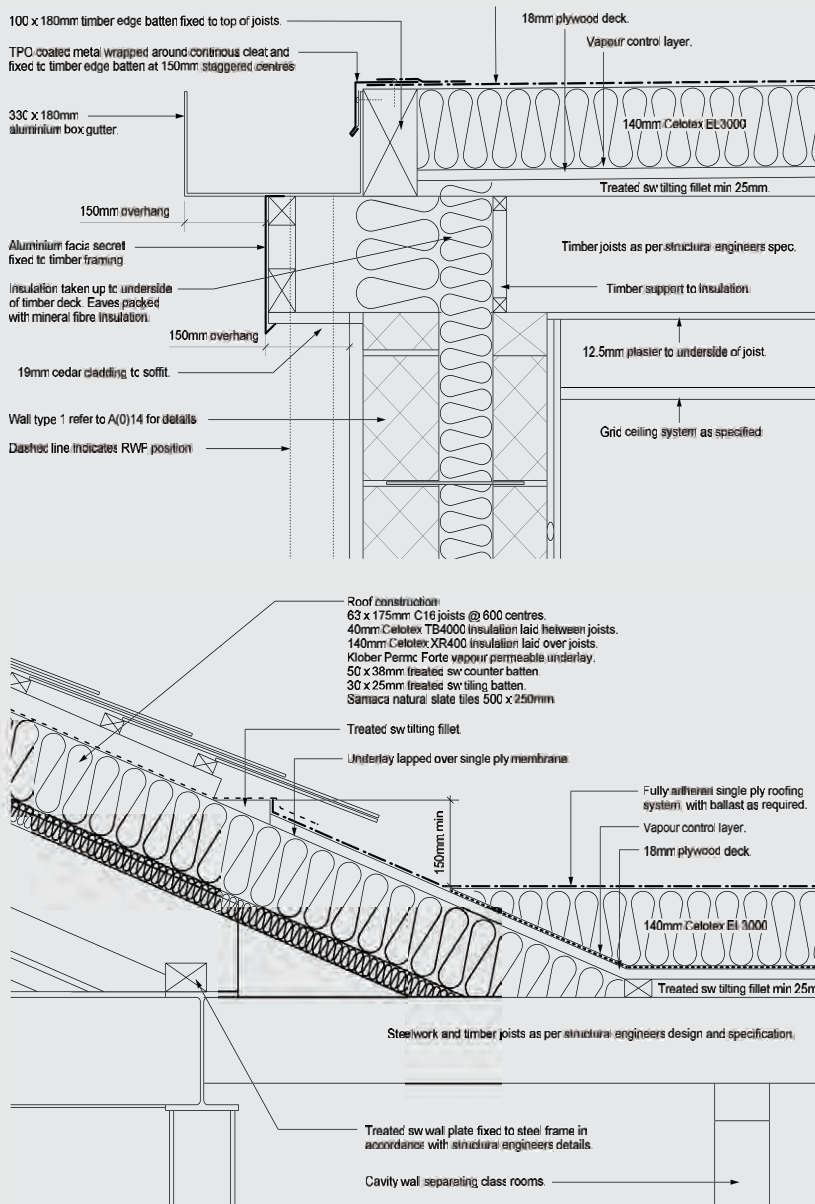


Weak mix infill, 225mm below dpm and then a further 150mm of well compacted sand blinded hardcore was applied directly above the concrete foundations.



Roof:

The flat roof eaves were packed with mineral fibre insulation and supported by timber joists. Above this, 100x180mm timber edge batten was fixed to the top of the joists and 18mm plywood deck with a vapour control layer was also applied. The roof was insulated with 140mm of Celotex EL3000.

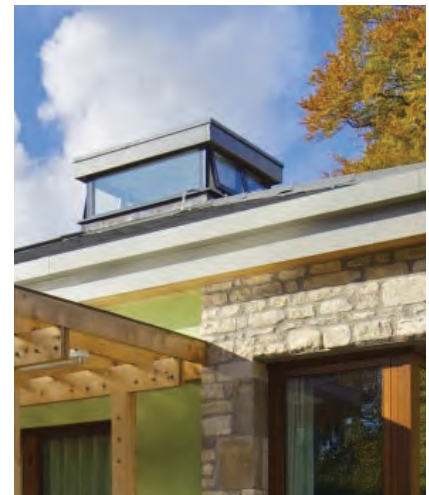


The pitched roof construction consisted of 63x175mm C16 joists at 600 centres. 40mm of Celotex TB4000 insulation was laid between the joists and 140mm of Celotex XR400 insulation was laid over the joists. The roof structure had a Klover Permo Forte vapour permeable underlay, 50x38mm treated sw counter batten and 30x25mm treated sw tiling batten. The tiles for the pitched roof were Samaca natural slate tiles 500x250mm.

"H+H is a sustainable manufacturer with high quality products, making them the natural choice for the project as their ideals tallied with those of the schools. The blocks were also chosen for their light weight, resulting in a very quick construction.

"Ultimately it's a very satisfying product to work with as the blocks can be cut on site, which provided us with great versatility during the build. As a result, we were able to build a thermally efficient shell with very impressive U-value results."

**H Mealing & Sons Director,
Glen Penhey**





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.

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 up to 85% recycled materials, it is sustainable both in manufacture and in use.

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 aircrete is now firmly established within the UK.

All drawings courtesy of CMS Bath Limited.

Contact details

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Further reading

Designing with Aircrete
Building with Aircrete
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

