

modern methods OF CONSTRUCTION

An increasing number of political initiatives aim to address the fundamental issue of housing shortages in the UK, recognising the continued shortfall between supply and demand and the impact this has on house price inflation and affordability. On many of these initiatives - especially where these relate to social housing - the Government is actively encouraging the use of innovative building techniques and materials and, in particular, the application of Modern Methods of Construction (MMC).

A MODERN METHOD OF CONSTRUCTION

Changes to the Building Regulations, the increased use of innovative materials and methods of construction and the pressure to adopt best practices across the building industry have all helped drive change in this quite traditional sector. During the 50 years that Aircrete has been used in the UK it has evolved continuously, and is now widely recognised as a modern construction material. Thin joint masonry - Aircrete's increasingly popular build method - has been accepted by the Housing Corporation as a MMC, so meeting the criteria of the Government's £300m "Challenge" funding for social housing, of which 33% is targeted to be built using modern methods. The Housing Corporation has responsibility for regulating the delivery of social housing through Housing Associations and defines several MMC build categories with the aim of producing new housing more quickly and cost-effectively. Thin joint Aircrete is classified under Group Five of these categories.

“ This category is intended to encompass schemes utilising innovative house building techniques and structural systems...typically... Aircrete 'thin joint system' would fall within this category ”

Housing Corporation: Capital Funding Guide
Category Five: Modern Methods of Construction.

Social Housing, Bethnall Green

Thin joint Aircrete masonry, together with foundation blocks and other aircrete structural materials, were used on this East London development as part of a measured trial by the Housing Association to quantify actual savings in build times compared to building the same design using more traditional methods.

The two and three-storey homes also benefited from the very high thermal efficiency of the uninsulated solid wall construction, achieving a minimum SAP rating of 100. At the same time, the exceptional dimensional tolerances allowed both internal and external walls to be finished using innovative cladding and sprayed-render systems, which further reduced build times. The results showed this 'whole-house' aircrete approach saved on build time by a very significant twelve weeks compared to traditional construction.



THE CASE FOR MODERN METHODS

There are many reasons why builders are being encouraged to utilise modern methods of construction: commercial, environmental and economical.

The use of MMC's and the innovative development of building products are seen as ways of supporting beneficial improvements in housebuilding.

OVERCOMING SKILLS SHORTAGES

The shortage of appropriate skills can be an issue for the construction industry; something that can affect build quality, completion times and costs - and may even impact on health and safety. Many of Aircrete's innovative products and construction methods employ simple, easily-learned skills or even existing competencies that can be applied by more than one trade - overcoming one of the key barriers to MMC adoption identified in the Barker Review. At the same time these use proven design details and materials with independent certification and a history of reliable performance.

GREATER ENERGY EFFICIENCY

Recent changes to the Building Regulations (Part L) reflect an increasingly responsible approach by government to encourage lower energy use in accordance with the Kyoto agreement. The microcellular composition of Aircrete has an inherent thermal efficiency. Its use in single leaf (solid) external walls further reduces insulation requirements, a benefit that also applies to thin joint construction.

COST-EFFECTIVE SOLUTIONS

MMC's are more likely to be used wherever a genuine commercial benefit is anticipated.

The Barker Review recognises this as a constraint when outcomes are 'uncertain', and this is exacerbated by the understandable caution of a naturally conservative industry. In the case of Aircrete however, the innovative products and methods yield demonstrable cost savings - in time, materials and earlier completion.

Local Authority Housing, West Midlands

On this development of some 20 new homes in the north of Birmingham, aircrete tongue & groove foundation blocks were used because of their excellent structural performance and durability, together with the faster build times made possible.

Aircrete blocks have always been an attractive alternative to traditional foundation materials for both domestic and commercial developments due to their overall versatility and strength (up to 7N/mm²). This is especially the case for sites where access for poured concrete proves difficult or obstructive and where the slower build times - almost double - of brick or concrete block prove uneconomical.

The development of aircrete tongue and groove foundation blocks with integral handholds enhances productivity - for not only does this make handling and laying easier, but because only the beds need to be mortared, build time is improved by a further 25%.



OS (MMC'S)

- OVERCOMES SKILLS SHORTAGES
- GREATER ENERGY EFFICIENCY
- MORE COST EFFECTIVE
- FASTER CONSTRUCTION
- IMPROVED CUSTOMER SATISFACTION
- BETTER ACOUSTIC PERFORMANCE
- USES SUSTAINABLE MATERIALS



FASTER CONSTRUCTION TIMES

The Housing Corporation, in its Capital Funding Guide sets three key objectives for Challenge Funding; one of these is to produce new housing more quickly and cost effectively. Reduced building time is a key benefit of Aircrete using standard format blocks or the many innovative products specifically designed for this purpose. Thin layer mortar... large format blocks... tongue and groove blocks with handholds... are all proven methods that can rapidly improve build times.

SATISFYING CUSTOMERS

One of the main recommendations of the Barker Review is for the housebuilder to demonstrate increased levels of customer satisfaction. Independent research amongst homebuyers repeatedly shows a preference for solid masonry construction, which Aircrete satisfies in addition to its superior thermal and acoustic performance.

IMPROVING ACOUSTIC PERFORMANCE

Changes to the Building Regulations, Part E raise the level of acoustic insulation required between and within dwellings. Ways of conforming to these requirements - methods of compliance - include Robust Details which have undergone prior testing. Appropriate solutions include traditional and modern methods, and a wide range of Aircrete construction details meet these requirements.

A SUSTAINABLE MATERIAL

Sustainability is a highly topical issue currently driving government policy in a number of areas. Championed at Kyoto, embraced by Egan, fostered through changes to Part L and Part E of the Building Regulations and visible in almost all public sector guidelines affecting construction... the need to use resources responsibly for tomorrow's generation as well as today's will predictably have a strong influence on future decision-making in both public and private sectors. Aircrete, which accounts for over 70% of new housing in the UK, reduces the consumption of heavy quarried materials and is totally inert. Many products are manufactured using recycled materials and, in addition to its low wastage, low maintenance and long life expectancy, is recyclable and has a lower embodied energy content. Aircrete's light weight also allows greater volume per density, leading to less vehicle movements.

COMMERCIAL ADVANTAGE THROUGH INNOVATION



THIN JOINT SYSTEM

The 'thin joint' method of construction, utilising mortar joints less than 3mm, allows Aircrete walls to be built very rapidly. With the mortar setting in an hour or so, many courses can be built in a day, making house completions possible in a significantly shorter time period.



SOLID WALLS

The use of Aircrete blocks in solid, single leaf wall constructions - a form widely used elsewhere in Europe - produces excellent thermal performance when used with external insulation as well as creating a rapidly-built, very cost-effective substrate for rendered finishes, cladding or tile hanging. Such construction is inherently airtight and reduces CO₂ emissions.



WHOLE HOUSE CONCEPT

By combining structural Aircrete elements with Aircrete walls and foundations, an entire house can be constructed very rapidly, combining off-site fabrication with design versatility and flexible on-site working. The resulting fast-track structure has excellent thermal and acoustic performance.



BEAM AND BLOCK FLOORING

This innovative build method utilises the light weight and thermal performance of Aircrete to create a solid, system-built floor that can significantly reduce heat losses, reduce noise transmission and minimise the amount of secondary insulation. Recent Part L changes mean nearly all floors will require additional insulation.



LARGE FORMAT

Aircrete's low mass:volume ratio has allowed the development of large format blocks for cavity or solid wall construction which increase productivity and reduce cost.



FOUNDATIONS

Used below ground, Aircrete foundation blocks are a rapid and cost-effective alternative to traditional methods. Their light weight allows large block sizes to be used whilst a further, innovative development using tongue and grooved blocks with handholds, makes the process of laying even easier and quicker.

FURTHER REFERENCES:

Housing Corporation: Capital Funding Guide April 2003

Barker Review Final Report - Recommendations

DTI / Aircrete Bureau Code of Practice for the use of Aircrete

Aircrete Bureau - Building with Thin Joint Masonry



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