

Factsheet

The Rå Build Cost Advantage



Further to a previous study undertaken in 2008 calfordseaden was commissioned to again research the comparative costs of five different common house construction methods based on a 20 unit development of 3 bedroom houses.

As previously, calfordseaden was instructed to act independently and provide an unbiased, fair and independent report.

The research concluded once again that thin-joint masonry delivers a cost effective construction, in the time it would normally take to build a framed construction.



The Research

Cost remains a key driver when deciding on which construction method to use, so calfordseaden were commissioned to conduct a cost comparison between thin-joint masonry and other popular methods of construction, taking into account varying labour and material prices.

Rationale

Prices for labour and materials were established from a representative selection of market rates, approved contractors and actual prices returned from contractors and suppliers.

Specification

The costs are based on the following specification:

- The values relate to a site of 20 dwellings.
- All prices are based on the same house type
- All external walls achieve a U-value of 0.18W/m²K
- Ground floors are to achieve a U-value of 0.13W/m²K
- Any insulation is specified as rigid board
- All units are specified using best practice foundation solutions
- All units have been priced to the same level of completion, ignoring any external works, services, fees and design costs
- All units have been priced with identical external leaf materials and internal fittings and finishes

Summary Information	Cost (£/m ²)	Increase in cost over Thin-Joint
SIPS	910	9.7%
Timber frame	900	8.6%
Aggregate, masonry blocks	850	2.6%
Aircrete masonry blocks	840	1.5%
Thin-joint masonry	830	-



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calfordseaden is a multidisciplinary construction and property consultancy working across the private and public sectors in the UK housing, building and construction industries.

As a multi-disciplinary Practice we provide a comprehensive range of services comprising chartered surveying, project management, architecture and master planning, civil and structural engineering, mechanical and electrical engineering and health and safety advice.

Innovation in Construction

calfordseaden have pioneered the use of modern methods of construction since the early 1990s. Over this period of time we have made considerable investments in the research and development of such methods, and have been involved in a number of significant initiatives.



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Analysis of Results - the savings

Where building like for like weather tight constructions, the results from the study highlight the benefits of thin-joint masonry as a cost effective construction method.

Cost (£/m ²)		
Thin-joint masonry	830	1.5% Increase
Masonry Aircrete blocks	840	

Whilst material cost of thin-joint masonry are slightly higher, they are more than offset because the method saves time on-site, therefore saving labour and site management costs.

Cost (£/m ²)		
Thin-joint masonry	830	2.6% Increase
Masonry Aircrete blocks	850	

Although basic raw materials prices of aggregate blocks are lower than aircrete, the total cost of thin-joint masonry is lower due to time savings on-site.

Cost (£/m ²)		
Thin-joint masonry	830	8.6% Increase
Timber frame	900	

Compared with timber frame the greatest difference is the cost of the superstructure. Thin-joint masonry is similar to timber frame in build speed, but is lower in overall cost due to lower materials and plant costs.

Cost (£/m ²)		
Thin-joint masonry	830	9.7% Increase
SIPS	910	

Again, with SIPS the greatest difference is found in the cost of the superstructure, with thin-joint masonry in build speed, but lower in material and plant costs.



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Conclusion

Thin-Joint masonry construction provides a significant cost saving over other forms of construction.

Thin-Joint masonry offers a reduction in time on site over traditional build methods.

Thin-Joint masonry retains the on-site flexibility of traditional build whilst also allowing shorter, less onerous lead times.

List of Assumptions

Programme

- Christmas and Easter breaks ignored
- No allowances for inclement weather
- Assumed sufficient labour available
- Assumed no delays due to theft/vandalism
- Lead times for floors & frames not considered (usually 12-16 Weeks)
- Assumed all truss can be erected using site forklift
- Assumes small groundworks gang, on site for 21 weeks

Build Costs

- Assumes payment upon completion for timber frames
- Insulation priced to meet U-values of 0.18W/m²K for walls and 0.13W/m²K for floors
- Assumed no variation in design costs for alternative methods of construction
- Assume external works as excluded
- All methods have external brick facade
- Assume good ground conditions i.e. no contamination cost/piling
- All price exclude VAT
- Service connections, utility costs, land costs etc. excluded
- Assumed no changes in heating system required between construction methods
- Rates taken from actual contractor & current market rates

- Price current to 3rd quarter 2015
- Prices based on working in outer London
- Block prices taken from current builders merchant rates, excluding any discount
- Timber frame prices taken from actual quotes received

Masonry Construction - Aggregate Blocks

- Based on traditional cavity wall using blocks with partial fill, rigid board Celotex insulation to achieve U-Value of 0.18W/m²K
- Pre-cast concrete beam and block floor, using aggregate infill blocks

Masonry Construction - Aircrete Blocks

- Based on traditional cavity wall using blocks with partial fill, rigid board Celotex insulation to achieve U-Value of 0.18W/m²K
- Pre-cast concrete beam and block floor, using aircrete blocks, 3.6N/mm²

Timber Frame

- Open panel timber frame system, with ply sheathing. Two layers of rigid Celotex insulation. Brick external skin
- Pre-cast concrete beam and block floor, using aggregate infill blocks

SIPS Frame

- Insulated panels with brick external skin
- Pre-cast concrete beam and block floor, using aggregate infill blocks

Thin-Joint Masonry

- Cavity wall construction using large format aircrete blocks with thin layer construction. Brick outer skin with rigid Celotex partial fill cavity insulation
- Pre-cast concrete beam and block floor, using aircrete blocks, 3.6N/mm² infill blocks



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