Last month, I started comparing the pros and cons of the two main methods of house building: brick-and-block and timber frame. The main difference between the two methods is the inner leaf of the exterior walls: blockwork in one case and timber panels in the other.

The comparisons last month were focussed on energy and environmental factors, and there was no decisive advantage to either method. Let’s continue with the comparisons to see what conclusions we can reach.

Sound insulation

The heavy mass of a brick outer skin greatly reduces the intensity of external sound transmitted through the walls. I don’t know of any studies of the matter, but probably most noise enters a house through the windows, roof and flues, rather than through the walls. So as far as the insulation of external noise is concerned, there is likely to be little difference between the two methods of construction.

But for sounds generated within the house it is a different matter, and timber frame houses have the reputation of being noisier than masonry ones. In general, for reducing the transmission of sound though a material, the more mass (ie, weight) the better. So a blockwork partition is more effective than a basic timber panel with just a layer of plasterboard on each side. (If sound insulation is a matter of great concern to you, use solid concrete blocks, rather than lightweight ones. And fit heavy internal doors – it would be good if the joinery brochures gave the weight of internal doors as some measure of their sound insulation value.)

Fortunately, the sound insulation of a timber panel can be greatly improved by fitting a layer of mineral wool within the panel. This material, rockwool or glasswool, has a sound deadening effect way beyond what would be expected for its mass. The revision of Part E of the building regulations in 2003 stipulated for the first time some requirements for sound insulation within a detached house. Minimum standards were set for walls of bedrooms and WC’s, and for upper floors. Both lightweight, 10 cm blockwork and timber panels with mineral wool inside meet the requirements. (If you are purchasing a timber frame kit you might wish to stipulate that all the internal walls meet these minimal requirements. If timber frame manufacturers provided all internal panels with acoustic insulation as a matter of course, their houses would not have acquired a ‘noisy’ reputation.)

Precision or adaptability?

You can be fairly sure that a timber frame kit will be made in accordance with the plans for the house. (Though not totally certain – mistakes are occasionally made.) And the frame will be erected in accordance with the plans. If the plans show a certain layout for kitchen units, for example, you know that the kitchen, as built, will have the right dimensions.

But in the building of a blockwork house you are in the hands of your bricklayers – so check their work regularly. Just from my own experience, you can end up with a window in the wrong position, a partition wall out of place, and floor joists at the wrong level (ie, wrong ceiling height). In short, there may sometimes be deviations from the plans.
On the other hand, deviations can sometimes be desirable. During the course of a build, some improvement to the plans may become apparent (e.g., changing the position of an internal door), and usually the bricklayers will be able to adapt to your new requirements. Remember, though, that it is better by far to modify plans before you build, rather than during a build.

And sometimes deviations may be forced upon you. It is not uncommon for groundworkers to lay foundations with inaccurate dimensions. Bricklayers can easily adapt, but not frame erectors. If a frame is to be erected and the foundations are more than a few centimetres out from the plans, then you will have to waste time, and possibly money, while the groundworkers correct their work. (Try to avoid this by emphasising to your groundworkers the need for accuracy before they start work.)

Another aspect of adaptability is the making of alterations in the future. If alterations to a timber frame are to be made, then structural calculations will be required – unlike blockwork.

Managerial supervision

As mentioned above, there is more likelihood of mistakes being made in the building of a blockwork shell than in the erection of a timber frame. Moreover the building of a traditional blockwork shell takes a lot longer. So more managerial supervision is required for building in blockwork rather than timber frame. (More understanding of the building process is required, too.)

Snagging

After a house has been occupied and centrally heated, the plaster on blockwork is liable to develop some cracks. This is of no structural significance, but it does require the return of a decorator (unless you DIY). Timber frames are dry-lined (the plasterboard joints are taped and filled) or the plasterboard skimmed. Either way, cracking should not occur.

Speed of construction

In the past, the fastest builds have been timber frame – three to four months from the first arrival of a digger on site to the last departure of the decorators’ van. So the claim that timber frame construction is faster certainly has some justification. By the way, if you find the idea of a fast build appealing – and who doesn’t? – you should be aware of the Brinkley Triangle. In his ever popular book, The House Builder’s Bible, Mark Brinkley puts three desirable qualities of a build – quick, cheap and good – at the points of a triangle. You may be able to achieve two of these qualities in a build but not all three. If you are going for quickness, which of the other two qualities are you ready to sacrifice?

With the foundations in place, it generally takes a week, or so, to erect a timber frame. With masonry walls, on the other hand, it is two to four months before the roof trusses are in place. No contest, you might think. But on closer examination, the situation is not so clear cut. It is usually the granting of detailed planning permission which is the signal for ‘all systems go’. You then place a firm order for your timber frame kit, and get in the groundworkers to lay the foundations. The foundations may be in place within a month. Then what happens? You wait for the timber frame kit to arrive. Since delivery time for a kit is generally two to three months, nothing happens.
on site for a month or two, and much of the speed advantage of putting up a frame has been lost. In contrast, a lorry load of blocks will arrive on site in less than a week.

Moreover, the block manufacturers are now claiming that a blockwork shell can be put up just as quickly as a timber frame one – by the use of thin joint blockwork. This method has been used in Northern Europe for decades, but the UK’s conservative building industry has been very tardy in taking it up. Essentially, a thin layer of ‘adhesive’ is used to stick the blocks together. The adhesive sets much more quickly than mortar, allowing many more courses of blockwork to be laid in a session. And taking a leaf out of the timber framers’ book, the block manufacturers have shown that it is possible to build the whole inner leaf of blockwork first, adding the outer leaf of brickwork after the roof has been put on. Building the blockwork inner leaf and erecting the roof trusses may take only a week or two – comparable to timber frame construction.

Support for selfbuilders

There are several companies that offer selfbuild packages – a design, and the basic materials for building it. Usually a package also includes selfbuild advice and help with gaining local authority consents. All but one of the package companies base their kits on timber frame. (The exception is Design and Materials, whose kits are based on masonry construction.) For novice selfbuilders, the ‘helping hand’ offered by these companies is appealing. This, together with the ‘free’ design that comes with a package, may more than compensate for the higher cost of purchasing materials via this route (perhaps 30%).

Anyway, if you do want to go via the package build route, the choice of companies is much greater for timber frame construction.

Costs

Most selfbuild pundits say that the build costs for timber frame and for masonry construction are much the same. Not me. I say that timber frame is more expensive. In my book, All About Selfbuild, the cost of building the shell with a timber frame is said to be about 5% more than with blockwork. But it now seems as though the timber frame method costs even more. Last year the Government issued a report entitled Housing Supply by Kate Barker. For the report, research was undertaken by the Building Cost Information Service (a subsidiary of RICS) to compare the costs of timber frame and blockwork construction. To quote from the report

Timber framed dwellings cost on average 8.9% more to build than traditional schemes [brick and block construction].

Was that simply because the timber frame dwellings were larger, I wondered? But no, BCIS told me that that the figure resulted from comparing like with like, both for size and specification of fittings, etc.

Robustness

A platitude is that we live in uncertain times. (My sense of history is that times have always been uncertain!) Anyway, who knows what the future holds and what adversities your house might have to withstand one day: flood, fire, explosion,
termites, or whatever. I would expect a masonry house to withstand these better than a timber frame one.

(Termite – in the UK? Yes. Perhaps as a result of global warming, termites are becoming established in some parts of southern England. Some termites gobble up wood. If you are worried about this as a possibility, you can ask for your timber frame to be treated.)

**Summary**

Here is the gist of the enquiry so far:

*Thermal insulation*
It is fairly straightforward to reach the present fairly high standards of wall insulation by either method of construction. But if you want to have extremely good thermal insulation (eg, a U value below 0.2 W/(m².°C) for the walls), the cost advantage is with brick and block – to put in thicker insulation, just make the cavity wider.

*Thermal stability/responsiveness*
Blockwork construction gives more thermal stability but less responsiveness than timber frame. Most people prefer to have thermal stability.

*Airtightness*
To reach the fairly good standard of airtightness that comes naturally to timber frame construction, blockwork should be parged (plastered) in floor voids.

*Environmental factors*
Timber is a renewable resource; most lightweight blocks are made largely from recycled material. Timber incorporates more embodied energy than blocks.

*Sound insulation*
Both methods can give fairly good standards of sound insulation. But for extra good sound insulation, build internal walls with solid concrete blocks.

*Precision or adaptability*
As built, the dimensions and layout of a timber frame house will be in accordance with the plans. Mistakes are more likely to be made with blockwork built on site. On the other hand, blockwork can be adapted to inaccurate foundations and minor changes of plan.

*Managerial supervision*
Blockwork construction requires more supervision than timber frame.

*Snags*
Blockwork construction is more likely than timber frame to require the return of a decorator.

*Speed of construction*
The shell of a timber frame house can be built much faster than a conventional blockwork one – as long as you can get the frame delivered when you want it. But if you are happy to be a pioneer, a shell with thin joint blockwork can be built almost as fast as one with a timber frame.
Hand holding
If you want the support offered to selfbuilders by package build companies, there is a much greater choice for timber frame.

Cost
The cost of a timber frame shell is likely to be about 5% - 18% higher than a blockwork one. (The cost of the shell is usually about half the total build cost.) If you are renting accommodation during the build and if you build fast with timber frame, then a saving on rent may go some way to offset a higher build cost.

Robustness
It is difficult to find quantitative comparisons, but many people would say intuitively that a blockwork shell is likely to withstand adversity more robustly than a timber frame one.

Conclusions
If you want the assistance and design that comes with a selfbuild package, your choice is much greater for timber frame construction.

For a fast build, timber frame has the proven track record – provided you can get a fast delivery of the frame. But if you are happy to be a pioneer, thin joint blockwork also gives a fast build.

Building with blockwork requires more managerial supervision and expertise.
Building with a timber frame is more costly.
Neither method has any decisive advantage, but overall, blockwork probably results in a better house, especially for the long term.

FURTHER INFO:

Building Cost Information Service
Tel 020 7695 1500
www.bcis.co.uk

BCIS Rebuilding Cost Calculator
BCIS have an online calculator for finding the rebuilding cost of a house (for insurance purposes). You could use their rebuilding cost per unit area for a modern house in your region as a very approximate indication of the cost to build your new home. (The figure is likely to be on the high side since it includes the cost of demolition and professional fees.)
http://calculator.bcis.co.uk.

The Barker Review of Housing Supply
A large section of this exhaustive review is devoted to commercial house building. Nowhere is there a mention of selfbuild, even though selfbuilders are building at least 10% of new houses – a case of the government listening to businesses but not to people.
http://www.hm-treasury.gov.uk

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