

In the frame

Alternatives to brick and block construction are becoming increasingly used during the building process. Graham Raven argues the case for steel framed homes, and explains why it may be the most sustainable option for social housing.

The UK construction industry is faced with an ever-increasing demand for new affordable homes.

Combine this with a lack of traditionally skilled workers, rising construction costs, new environmental regulations, and a diminishing amount of brownfield land, and the provision of these homes becomes quite a challenge.

Nowhere are the demands for affordable housing more acute than in the local authority building sector, where supply issues are coupled with a responsibility to provide high quality homes that are also in line with the Government's sustainable communities agenda. Social housing must be of a high design standard yet affordable, erected

quickly whilst maximising the utilisation of space and meeting exacting environmental criteria.

Whereas the delivery of these seemingly conflicting priorities may overwhelm the traditional construction sector, modern methods of construction (MMC) offer a cost-effective, efficient and sustainable solution to many of the UK's housing and construction problems.

It's a steel

Used by over half of the Government's Design for Manufacture competition winners, who successfully built high-quality homes for the construction cost of £60,000, steel housing systems demonstrate that it is possible to be cost

efficient, improve design standards and use an entirely recyclable material at the same time.

However, while the merits of steel buildings are widely accepted by house builders in Australia and the US — and form over 70% of the UK's commercial construction sector — the proportion of steel in the UK residential market is still relatively small — currently approximately 3%.

Nevertheless, changes are in the pipeline and indicate substantial growth of steel homes in the near future. The success of Design for Manufacture competition has given the opportunity to demonstrate to the industry the benefits of steel. Research company MSI forecast a seven-fold increase in the prefabricated market to £300m, by 2009.

This growth in steel housing reflects the fact that the qualities of homes constructed largely off-site are increasingly being proven. Indeed, manufactured off-site, steel frame systems are a world apart from the poor quality 'pre-fabs' often associated with post-war construction. Designers now understand the construction details needed to provide durable buildings and strict factory controlled conditions enable accurate, quality workmanship, resulting in fewer defects than on-site construction. This makes steel frame housing more predictable, helping contractors to plan schedules more

Steel buildings are widely accepted by house builders in Australia and the US



The National Audit Office found that by using MMC it should be possible to build up to four times as many homes with the same amount of on-site labour and construction time.



effectively and ultimately saving time and money.

Clock watching

Time efficiency is a major advantage of modern construction methods. The National Audit Office found that by using MMC instead of more established techniques, it should be possible to build up to four times as many homes with the same amount of on-site labour and construction time could be halved.

Assisted by 'just in time' delivery from factory to site, a streamlined supply chain helps to reduce on-site disturbance and delays, eliminating problems associated with storing materials that are vulnerable to theft or damage.

Facilitated by computer-aided design and manufacture, off-site processes allow for greater efficiency and volume of production and enable components to be created for individual jobs, serving to minimise waste. Furthermore, the bespoke aspect of manufactured steel systems means that even small or awkward plots of brownfield land can be used for essential new homes.

Design led

The modern methods used to manufacture steel housing systems also enable high standards of design quality. The long span capabilities of steel joists reduce the amount of supporting framework, therefore enhancing the flexibility of floor plan and room size. By

reducing the need for internal supporting walls, space can also be reconfigured and adapted to suit the needs of the householder over time.

Steel homes also present major advantages in terms of sustainability. Not only is steel 100% recyclable, resulting in saved landfill space and the conservation of natural resources, but providers of steel homes can meet and even exceed the latest environmental building regulations. Factory production and less work on site provide more conclusive and safer working conditions. Furthermore, a stable workforce encourages training and skills development.

By adding supplementary insulation to stud walls, modern steel homes can exceed Part L Building Regulations and the recently launched EcoHomes 2006 'Very Good' standard, without having to compromise the amount of useable floor space. This level of energy efficiency

is imperative for all organisations intending to receive English Partnerships or Housing Corporation funding.

What is more, the modern insulation materials used in steel frame construction produce low U-values and high standards of air tightness, which promote a warm,

draught-free environment, reducing energy consumption and the associated utility bills for the occupant. Similarly, the multiple and resilient layers of materials, along with a cavity and insulation in lightweight steel construction, provide excellent acoustic performance.

A future of MMC?

There is no doubt that momentum is growing for the UK house building industry to embrace MMC, and that steel in particular, is challenging the dominance of more traditional materials. With its speed of construction, cost effectiveness, outstanding performance, and unrivalled sustainable qualities, the potential benefits of steel systems are far reaching, providing a genuine opportunity for the construction industry to meet growing, and often conflicting demands.

Steel systems are a tried and tested modern method of housing construction, which can and have already been used to build thriving, vibrant and sustainable communities. It is time local authorities also embraced new materials and processes, which not only enable large amounts of affordable housing to be constructed efficiently, but also reflect high levels of design quality contributing to an improved quality of life for residents.

■ Graham Raven is convener of the Steel Homes Group

■ For more information visit www.readerlink.co.uk or mark

READERLINK 308

The Riddings Housing Development was constructed using steel frame

