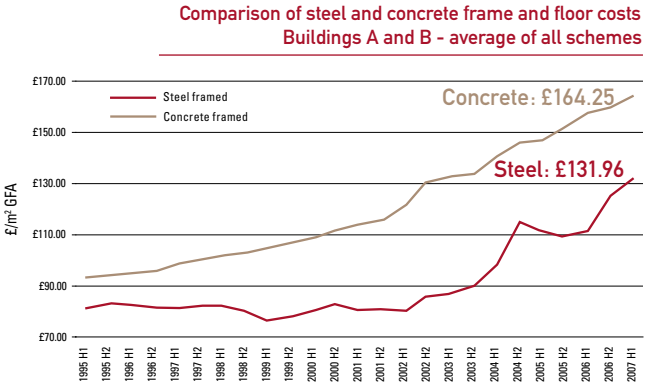
The comparative cost of steel and concrete building frames...

...the facts

Steel still the first choice framing solution

The latest update to the independently produced cost comparison study for commercial buildings proves that structural steel framing solutions are faster to build and more cost effective than reinforced concrete alternatives.



The study, conducted by a team including Davis Langdon, Arup and MACE, considers two typical modern commercial developments (see table below). A range of steel, composite and concrete based frame solutions for both buildings were fully designed, costed and programmed, with prices current in June 2007.

This independent study was first carried out in 1993 and is the established industry standard. The building design and construction methods are regularly reviewed and updated to reflect modern practice. The latest results are summarised below and more information can be found at www.corusconstruction.com/coststudy

Building A 2,600m² office, Manchester	Composite steel beam and slab	Slimdek (steel shallow floor solution)	Long span cellular beams	Reinforced concrete flat slab	Insitu frame with precast floors
Frame and floor cost (£/m² GFA)	108	136	133	156	130
Frame construction time (weeks)	7	6	6	8	8
Overall building cost (£/m² GFA)	1187	1201	1228	1253	1228
Overall construction time (weeks)	42	40	41	44	43
Building B 18,000m² office, London	Composite steel beam and slab	Slimdek (steel shallow floor solution)	Long span cellular beams	Reinforced concrete flat slab	Post tensioned ribbed concrete slab
Frame and floor cost (£/m² GFA)	123	151	149	182	194
Frame construction time (weeks)	13	13	13	18	19
Overall building cost (£/m² GFA)	1881	1883	1896	1973	1951
Overall construction time (weeks)	67	67	66	76	76

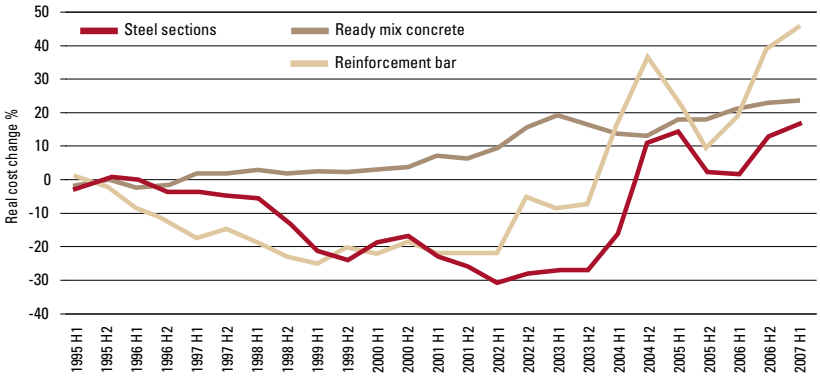
The cost of a frame and floor is a relatively small part of the total cost of a development. However, the selection of a steel frame reduces timescales and has a beneficial effect on other major variable cost items such as foundations, cladding and services, leading to significant cost savings for the overall project.

Construction costs relative to inflation

The Department for Business, Enterprise and Regulatory Reform (formerly Department of Trade and Industry) produces monthly statistics tracking construction material costs.

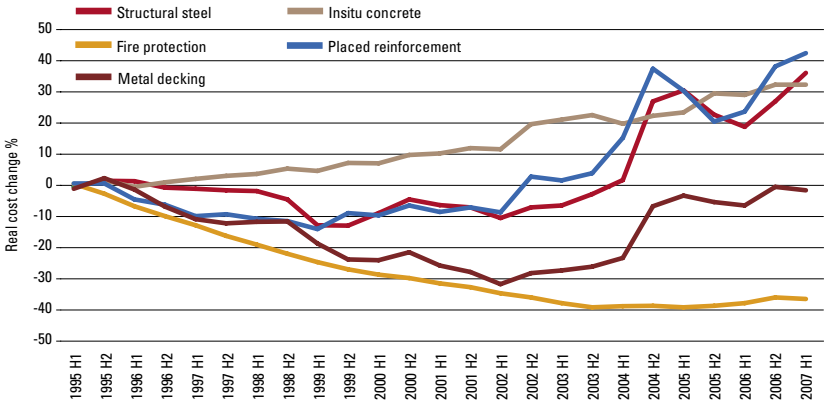
The graph below shows them plotted against GDP inflation to provide a comparison in real terms.

Raw material costs relative to inflation



When looking at the constructed component costs over the same period, it can be seen that the relative costs of fire protection and metal decking have fallen in cost since 1995, which has helped maintain steel's competitive position over concrete.

Constructed component costs relative to inflation

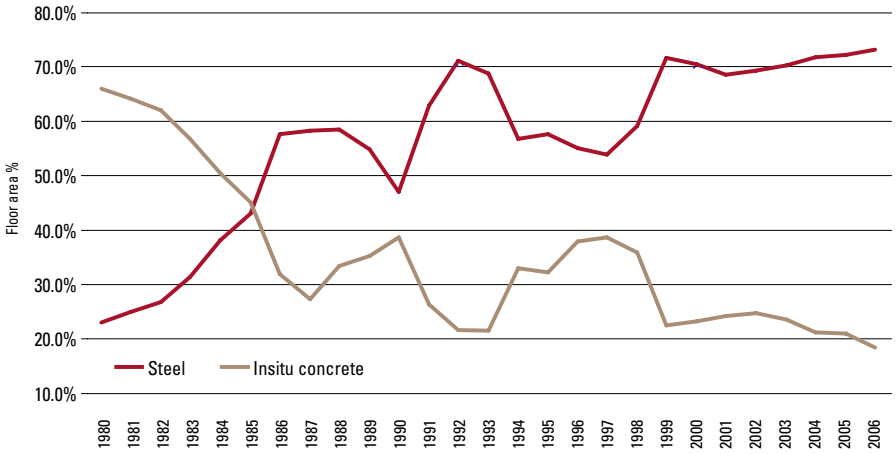


Construction market prefers steel

Cost effectiveness is one of the many advantages of structural steelwork. This position is reflected in another long established independent industry-standard survey, which has measured the relative market share of structural frames annually since 1980.

The most recent results show that steel is preferred as a framing solution for over 73% of multi-storey commercial buildings, whilst insitu concrete accounts for 18%. The remaining 9% of the market is attributed to load bearing masonry, pre-cast concrete and timber.

Market share for steel and concrete frames
UK multi-storey buildings



More information

For further detail please visit: www.corusconstruction.com/coststudy

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