



Zig Inge Retirement Village – this residential complex utilising a structural steel frame is nearing completion at Camberwell, Victoria.

Structural Steel – The material of choice.

PROMINENT UK STEELWORK CONTRACTOR, RICHARD BARRETT PRESENTS HIS VIEWS ON THE DRIVING FORCES AND ISSUES FOR STRUCTURAL STEEL

INTRODUCING RICHARD BARRETT



Richard Barrett is a Structural Engineer and Managing Director of Barrett Steel Buildings, the United Kingdom's 10th largest steelwork contractor specialising in Design & Build projects.

He is a Director of Barrett Steel, the UK's largest independent steel stockholding (distributor) company.

Richard is on the Council of the British Constructional Steelwork Association and chairs both the Process and Technical Committee, and The National Steelwork Contractors Group.

He chairs the technical Management Board of the European Convention for Constructional Steelwork (ECCS), the European association leading the drive for implementation of Eurocodes across the 23 member countries.

THE DRIVERS AND ISSUES FOR STEEL

Richard Barrett's visit was at the invitation of the Australian Steel Institute, as a guest speaker at the 2003 Australian Steel Convention. He also gave a series of industry briefings in association with Engineers Australia, under the sponsorship of Pacific Computing, the Australasian distributors of X-Steel.

In an in-depth interview with OneSteel Solutions, Richard Barrett discussed some of the drivers and issues at play in the economy and how these impact steel construction.

Richard Barrett describes the UK market as the most successful steel market in Europe.

With nearly 70% of new office buildings in the United Kingdom being built with structural steel frames, steelwork contractors in the UK look to new markets for future growth.



However he said, “The current UK market is quite weak, particularly London, where weakness in the world financial market has meant construction slowdown and an oversupply of office space. So that market, which was a major market for steel, has dried up. The biggest market for steel in the UK, the shed market for warehouse and distribution, has also slowed. So about 65 percent of our activity is in an area which is in cyclical decline.”

MARKET ANALYSIS AND ADVERTISING

Despite this decline the UK steel industry has managed to maintain volumes and tonnages. But how?

Richard Barrett told OneSteel Solutions that the National Steelwork Contractors Group looked at other markets where they could boost volumes and take market share from concrete. They identified residential, the very strong education market for schools and universities, hospitals and carparks.

“Carparks and residential are two areas where concrete has the larger market share. The residential apartment building is a growth area where we have about 10 to 15 percent of the market, whereas in offices it’s 69 percent. If we can drive those markets forward the performance of the steel industry will be stronger.”

Market capture has been the outcome of astute market analysis, acted on by aggressive advertising.

“The National Steel Contractors Group passed the hat around and the ads went out” Richard Barrett said, “through Construction News, a tabloid size trade publication, targeting developers, builders, the architects and engineers. We took three large pages full of interesting buildings, built in steel.”

“The reaction to the campaign has been extremely positive with developers and builders, who have traditionally developed in concrete, saying: “I didn’t know they did these in steel. The campaign has offset the decline in the office and the shed markets. We are holding the volumes and taking market share from other materials.”

DESIGN AND BUILD

On some projects in the UK, Richard Barrett explained, the steelwork contractor does the steelwork design. “I’m not talking about doing the architectural aspects but the steelwork contractors are deciding the size of the steel frame and the options and the layout, if they get in early enough.”

“Design of high profile projects will always stay with the big consulting firms.

But the mainstream market for regular buildings, ten storey office blocks or five storey apartments, is perfect for a Design and Build steel contractor and the market is increasingly moving that way.”

“There will always be a role for the consulting engineer, but the steelwork contractor will, most of the time, come up with a better design on these projects. That’s because he’s driven to win the job through competition so has to try harder to come up with the optimum solutions. He’s also in possession of information the consulting engineer, realistically, can’t get, such as material availability, material prices, different sizes, different cuts of steel. He can design the project to suit his commercial terms, the agreements he has with the steel mills or the steel distributors.”

“The steelwork contractor can also design to suit the fabrication facilities. We tailor our designs precisely to fit our machines so the pieces are ideal to go through the machinery. We’re designing it to be easy to build so you’ve got the full depth of the vision.”

“But in the construction industry we too often divorce the two and put the professionals in to do the design.”

“Over the last 20 years Design and Build has become predominant in the single storey market - a massively important

One of Barrett Steel’s major UK residential projects, designed using structural steel framing.

THE IT ADVANTAGE

Barrett Steel Buildings operates an integrated suite of engineering design, analysis and steel detailing packages linked to an in-house multi function program for cost estimating. Central to the suite are the shop-detailing and fabrication control software packages.

With 10 engineers on staff the company is a hybrid between a consulting engineer and fabricator. All the design, which the company considers a core function, is done in-house. Steel detailing, however, is done at sites in the UK, Brisbane, Australia and Auckland, New Zealand.



market - with almost all industrial and warehousing and a good chunk of retail and leisure. About 80 percent of this is steelwork contractor designed. In multilevel it's more like a quarter but there is no doubt the trend is moving inexorably toward the Design and Build option."

"You can cut the tonnage by say 40 percent on a competitive consultant design. So when people say what's the comparative cost between steel and concrete it almost means nothing because you have to ask who's designed it."

THE DRIVERS FOR STEEL

Richard Barrett maintains that in countries with higher GDP per capita, steel will have a higher market share because of what he calls 'the atrium factor' where clients are looking for more flexibility, light and interest in the structure, factors to which steel is well suited.

"But the really big drivers are the flexibility you get with structural steel, the bigger spans, the open floor spaces which give you wider areas, fewer and smaller columns taking up a lot less space in the offices area and providing enhanced light and space."

"The speed of the actual build and the fact that it can be altered during construction are especially helpful with hospital construction."

"I reckon nothing can beat a steel framed solution for floor to floor height so the floor zone, including integrated services, will be less or as good as anything concrete can provide, even with a post tensioned flat slab solution."

"The floor height is obviously a key driver for the economy of the building because it reduces the amount of material you have on the façade. With height restrictions in the UK in some areas limiting projects to 10 storeys, you can sometimes squeeze in an additional floor, because you're saving 200 mm every floor, and that can transform the economics of the site. You get a totally different approach to the duct work and the loaded beams."

SAFETY FACTORS

There are powerful drivers on safety on all construction sites. In Europe construction design and management regulations place a 'duty of care' on the designer to take into account the construction of the building and its post construction maintenance. In the UK there is a major drive on trying to reduce site accidents.

"One thing you can do to make the building safer to build is to do as much as possible of the work off site. On a steel site risks are reduced by keeping the number of site personnel to a minimum. That 'duty of care' is just the way the world is going."

FIRE ENGINEERING

In the UK, the steelwork contractor, if he's any good, should also be doing the fire engineering design. The old fashioned way was to design the steel and then design the fire protection system. Now we integrate both so you get the optimum steel beam with its fire protection. This might mean you might have a beam that is slightly heavier with less fire protection.

In Australia, fire safety engineering offers an enhanced solution through the reduction, or even the elimination of passive fire protection, in combination with active sprinkler systems. This allows many forms of multi-level steel framed buildings, for instance carparks, offices, open sports stands and retail buildings, to have the majority of the structural steelwork constructed without the need for such protection.

SUSTAINABILITY

"There is pressure from the UK government to have a sustainable and profitable building industry. Pressure is also coming from clients. The blue chip companies, commissioning a building, want it demonstrated that the building has been done in a sustainable way because shareholders now expect and demand it.

Richard Barrett thinks we have a fantastic story to tell on sustainability and says the quicker it becomes more prevalent the better.

"Steel has a massive advantage over concrete as a sustainable material so there are huge possibilities. It's easier to adapt, it's fundamentally more flexible, it has fewer columns so you can rearrange it at relatively low cost so that makes it more sustainable right from the start."

"A steel building will tolerate significantly more change than a concrete building, and the chances are the material in the first place may have been used before."

"Finally if you do need to demolish the building you can recycle the steel. In the UK 11 percent of steel is actually reused rather than recycled, by far the best thing you can do, and 83 percent is recycled and only 6 percent goes to waste. A concrete building is messy to demolish and grind up. The waste is used as some sort of base course so it's about as low a grade application as you could imagine."

THE SUPPLY CHAIN

The UK Government viewed the construction industry as primitive and inefficient and commissioned a report into its operation. One of the ways recommended for improvement is to hold together project teams so that experience and efficiency gains are not lost. This is leading to a move towards more integrated supply chains in most of the key areas.

INFORMATION KEY

Visit the OneSteel website at: www.onesteel.com for information on Fire Safety Engineering with structural steel

or contact
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