

Infill Walls in Light Steel for Cambridge Apartments



Leading architectural practices Feilden Clegg Bradley (FCB), Alison Brooks Associates (ABA), and Maccreanor Lavington Associates (MLA) have created an eclectic mixture of modern designs for the former Inland Revenue site at Brooklands Road, Cambridge. A common theme running through the 500 apartment project is the efficient use of living space and the mixture of private and commercial areas for this high value urban site.

Although the primary structure of most of the buildings is in pre-cast and in-situ concrete, Metek Building Systems light steel framing solution was used for all the internal and external walls on the main facades and for the roof structure. Building ABA01 (above) was one of the first to be completed and consists of 4 storeys with a penthouse apartment enclosed by a curved steel roof comprising Rectangular Hollow Section (RHS) beams, light steel purlins, and light steel infills.

The 3 storey FCB buildings emphasized the public amenity by creating communal first floor space and included 9m high chimneys feeding all apartments. The structure of these chimneys was conceived using steel posts and light steel infills – the first known application of this technology in such tall chimneys. The patio doors required a light steel supporting structure capable of over 4m span which Metek provided.

The construction programme for the first phase of the project necessitated a tight 6 months to completion of the show houses from start on site, and a further 4 months to completion of the first phase of apartments and houses. With the first phase almost fully sold, client Countryside Properties has embarked on the second phase of the multi-million pound project using the same construction technology and project partners.



Metek Annexe design with hot rolled curved sections

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Technical Details

MBS Application Benefits

- Rapid erection of a dry building envelope.
- Ability to respond to dimensional inaccuracies of the supporting concrete framework.
- Curved roof and variety of roof profiles
- Support to wide patio doors.
- Chimneys of 9m height using steel posts and infills.

Project Team

Client:

Countryside Properties

Contractor:

Kajima

Architects:

Feilden Clegg Bradley,
Alison Brooks Associates,
Macreanor Lavington Associates

Light steel Framing:

Metek Building Systems

Curved steel:

Angle Ring

Construction Details

The light steel infill walls ranged from 2.8 to 4.2m height and were mostly designed using 100mm x 1.6mm thick light C sections. Wide openings for patio doors were created using multiple C sections for posts and lintels without changing the basic construction technology. Importantly, the as-built dimensions of the concrete frame were measured on-site, and faxed back to Metek's design-office for next day manufacture. In this way, Metek could satisfy both 'just in time' delivery of the pre-fabricated light steel wall panels, and could also achieve dimensional accuracy for easy installation. This was essential to meet Kajima's tight construction programme.

The curved roof of building ABA01 posed particular technical questions, which were solved by bending of the 200mm x 100mm RHS rafters to a radius of as low as 700mm. Purlins comprising 175mm deep C sections spanned up to 6m between the RHS rafters and their Autoform ends were screw-fixed to the face of the RHS. The roof was clad in copper sheeting attached to plywood that was itself screw-fixed through the closed cell insulation to the purlins. Small chimneys and roof-



Aerial view of Metek's light steel framing – works in progress

lights were directly fixed to the purlins. A canopy was also constructed using steel C-sections bolted to the RHS members.

In the FCB buildings, pre-fabricated light steel roof panels spanned directly between light steel separating walls. The chimneys used 100mm square SHS posts bolted to the concrete slab with light steel infills in the form of lattice members between the posts. The steelwork also had to support the brickwork facia to the chimneys, which was supported directly on lintels attached to the steelwork.

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