

High-life for Light Steel at Wembley



The rapid construction programme and site logistics of Wimpey's 150 unit Chalkhill development in Wembley led the contractor to choose Metek Building Systems light steel framing solution to replace blockwork walls, and mono-pitch light steel lattice trusses to replace the previously specified timber roof trusses on all the multi-storey apartment buildings.

Blocks J and N are 7 and 8 storey apartment buildings consisting of a concrete frame, and a 2 storey penthouse level constructed in a primary steel frame with light steel roof purlins and infill walls. Externally, the infill walls supported both brickwork and insulated render cladding. Pre-fabricated steel balconies supported on tubular steel posts provide magnificent views of Wembley's new stadium only a mile away.

The light steel infill-walls and roof trusses were delivered 'just in time' to site to minimize storage and also to meet the contractor's programme to completion. The £0.5 million contract for Metek was completed in only 11 months. Importantly, waste was effectively eliminated, and more complex wall panels could be manufactured to the as-built concrete frame rather than the theoretical dimensions, which avoided re-work and delays.

The buildings achieved an ECO-Homes rating of 'Excellent', and the use of off-site construction for the infill walls meant that the impact of the construction operation on the urban locality was reduced. Wimpey construction manager Jamie Albone, believes that light steel framing will become the preferred form of wall construction for multi-storey buildings.



Metek light steel external envelope high-level infill

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Technical Details

MBS Application Benefits

- Light steel infill walls provide a variety of window sizes and wall heights.
- Long span mono-pitch lattice roof trusses on all buildings.
- Special holding down details developed to resist wind uplift on roof.
- Met the contractor's rapid construction programme.
- Eliminates waste and re-work.

Project Team

Client:

Wimpey and Metropolitan Housing Trust.

Contractor:

George Wimpey

Architects:

PCKO for apartment blocks

Consulting Engineer:

TPS Consult and Walsh Associates

Light steel Framing:

Metek UK Ltd.

Construction Details

The light steel infill walls consisted of pre-fabricated panels using 100mm x 1.6m C-sections at a spacing of 400 or 600mm, depending on the wind exposure and floor-floor height. Multiple C-sections were used to support patio doors or large windows. External insulation and runners to restrain the brickwork were screw-fixed to the light steel framing. Insulated render was attached to cement particle boards that was also screw-fixed to the light steel framing.

The light steel roof trusses on the low-rise buildings spanned up to 9m and, in these buildings, were supported by the blockwork. The roof slope of 9° meant that the depth of the mono-pitch trusses ranged from 1200 to 300mm at either end. Because of the high wind uplift forces at this roof slope, the trusses were attached to steel straps fixed to steel channels and posts embedded in the blockwork. On the high-rise buildings, the roof trusses were attached directly to the light steel infill walls.



Metek roof trusses to accept Metek roof panel - works in progress

The roof to the penthouses in the apartment buildings J and N consisted of hot-rolled steel RHS beams supporting 100mm x 1.6mm C-sections in pairs spanning up to 4.5m. At the edge of the building, these beams were designed to support the weight of window cleaning equipment suspended from the roof. The roofing consisted of composite panels screw-fixed to the light steel C-sections.

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