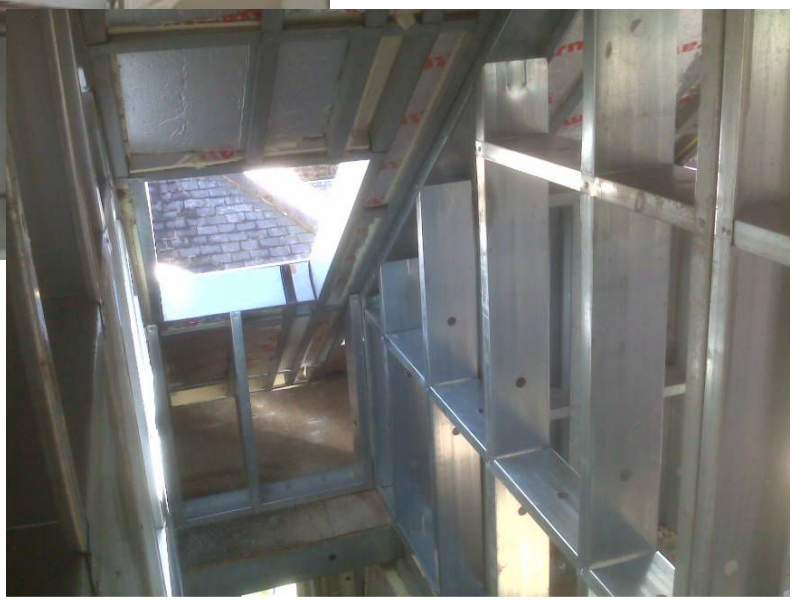

Project Overview

Client:	METCON (Ireland)
Architect:	Chris Boylan
Status:	Final Fit Out

BALLYMAN ROAD, Dublin – Residential Property

A bungalow with accommodation in the roof, and hipped windows in the roof. Foundations and light gauge structure were all completed by Metcon (Ireland) using their in house erection crew.

The building was made weather tight very quickly as the structure was manufactured using 200 x 50 light gauge steel sections to give the increased wall thickness for the U value required. Insulation was placed outside the frame to give a warm frame construction, and mineral wool between the studs was used to further increase the insulation. The whole structure was clad to the outside face with Dragonboard, a dry lining product and directly rendered.

Light steel framing uses galvanized cold form steel sections which were used as the main structural component. Wall panels, floor cassettes and roof trusses were prefabricated in a factory and later combined on site. Cement rendered finish was used as an external wall finish, though any skin can be applied as the light gauge steel carries the structure, and loads. Typicaly floor cassettes were designed to span between load bearing wall panels on z hangers to enable ease of levelling of the finished building. Floors are Givlon screeded using Lewis decking which was directly fastened to the floor cassettes.

The duo pitched roof consists of trusses assembled from C-section members. One of the main design challenges was getting the roof truss to work at a considerable long span by using a single C-section. Hence a thicker and deeper C-section was used for the roof truss spaced at 600mm centres, with a member at mid span to prevent lateral twist under the long spans. A hot rolled beam was used at the apex to support the roof due to internal floor to ceiling limitations.

The panels are connected to each other on site using conventional techniques such as Bolts or self-drilling screws. Wall panels are fixed onto previously installed concrete floor using a combination of bolts and screws to meet holding down and shear requirements.

The individual framing components are fully tied together to form inter-connecting panels, which together with the sheathing resistance of the lining boards, ensures the whole framed structure acts as a single mass. Bracing system consist of cross flat bracing and k- bracing to transfer the horizontal load generated by wind to the foundations.

The structural system is designed and erected in accordance with the guidance of Steel Construction Institute for light gauge steel framing in residential construction, P301. A design life of over 200 years can be achieved in a ‘warm frame’ construction. This design highlights that Light steel framing extends the range of steel framed options into residential construction, which has traditionally been in timber and masonry. Overall the project benefited from adopting light steel framing solution which combines the benefits of a reliable quality controlled product with speed of construction on site and the ability to create existing structural solution.