

Statement

Industry research: Mechanical fixings/fasteners to support Light Gauge Steel Framing Systems (SFS) infill walls to encased hot-rolled steel beams.

Date: 06.10.23

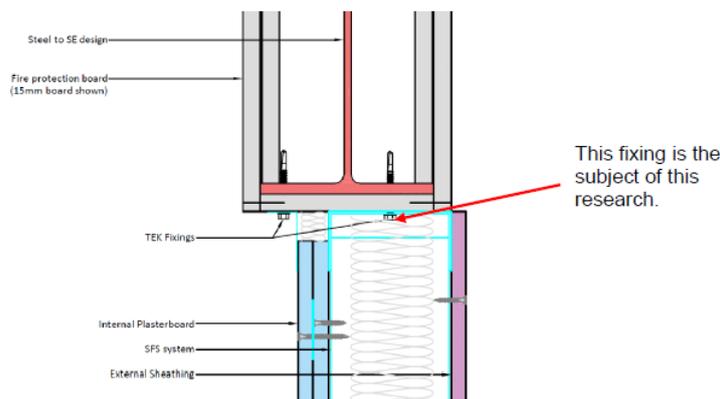
Introduction

Light gauge steel framing systems (SFS) are extensively used to infill the primary structure to establish a dry building envelope. These systems are typically referred to as SFS infill systems and are economical, safe, and efficient for providing façade support.

The load-bearing hot-rolled steel sections of a primary structural frame are typically encased using fire protection boards or thin film intumescent coatings for structural fire protection.

When encasement boards are used to provide fire protection to the primary steel frame the encasement board is sandwiched between the primary steel frame and SFS infill wall head channel.

A typical detail is shown below.



Research

An industry group (comprising some of the members of the FIS SFS Working Group) has been established with [FIS](#) and [SCI](#) in a collaboration within the industry, to carry out a research on the junctions between encased primary steelwork and SFS infill systems subject to wind loads.

The scope of the research is to understand the durability of these interfaces and the mechanical behaviour of the fixings used.

The industry group has designed and conducted a series of shear tests. These tests specifically evaluated the shear behaviour of fixings joining a hot-rolled steel plate to a light gauge steel plate, with the connection made through fire protection board.

The industry group is planning to carry out further research to investigate the behaviour of fixings and their rotational effects. The research will include full-scale testing of the SFS infill attached as a system to hot-rolled steel beams through fire protection boards with the aim to understand the

behaviour of these junctions and to formulate a design methodology that combines empirical data and numerical calculation.

Further information and support will be provided in 2024.

Recommendations

Designers responsible for this junction should consider the impact of the encasement board on the fixity of the SFS head track.

Expertly engineered solutions should be sourced from specialist SFS designers.

Industry Collaboration

Please contact joecilia@thefis.org if you would like to be involved in this ongoing study. The organisations currently supporting the work are:

- FIS
- SCI
- BW industries
- Caledan
- Etex
- Hadley Group
- James Hardie
- Kingspan Steel Building Solutions
- Knauf
- Saint-Gobain
- voestalpine Metsec
- Willmott Dixon

FIS is the not-for-profit representative body for the £10 billion finishes and interiors sector in the UK. The organisation exists to support its members, improve safety, minimise risk, enhance productivity and drive innovation in the sector.

<https://www.thefis.org/about-us/>

SCI (the Steel Construction Institute) has been a trusted, independent source of information and engineering expertise globally for over 30 years, and remains the leading, independent provider of technical expertise and disseminator of best practice to the steel construction sector.

<https://www.steel-sci.com/sci-about.html>