A Student's Guide to Light Steel Framing

Light Steel Framing (LSF) is a modern building system that brings significant advantages over traditional building methods.

WHAT IS IT?

In New Zealand light steel framing is made from structural quality, high strength, flat galvanised steel. To manufacture light steel framing, wide galvanised steel coil, as produced by New Zealand Steel is cut down (slit) to the required widths. The slit steel coil is fed into a roll forming framing machine. The framing machine is computer controlled, which will output the steel lengths, punched as required for fasteners and services.

Computer controlled design delivers dimensionally accurate building structures designed to work with a wide range of building products – from age-old concrete and timber to ultra-modern cladding and roofing materials. Construction using LSF dramatically reduces build times, offers greater accuracy and build efficiency, minimises wastage, improves strength, durability and performance just to name a few.

WHAT ARE THE ADVANTAGES?

The quality of light steel framing is highly consistent - dimensionally accurate, with an inherently stable structure.

Producing the frames from coil, means less waste (scrap) and higher yields -the scrap generated will be recycled.

The frames, during installation and once in use, don't shrink, split, absorb moisture or rot, and they don't burn unless exposed to extreme temperatures.

Light steel frame building systems are ideally suited to meeting the challenge of climate change and freak weather events; linings and claddings for LSF systems can easily be removed and replaced, as the frames are not damaged.

Light steel frame structures can be deconstructed at end of life, and the steel framing reused or repurposed in other LSF structures, or ultimately recycled and manufactured into another superb steel product.

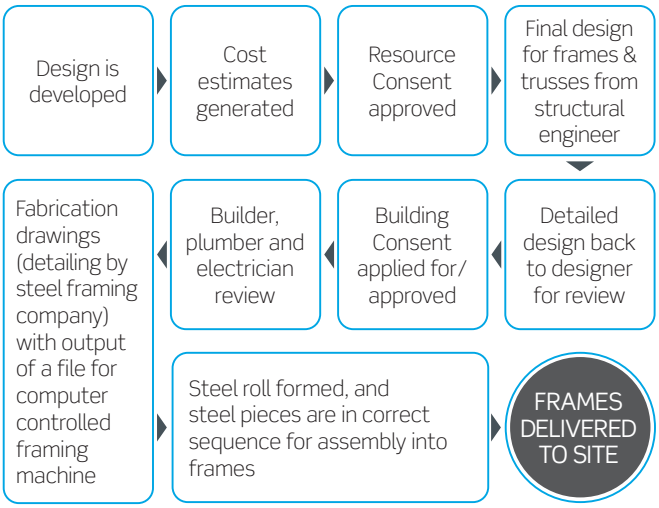
A steel-frame is lightweight and easy to handle; it's approximately one third of the weight of a timber-frame, making movement on site easier.

BUILDING REGULATIONS

Both the NASH Standard Part 2 2019 and NASH Building Envelope Solutions 2019 (E2/AS4) are now cited as Acceptable Solutions to the New Zealand Building Code.

These latest versions of the two documents are available to download from the NASH NZ website; www.nashnz.org.nz

The design and fabrication process



Plumbers and electricians should be involved before the frames are produced. The punching of service holes can be made during the roll-forming process, reducing time on site.

The detailing and fabrication processes are linked, the final steel frame and truss outputs are the input for the computer-controlled roll forming machine.

WHERE CAN I USE IT?

Axxis® steel manufactured by New Zealand Steel for light steel wall framing, roof framing and mid-floors within a closed envelope will achieve the durability requirement of the New Zealand Building Code Clause B2 Durability when it is located in a lined dry internal environment, with an effective thermal break used with roof and wall frames in accordance with NASH Building Envelope Solutions 2019.

New Zealand Steel's Axxis® Steel Durability Statement offers a 50 year durability when used and maintained as per New Zealand Steel's Durability Statement.

Steel is non-allergenic and Axxis® Steel for Framing has been recognised as a 'Sensitive Choice' as it doesn't support mould growth or rot. The stability of steel protects against cracked linings and cladding, and it doesn't emit gases or other vapours.

HOW ARE CLADDING AND LININGS FIXED?

Steel framing enables you to apply exactly the same interior and exterior finishes as with timber framed houses. Gypsum board linings are glued and screwed to the frame. Thermal breaks are fixed to the exterior face of frames before building wrap is applied and cladding fixed.

WHEN THE WEATHER CHANGES, DOES STEEL CONTRACT AND EXPAND LIKE TIMBER?

Steel framing is a relatively stable product, with a coefficient of linear expansion of 12×10^{-6} per degree Celsius, which equates to just 0.012mm per lineal metre of expansion for every degree Celsius change in temperature. Steel does not absorb moisture, so no dimensional change occurs as a result of variations in moisture levels.

WANT TO KNOW MORE?

The NASH website has documents covering the design and construction of steel framing, along with a number of manufacturers available throughout New Zealand.

Visit www.nashnz.org.nz to find out more.

For further information about Axxis® Steel for Framing visit www.nzsteel.co.nz/products/axxis-steel-for-framing, or contact New Zealand Steel on 0800 697 833 or email specifications@colorsteel.co.nz

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