Advantages of Light Weight Steel Construction

Superior qualities of LWS:

Steel Frame historically has been less expensive than competing forms of construction. Steel Frame is manufactured from sheet steel on continuous roll forming mills at high speed. Since the process is fast, there is less need to carry manufactured product in stock. Factory panels improve economy.

Energy efficient

Sustainability is all about optimal use of the resources on earth, which includes avoiding over-exploitation of resources, minimising harm to the environment and the atmosphere and ensuring an acceptable quality of life for every human being, now and in the future. Steel has become an eminently sustainable material, through the modernization of production processes which optimizes energy consumption, and minimizes pollution, as well as through the recycling of discarded metals.

Steel Frame Building offers designers and building owners the opportunity to maximise energy efficiency during building operations as well as during the life of the building.

The primary steel industry worldwide has in recent times vastly improved production processes to minimise energy consumption and pollution. Furthermore, a large percentage of all discarded metals generated are re-used in electric arc furnaces to produce new steel, resulting in significant energy savings and a cleaner environment.

As Steel Frame Building is an engineered building method, use of materials is optimised offering savings in energy used to produce the materials.

The mass of a wall in a Steel Frame Building is less than 10% of that of a double skin plastered brick wall. It follows that significant energy savings are achieved merely in the transport of the materials to the building site. Furthermore, wastage of materials on site is minimised, again conserving energy by eliminating the need to remove truck loads of building rubble after completion of the building process.

However, the most significant energy saving is achieved over the life of the building. Steel Frame Buildings can be optimally insulated for each type of building, in the different geographic regions in Southern Africa, resulting in energy savings for heating and cooling.

All the above factors combine to render Steel-Frame-Buildings energy efficient, and sustainable.

Faster Construction:

Time saving could be as much as 40%, compared with conventional building, this depends on the project size. Less time, less labour cost, less interim interest from the bank.

All frames are manufactured and assembled under controlled factory conditioned, maximizing quality and efficiency. Cold or wet weather is not an issue with Steel Frame and so the construction season can be extended into the full year. This combined with the use of panels will enhance warehousing affect for your materials as well as timelier tenant/owner occupancy.

Thermal Performance:

A great deal of time, money and effort is spent on the Thermal insulation. Thermal insulation can be specified to be up to 5 x superior to conventional brick and mortar buildings. Steel Frame when combined with other materials will make economic and efficient building envelope systems for the effective control of thermal transfer and moisture movement.

Extra floor space

Due to reduced thickness of external walls compared with a double skin brick wall an additional 6% of floor space could be utilised.
Accuracy

The Steel Frame dictates a high degree of accuracy of building dimensions. Being computer designed and rolled, the allowable tolerances are minute (as low as 5mm), thus ensuring a perfect home every time.

Durable

With its high strength and protective coatings, Steel Frame is impressively durable. Standard coatings on Steel Frame in properly constructed, environmentally controlled buildings will perform for well over one hundred years and more.

Sloping sites

The Steel Frame building method lends itself to column foundations and suspended floors, reducing the cost of building on uneven sites.

Architecturally Attractive & Flexible

With Steel Frame, the designer has extensive choices of finishes to achieve the desired aesthetics for the project. Some of the exterior wall finishes commonly combined with Steel Frame are: Single skin brick veneer Fibre Cement Sheets, Vermont Plank (Ship Lapped) Brick, stone, ceramic tile and concrete veneers, Prefinished plywood, Exterior insulation and finish (EFIS) systems, Cement plaster (stucco) on metal mesh

Flexibility

Horizontal and vertical additions can be effected easily, in stages.

Almost Limitless Design Freedom

Steel Frame can be used for almost any building construction. Light Steel Frame in ground floor exterior axial load bearing walls is limited but they are continually expanding with advances in roll forming manufacturing. Span lengths will vary by section size i.e. with the depth and thickness of steel member, but unsupported spans of up to 24 meters has been achieved so far.

Non-Combustibility & Fire Resistant

Steel is a non-combustible material and will not add fuel to a building fire. Many floor and wall assemblies made from Steel Frame have been tested and several additional designs have achieved significant fire ratings.

Earlier Occupation

Faster construction means earlier completion, therefore earlier beneficial occupation of buildings.

Reliable & Healthy

Steel Frame is a reliable product that will not shrink, warp, swell, creep or otherwise move which enhances and maintains construction quality. Steel Frame is non-organic and so cannot rot or support unhealthy infestations of mold and fungus growth. Steel Frame is not hospitable to nor will vermin such as termites and rodents damage it.

Ease of Assembly

Steel Frames are easily handled in the shop and field. Many roll formed sections can be moved and lifted by hand or by low capacity mechanical lifts, possibly allowing smaller and less expensive job site hoisting equipment.
Minimal wastage

Most of the cutting and sizing is done in-factory, the material wastage is zero. Whatever wasted steel there might be is recycled. On-site cutting is minimised. The Steel Frame house can come in already completed frames ready to be erected.

Services

Plumbing and Electrical wiring are installed in wall cavities without chasing of walls.

Tried and Tested

Steel has a long record of use in construction due to its strength, durability and economy. Steel Framing brings these attributes plus many others to the low-rise residential and commercial marketplace. Consider the following:

Lightweight Construction

Roll-formed Steel Frame sections have a higher strength to weight ratio and, therefore, are lighter than wood or masonry of comparable size. This means less building mass. This has a positive impact on the building's seismic resistance, it may allow economical spread footing foundations and it may also allow upward expansion in a building originally not designed for an extra floor.

Panels

Wall, floor and roof panels can be easily and quickly assembled in a factory setting. Field erection of factory assembled panels is generally more timely and efficient compared to wet masonry. Steel Frame panels can be easily highway transported limited only by length and width restrictions not load limits. Controlled factory designs are inherently stable and accurate steel sections enhances construction quality.

Approved by National Building Regulations

Light Steel Frame Construction for residential or commercial projects complies with the rational design requirements of the National Building Regulations.

Approved by National Home Builders Registration Council - NHBRC

Each structure is signed off by a structural engineer

Although the use of sophisticated software has greatly benefited the design and engineering of Steel Frame Buildings, you can rest assured that ALL plans must be approved by a consulting structural engineer.

To summarise: LWS advantages are:

It's non-combustible.
Highest strength-to-weight ratio of any building material.
Resists mould and mildew.
Resistant to termites and other boring insects.
Does not deplete forests and is 100% recyclable..
Outstanding design flexibility.
Cleaner building site with less rubble to remove from site and damage to garden/site.
Does NOT interfere with radio, TV or cellular signals.
Multiple access holes in each stud significantly simplify future wiring & plumbing.
Up to 40% saving in construction time, depending on project size.
Walls designed to exceed government energy efficient standards. Improved product quality with vertical, true and straight surfaces.