

Steel Framing in Your Home

It's hard to picture a home under construction where skill saws are absent, the clatter and bang of hammers are gone, and the smells of fresh cut wood have all been eliminated. In their place, you see the shiny hard edge of metal framing, sparks flying as special saws cut it, the whine of screwdrivers, and a host of other sights and sounds from new tools and technology. This is not the future. It's the present, right here in Sacramento, at an increasing number of job sites. Why isn't everyone using steel framing? Should you be insisting on it for your home remodeling project?

Open any construction industry trade magazine, and you'll be bombarded with full page advertisements touting the advantages of steel construction. Termite Free! Earthquake strong! Recyclable! Let me give you my perspective into some of these issues. When the long-term environmental impact associated with the production of steel is considered, wood has distinct advantages. It is, after all, a renewable resource by definition, and in fact, many lumber products currently available come from plantation forests, not from old growth forests.

When you fly over Western Washington or Oregon, I find it heart sickening to look down at the huge areas of clear-cuts. According to the Western Woods Products Association, however, forests in the United States contain more lumber today than they did at the turn of the century. Although steel is recyclable (most steel products are made with at least 25% recycled material, with some as much as 100%), so is wood. If you compare strength, steel is strong, but wood is better able to absorb shock. After considering all factors, including the skills available to perform connections, wood currently has a strength advantage. A wood stud has a lot more strength than is typically required in a wall. A steel stud, in contrast, can be ordered *very* thin and light, resulting in less "back up" strength in the event of unforeseen loading.

In decay resistance, steel has a definite advantage, but a properly maintained home is not a festering nest of termites (hopefully). Steel is also fireproof, but the reality is that the contents of most homes exceed in fire fuel the contribution of the structure. An over-stuffed couch, for example, can fill a house with smoke from a tiny fire, leading to catastrophe faster than those flames could threaten the structure's integrity.

Insulation is one area in which steel has a definite disadvantage. Some early use of steel studs, for example, had the problem of "telegraphing" on the exterior at every stud line. This could happen due to slight differences in temperature and where moisture condensation could occur over the steel studs, which in turn could accumulate dirt and dust from the air. Steel conducts heat extremely well, meaning that with steel framing it is almost essential to have a continuous sheet of insulation over the outside of the studs.

Although few carpenters know how to work with metal studs, the skills to work with steel framing are not actually in short supply. In fact, in any shopping center or large office the interior construction is typically metal stud and has been for many years due to fire code requirements. On residential construction, however, steel framing is still relatively rare, and in fact, does require different tools and different fastening methods than carpenters are trained with. Picture trying to install finish wood trim on a steel framed wall, for example. Nails won't work. You have to use special finish screws. There also would be differences for *each trade* from plumbers and electricians to insulation installers (whose handy staple tacker is useless with metal studs).

From a practical standpoint, we have used metal framing in some residential additions to solve particular problems (such as in a floor framing with limited depth available). I don't believe, however, that we will see common

use of metal framing in custom new homes or residential remodels for many years (if ever). Competing products, such as parallel strand lumber, are still cost effective compared to steel, and are likely to remain so since they don't rely on large dimension, old growth timbers to produce. In the future, there may be times when steel has some economic advantages due to price fluctuations; I expect that the pendulum will swing back and forth.

A switch to steel is more likely in a production environment, such as in tract housing where economics can change dramatically. In custom work and especially remodels, the effort needed to tie wood and metal together, labor factors and inertia will dramatically slow down the switch to steel.

Copyright 1997 Michael F. Malinowski, AIA