



GREEN DURABILITY

by Keith Lindemulder

Durability is one of those key attributes of cold-formed steel (CFS) that is often taken for granted. We all know that CFS doesn't warp, swell, shrink, crack, creep, twist or rot. It doesn't contribute to the spread of a fire and termites haven't acquired a taste for steel either! All these features add up to durability.

Durability is important for many reasons. In the short term, a well built house with stable materials will help avoid call-backs for the builder and designer. Longer term durability is important to the home owner to help maintain the investment value of the home as well as reduce operating and maintenance costs of owning the home. While these may seem obvious, more recent studies have shown that increased durability of a home can contribute to lowering the overall costs of operating the home over its lifespan. A house that doesn't "move" as much after it's originally built is more likely to have things like door and window weather stripping work as designed with less maintenance.

The wood industry would tell us that as long as the wood used to frame a house is properly dried and kept dry the warping, cracking, shrinking issues won't be a problem. With proper flashing and construction techniques (always a good idea regardless of materials), wood shouldn't rot. And with chemical treatment,

it won't burn and can be made resistant to termites. All this may be true, but each additional step costs time and money and may only be partially effective. It sure seems like there's a lot of hoops to jump through just to use wood "properly"!

In all the major building codes today there are termite infestation probability maps and decay probability maps. It's estimated that nearly half of all new homes built each year in the US are at risk of significant termite and decay damage. Likewise, in 1993, the National Institute of Building Sciences estimates that it costs more than \$2 Billion annually to replace wood that's been severely damaged by decay or termites.

Properly coated galvanized steel can last hundreds of years in even the worst conditions. The dimensional stability of the shapes means that the structure will not move over the lifespan of the building due to swelling or shrinking of the framing materials. Also, the high ductility of steel (the ability of steel to bend and not break under stress) and positive fasteners means that the structure will perform well in seismic and high wind events.

Durability of a cold-formed steel structure doesn't get a lot of attention because it's become expected. And as a bonus, when the structure outlives its useful life, 100% of the steel materials in the frame can be recycled into new steel ready to perform for years to come.

WORLDWIDE, BUILDINGS ACCOUNT FOR...

17% fresh water withdrawals

25% wood harvest

33% CO₂ emissions

40% material and energy use
45% in China

