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HEADLINE: ENGINEERED WOOD; I-BEAM, OPEN WEB TRUSS & LVL'S

After the advent of roof trusses, in the late 60's, the use of engineered wood was very slow in developing, mainly due to the cost of the engineered products. The first replacement was the "Wood I Joist" followed by the "Open Web Floor Trusses." Both are used in replacement of conventional dimensioned lumber for your floor joists, but, even though they do the same job, they are, in fact, two different products

First a little history; a company called Trus Joist Corporation invented the wood I-Joist in 1969 and remained the main suppler for nearly 10 years. By the late 70's, Trus Joist had developed a number of improvements over the original dimensioned lumber flanges and plywood web section. By 1990, they had introduced laminated veneer for their top and bottom flange and OSB for the web section. At the same time, a number of companies were making this type of floor joist; the most widely known being Trus' "Silent Floor." Today, Silent Floor is controlled by Weyerhaeuser and they command over half of the $750 million dollars' worth of sales in wood I-joists sold in North America, annually. In fact, about five companies control nearly 90% of the market.

The advantages to wood I-joists are many and well recognized in the home building industry. When I was renovating my former home in the early 90's, I designed a family room that was nearly 20 feet wide with no centre beam present. Without using wood I-joists, this would not have been possible at a reasonable cost. Wood I-joists are stronger, stiffer and have greater stability, along with being very light weight compared to regular lumber. Wood I-joists have been used for cathedral roofs to give both strength and simplified assembly. You don't just walk into the lumber yard and buy these off the shelf, however. Each project must be engineered; most lumber stores now have the software and capabilities to complete a layout for any addition or new home.

While they are a major step ahead, it is important that they be installed correctly. Proper hangers and rim joist attachment, along with how and where you can cut the holes for plumbing and heating ducts dictates some installations. The added value is the savings to our forests; an average 1,500 sq. ft. home that used conventional lumber could reduce its volume by nearly 60% by switching the floor frame to wood I-joists…..that's a lot of trees!

One misconception is that the "Silent Floor" never squeaks, or so says the ads. While the actual I-Joist does not warp, twist, shrink or crack, the installation can cause squeaks. In fact, Weyerhaeuser put out a Field Guide for the Prevention and Repair of Squeaks. Improperly installed hangers, poor attachment to the sill plate and mechanical and plumbing rubbing against the I-Joist are just a few of the issues they are aware of. This 10 page field guide offers solutions to most of the problems.

The new kid on the block is called the "Open Web Floor Truss" and this adheres to the principle of every truss. The theory behind this type of assembly; be it for a roof or a floor, is that there are one or more triangular units constructed

with straight members whose ends are all connected. Commercially, the open web steel truss has been used for years; some applications going back before WW2. Open web floor trusses for residential use have only come into their own in the past 10 years and they are rapidly replacing the wood I-joist in popularity for a number of reasons. The open space is ideal for running wires, plumbing and heating ductwork. There are three popular methods of open truss assembly. The top chord is usually a 2x3 or 2x4 wood material, the chord sections can be a metal triangle section, wood sections that are attached by metal gang plates or a finger joint assembly. Care must be taken when installing open web trusses. There is a top and bottom and this also dictates that the web sections are all in line. They must also be secured with a dimensioned lumber spacer that runs the full distance of the building and attaches every open web truss. The latest improvement is a decent length of a trim able end on the open web truss. This allows the carpenter on site to cut the end for an exacting fit. This was an issue with early open web trusses, where you had to be very careful how you trimmed them, if at all.

The newest player on the market is called laminated veneer lumber, or LVL's for short. These are used mainly for bearing beams, lintels over windows and, in some cases, floor joists, especially when that extra span in a small area is needed to match up with conventional lumber. We used LVL's, for example, in our spa assembly as the three main beams were supported on "footing tubes," creating the crawl space.

While there is some extra cost for engineered floor joists, open web trusses and LVL's, the advantages far outweigh the extra cost. Reduced labor installing them, sub-trades like the access for their pipes and wires and longer unsupported spans. You will like the quieter floor for sure and the forests and environment will benefit from the reduction in lumber your home needs vs. conventional lumber floor joists.

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