

TECHNICAL SOURCE GUIDE

ENGINEERED LUMBER I-BEAMS

By Elbin L. Clevelan, University of South Carolina

Due to the diminishing availability and increasing cost of sawn structural lumber, a number of engineered lumber products (ELP) are claiming an increasing percentage of the construction market.

Engineered I-beams have a web of selected plywood or oriented strand board (OSB) and flanges of MSR, LYL or PSL lumber. Wood I-joists were first used in the 1920s and were essentially built by hand. First mass produced by Trus-Joist Corp. in 1969, they are now manufactured by at least a dozen companies and are common items on construction sites

Many of the advantages that engineered wood I-beams offer contractors are also applicable to the theatre. (1) They are lighter in weight for a given span or load capacity, which makes them easier to lift into place and install. Two men can easily lift and install a 24-foot I-beam which also makes the work safer. (2) They are more rigid than dimensional construction lumber of the same size, resulting in longer spans and wider spacing between joists. (3) They are constructed from carefully graded and closely inspected materials to be highly consistent from piece to piece. Since I-beams are truer and straighter than sawn lumber, there is no need to examine a stack of lumber to select the best pieces. (4) They are manufactured in lengths and heights far beyond the range of dimensional lumber. consequently. they can be used in buildings which require open spans of 20 to 40 feet. (5) Each I-beam is cut to a specified length at the yard so there is less labor on site and less waste. (6) Wooden I-beams do not require blocking or bridging so they are faster to install and save on labor costs. (7) Within limits, webs can be drilled or cut for the installation of electrical, plumbing or HVAC runs. Of course flanges should never be drilled or notched. (8) Engineered I-beams can be ordered in special profiles to fit particular needs.

Of course, nothing is perfect and wood I-beams have limitations, too. 1) Toe nailing is not acceptable since it may split or damage the flange and thus weaken the entire beam. Instead, flanges are straight nailed to the plate with one 8 d nail on each side. 2) Butt joints require filler blocks to stiffen the web or to flush it out with the flanges. 3) There are limits to the sizes and locations of holes allowable in the webs. 4) Joists need to be stacked and handled vertically since they have little lateral strength. 5) This lateral weakness makes I-beams more prone to roll-over until decking or sheathing is applied, which requires temporary bracing. 6) Some construction joints are more complicated and may require metal connectors for best results. In any application other than common joists, it is wise to obtain and follow the manuals provided by most manufacturers or the Forests products Laboratory.

At the present time engineered wood I-beams cost 10% to 15% more than dimensional lumber of the same size. As with other engineered lumber products, this cost differential is often actually reversed due to other savings. Every lumber yard in our area now stocks wood I-beams or can supply them in any required size on 24 to 36 hours' notice.

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Major suppliers of engineered wood products include:

Tecton Laminates

P.O. Box 587

Hines, OR. 97738

PHONE: (503) 573-2312

Trus Joist MacMillan

P.O. Box 60

Boise, ID. 83207

Phone: (800) 628-3997

Weyerhaeuser Corp.

Company Headquarters

Tacoma, WA. 98477

Phone: (206) 924-2345

Willamette Industrials, Inc.

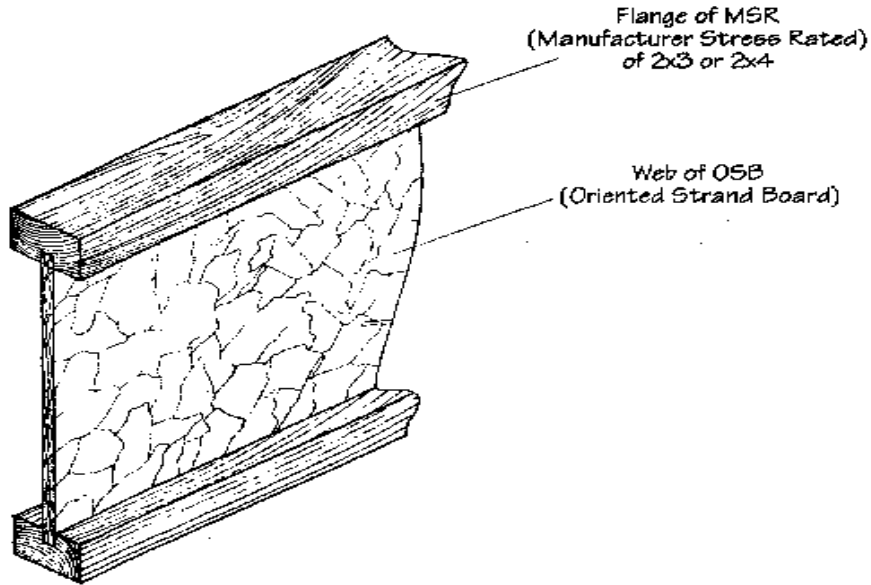
P.O. Box 907

Albany, OR. 97321

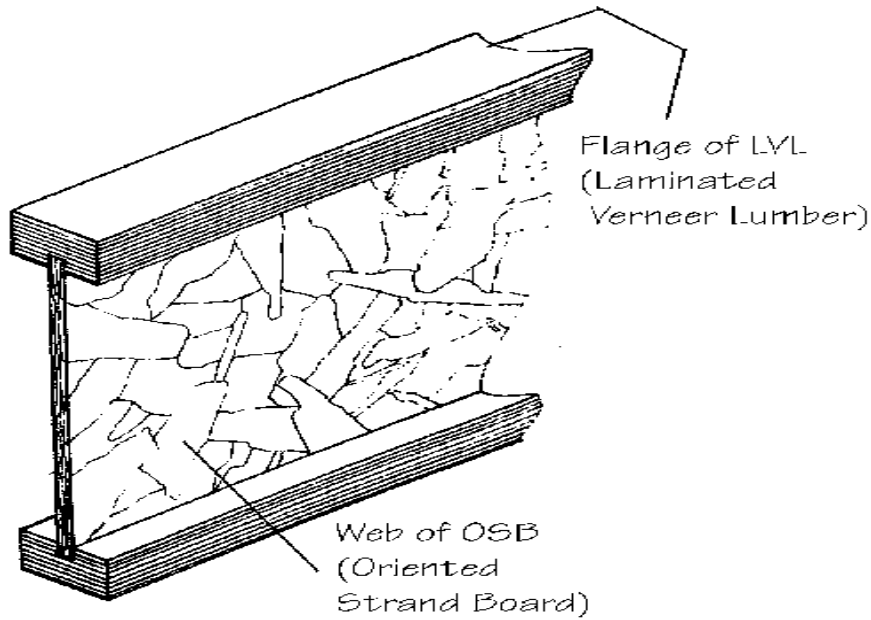
Phone: (503) 926-7771

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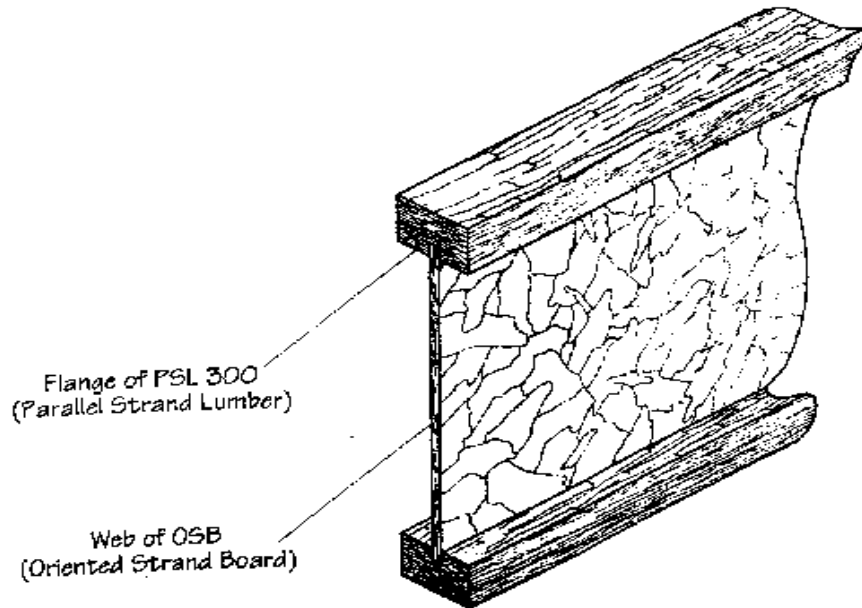
ENGINEERED I-BEAMS FROM TRUS-LOINT CORP.



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