Engineered Wood

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Index

Introduction

This paper is designed as another project. The paper has been written in a way to discuss the use of engineered floor joist for construction. There are many producers of engineered lumber in industry today and it is continuing to grow. Engineered floor joists are very interesting to many people. Especially the ones who produce it and the ones who use it. This topic is interesting for many reasons. First of all, any person that is involved in the construction field should be familiar with engineered lumber and do to so they need to become familiar with all the new materials that are on the market. Secondly, if a person is interesting in building a house they need to look into engineered lumber so they can compare it's uses to conventional sawn lumber.

Many people that look into building a house do not have any idea of using engineered lumber for the construction of their soon-to-be house. They let the contractor's take care of the business of building their home. What they should do is become educated on the building process, and in this case, the engineered floor joist system.

Engineered lumber is a great product and this paper will point out why. The reasons number many but there are a few main points that this paper will point out. Engineered floor joist is very good for the environment. They are also easier to handle versus conventional lumber. Another characteristic of engineer wood is the uniformity of the finished product. All in all, engineered lumber is a great product and in this paper you will see why.

Engineered Wood

In today's wide world of construction, the words "engineered" and "wood" fit together like peanut butter and jelly. There are many types of engineered wood. These types range from plywood, floor joists, beams, and veneer. This paper will focus your attention today on floor systems in residential homes. It will focus on the strength, the handling, and the environmental issues that deal with engineered wood, specifically floor joists.

First of all, using engineered wood in construction is very good for the environment. According to *Trus Joist MacMillian,* a company specializing in engineered lumber, smaller trees can be harvested for the use of producing engineered wood. A representative from *Trus Joist MacMillian* once said that only seven percent of all the trees his company uses are greater than twenty-one inches in diameter. He continued in saying that fifty percent of the trees used are less than nine inches in diameter. A second company by the name of *Willamette Industries,* one of *Trus Joist MacMillian's* competitors conclude that all of there wood comes form second growth resources. *Willamette Industries* have made a comparison of an engineered joist to a conventional sawn piece of lumber (2 inches by 10 inches). In this comparison, they conclude that an engineered floor joist uses half the wood five that a conventional floor joist does. So engineered wood is great for the environment. The turnover ratio for trees is great, and more of the tree can be used than in conventional lumber. *Trus Joist MacMillian* states that nearly seventy percent of the tree is used when the lumber is engineered.

Another characteristic of engineered floor joists is the ease of handling. One major positive attribute of these floor joists is weight. The weight of this product is very light compared to a conventional piece of lumber. It is very easy for one person to handle an engineered floor joist, but hard for one person to handle a conventional (2x10) floor joist.

A major characteristic of this product is its strength and durability. There are many strength characteristics when dealing with engineered lumber. In laymen's terms an engineered floor joist is stronger than a conventional floor joist because an engineered joist is uniform. There are no defects and no cracks in the lumber as opposed to what may be found in conventional lumber.

Next, there is concern about how long a member can span and still be strong. In older homes, people find a beam in the middle of the floor plan that holds up the conventional floor joists. With today's engineered floor joist, a builder is able to wipe out that support beam totally. An engineered joist can span a much longer distance than a conventional joist and still carry that same load.

Another issue is the spacing of the joist. Spacing concerns how far apart the joists are on a floor. Along with a longer span the engineered floor joist can be spaced farther apart than conventional lumber. An engineered floor joist (I joist) can span farther, be spaced farther apart than a conventional joist, and be as effective as a conventional joist.

Cost is another factor to consider with engineered floor joists. A person may think that these joists are a lot more expensive that the conventional joists and you know what? The engineered joists are a little more expensive than a regular 2x10. However, do not let the cost discourage you from building with engineered with lumber. Just

remember that engineered joists span farther and can be spaced farther apart. As a result, the money that is spent on conventional joists could be spent on engineered joist and a better product would be utilized.

One last point is that engineered joists are sometimes referred to as a "silent floor." These joists are engineered in such a way that there will be no noise comes from the floor. In houses with conventional floor system it seems almost every three feet a person walks there is a squeak in the floor. With engineered lumber it is pleasant to the ears not to hear your floor talking to you when you walk on it.

Conclusion

In conclusion, engineered floor joists are a thing of the future. They have started to become popular in all areas of the construction industry. These joists as well as all of engineered lumber is a great advantage for the environment. The trees that are used to produce this product come from smaller trees. In addition, more of the tree is used in the production of engineered wood products over conventional sawn lumber.

The durability of engineered wood is also a great characteristic for this product. This product has no defects to it. In conventional lumber there are knot holes and checks on the lumber that cause the value and strength of the lumber to go down. In engineered products there is no worry of this at all. Every product is uniform and has no defects what so ever. In addition to this, a person can cut a hole through the engineered joist without effecting the strength at all. All of these points are important to the construction industry and to have a better product a person should use engineered lumber.

Engineered lumber can also span a lot farther than a conventional piece of lumber. With this fact, a person can use less wood to construct a project. Also, even though they cost more since less can be used, the cost between engineered to conventional evens out.

Engineered wood is a great product and in any type of construction. It is a popular product and in the future the use of engineered wood will begin to increase. There are too many positive attributes for it not to be a success.

References

Books

Structures and Environment Handbook, MWPS-1. 11th ed. 1983, revised 1987. Copyright Midwest Plan Service. Ames, IA.

The Wood Book. Edited by Paulk Griffen. Published by Hatton Brown, copyright 1992.

Pamphlets/ Brochures

Trus Joist MacMillian, A Limited Partnership, Boise, Idaho. "How does the Silent Floor Support the Environment", copyright 1993. Trus Joist MacMillian.

Trus Joist MacMillian. "TJI Joist". Trus Joist MacMillian. Boise, ID.

Willamette Industries. "StrucJoist Product Guide" Video also. Willamette Industries. Albany, OR.