

Q. Are annoying floor vibrations a problem unique to wood I-joist floor systems?

A. No. Annoying vibration problems exist with bar joists, concrete floors and dimension lumber floor joists too. However, if you use Trus Joist® engineered wood products, you can take advantage of TJ-Pro Rating to design a floor that has less vibration.

Q. Are all floor performance issues a result of floor vibration?

A. Not always. Sometimes, people say a floor “feels” bad when it actually “sounds” bad. Squeaking floors or a rattling china cabinet can give the perception that the floor is performing poorly. As such, both correct floor installation and proper placement of furnishings are important factors in achieving a quality floor.

Q. Will the TJ-Pro Rating system solve floor performance issues?

A. Floor performance expectations are highly subjective, and because so many factors—including the quality of construction and building materials—can impact performance, TJ-Pro Rating cannot solve every performance issue. However, what TJ-Pro Rating can do is take some of the guesswork out of floor design and help you ensure customer satisfaction by taking their individual perceptions and expectations into account.



Trus Joist®
TJI® joists voted
#1 in quality!

BRAND LEADER
Builder
2015

Trus Joist™
Weyerhaeuser

TJ-PRO™ RATING

CONTACT US
888.453.8358 • weyerhaeuser.com/woodproducts

▲ Weyerhaeuser, Forte, Javelin, Trus Joist and TJI are registered trademarks, and TJ-Pro is a trademark of Weyerhaeuser NR Company. © 2019 Weyerhaeuser NR Company. All rights reserved.

July 2019 Reorder SVC-4006



QUESTIONS & ANSWERS



When it comes to homeowner expectations, floor performance plays a major role in how a house “feels”. Floors that don’t bounce under heavy foot traffic and glassware that doesn’t rattle when you walk by the china cabinet are just two examples of how floor performance can affect a homeowner perceptions and his or her level of satisfaction with a new home.

Below are answers to some common questions about floor performance that can help you build reliable floors that perform to the level of your customer’s expectations.

Q. What is annoying floor vibration?

A. Annoying floor vibration is the dynamic motion of the floor joists under normal working loads, such as movement of occupants. Generally, the dynamic properties of vibration are:

Frequency—This is the number of waves per second created when you step on the floor. Generally, low frequencies are uncomfortable. The less stiff the joist, the lower the frequency.

Damping—This is the ability of the floor system to “absorb” the wave that is introduced. The faster the wave is absorbed, the more solid the floor will feel.

Amplitude—This is the amount of movement. Generally, large movements are more noticeable, regardless of frequency.

Contact your Weyerhaeuser representative for additional information.

Q. Will an L/480 deflection ratio result in a satisfactory floor performance?

A. A simple, uniform live load deflection ratio, even if it is more restrictive than the code minimum will not always result in a “good” floor. Unfortunately, deflection alone will neither evaluate the dynamic performance or account for the subjective nature of floor performance. TJ-Pro Rating will account for both the dynamic and subjective aspects of floor performance.

Q. Is choosing the correct joist the main consideration to avoid annoying floor vibrations?

A. Choosing the right TJI joist is only one important step in specifying a quality floor with less annoying floor vibrations. The floor system's end use along with its overall design are also important considerations.

Factors to consider when designing a floor system include:

- Joist spacing
- Subfloor thickness and how it is attached (i.e., glued and nailed)
- Presence of a directly attached ceiling membrane
- Perpendicular partition walls
- Mid-span blocking

The floor's end use must also be taken into account. For example, a great room will experience higher foot traffic than a guest bedroom, so it may need to be designed to a higher specification. And a kitchen area may require additional joists to ensure heavy objects, such as an island counter, remain stable and level.

Q. Will proper system specification ensure a quality floor?

A. Not always. The quality of workmanship is very important as well. Below are some installation procedures that can help ensure a quality floor:

- Install connections properly
- Avoid shiners (nails that miss their target)
- Fasten partition walls securely to the floor joist system
- Ensure main carrying members (beams and girders) are both properly designed and installed

Q. What effect does floor sheathing have on overall floor performance?

A. Using a stiff, high quality floor sheathing product is a significant driver in how a floor will feel. It improves the composite stiffness (i.e., the floor joist and sheathing working together) of the floor system and reduces deflection between joists. In general, a thicker deck will perform better than a lesser alternative and this attribute is captured in TJ-Pro Rating.

Q. Will all floors with the same span, joist type, spacing and decking feel the same?

A. No. Typically, a floor joist supported by a wood framed wall or concrete foundation—instead of a beam—will feel better.

Q. Will the addition of a floor topping (i.e., light weight concrete) always result in improved floor performance?

A. Not always. While adding a concrete floor topping will increase transverse stiffness and have a positive effect, the added mass will decrease damping, resulting in a negative effect. Fortunately, the TJ-Pro Rating system can account for this when evaluating a floor design.

Q. Is there a minimum TJ-Pro Rating to ensure homeowner satisfaction?

A. Since floor vibration is subjective and each homeowner's expectation is different, there is no minimum TJ-Pro Rating to reference. A homeowner moving from a slab-on-grade structure is likely to have a higher floor performance expectation than someone who has lived on the third floor of an apartment complex. Similarly, a buyer moving to an upscale community may have a different perception and expectation than a first-time homeowner whose college dorm was acceptable just a handful of years earlier.

The TJ-Pro Rating system gives designers a tool that helps them consider regional building practices, past experience and customer expectations to define the right floor performance for each situation.

