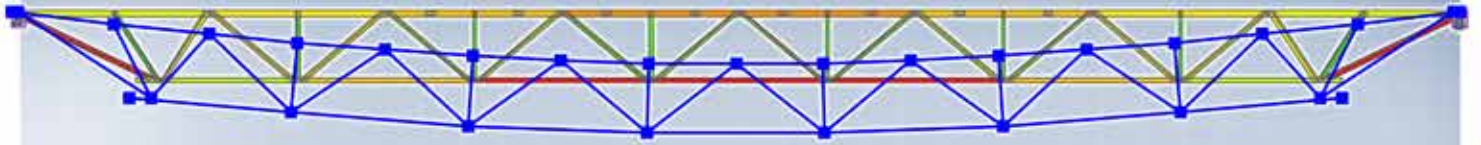


29% Stronger

31% Higher Reliability Index



129% Higher Ductility

Optimal Overload
Safety Sensoring

Flex-Joist[™]

Tension-Controlled Open Web Steel Joist Design

A new approach for today's high-performance, safety-optimized building environment

Flex-Joist[™] tension-controlled open web steel joist design gives building owners and specifiers the option of consistently higher steel joist performance at an affordable cost.

In addition, the greatly increased ductility of the joist establishes an unprecedented capacity for emergency response to an overload – providing probability of more time for the prevention of property damage, personal injuries and lost revenues caused by roof collapse.

For the ultimate in safety management, Flex-Joist[™] bottom chord and end webs can be affixed with electronic sensors and alarms post-erection by a third party provider to provide an optionally integrated overload warning system.

When you need increased strength, a higher measure of reliability, higher ductility, and optimized overload safety, Flex-Joist[™] is the answer.

- ✓ **Increased strength**
- ✓ **Higher reliability index**
- ✓ **Improved ductility & safety**
- ✓ **Optimal overload sensing**

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NEW MILLENNIUM
BUILDING SYSTEMS

Building a better steel experience.

Increased steel joist performance metrics – when and where you need them

Laboratory testing has consistently demonstrated the Flex-Joist™ design to exceed standard steel joist design for strength, reliability and ductility.

Joist Performance Comparison			
Criteria	Std. Joist	Flex-Joist™	% Diff.
Joist strength reliability β	2.6	3.2	22%
System strength reliability β^*	2.6	3.4	31%
Average test strength ratio	1.8	2.3	29%
Average test ductility ratio	1.4	3.2	129%
Tension limit state probability	Low	High	

*Based on 4 joists in parallel

31% higher reliability index

Standard SJI joists are designed based on procedures derived from the American Institute of Steel Construction (AISC) design specifications. AISC states that their design specifications result in an average member reliability index of $\beta = 2.6$, where β is the ratio of the standard deviation to the mean. Flex-Joist™ has been demonstrated to have a system reliability index of $\beta = 3.4$, or 31% higher than the industry standard.

29% stronger

By selectively increasing the size of the weakest components without decreasing the size of the strongest components, the strength of a Flex-Joist™ is substantially increased at an affordable cost.

129% higher ductility

The Flex-Joist™ design is based on limit states control, so it has a much higher probability of achieving a ductile tensile yielding limit state that is characterized by slow collapse, with large inelastic deformations and inelastic reserve capacity. This very ductile behavior gives sensory warning of impending collapse, allowing more time for evacuation and response.

Optimized safety sensing

The Flex-Joist™ is ideally suited for the optional, post-erection installation of electronic sensing and alarms to establish an early, roof overload warning system. The bottom chord and end webs of a Flex-Joist™ will be highly stressed prior to collapse and the location of sensors along these components can readily be installed by a third party provider.

