Q: Do you know of any good references for designing for uplift for steel joists?

A: We’d recommend the SJI Technical Digest No. 6 for Uplift (for more information, visit www.steeljoist.org) and Designing with Steel Joists, Joist Girders and Steel Deck by Fisher, West and Van de Pas and published by Vulcraft.

Q: How many consultants out there require in their specs that joist manufacturers to submit detailed cut sheets and calculations for each joist on the job?

A: Most typical steel joist jobs do not require a calculation submittal.

Q: Are there any good references for determining old joist designations? For example, I once saw a drawing call out a “Longspan underslung joist type 3214” and did not know where to find properties.

A: SJI has produced the 60-year Steel Joist Manual that lists all the standard designations from the past 60 years.

Q: Is there a physical meaning for the “section number” called on several joist tables; for example, the chords area?

A: There may be a correlation between the “section number” and the chord size for a specific manufacturer, but there is not an industry-wide universal size related to the chord number.

Q: A basic question...What is the meaning of the “9” in a 26K9 bar joist? I believe that the “26” is the depth in inches and it is a K series joist, but what is the “9”?

A: The “9” is commonly referred to as the chord size that relates to an approximate size for the chord. The actual size of chord may vary between manufacturers. It is most commonly used to match to the standard SJI load tables to select a load value.

Q: When using a joist on a low-rise metal building where the roof and the frame to which a joist is to be attached is sloped (and thus the joist is not plumb), does the vertical load (such as live load) on the joist need to be resolved into a load applied through the strong axis of the joist and a load applied in the plane of the roof-taken up with bridging? Is there a maximum...
Q: Why does Vulcraft not publish the Designing with Steel Joists and Joist Girders book any more?

A: Vulcraft is in the process of revising and printing a new version of Designing with Steel Joists and Joist Girders. If should be available mid-April 2002.

Q: On large warehouse roofs there is frequently an uplift requirement in the center of the building of 5 psf. Even at this small load, additional bridging is required. Why is this? Would it be possible to design the joist for the uplift without requiring added bridging, and would that be less expensive than installing bridging?

A: For typical K-series, joists, the end web member may have a slenderness ratio of close to 200 with a $K = 1.0$ for the typical gravity load design. If the bottom chord bridging is not present, $K$ should be taken as 2.0, which would require a very significantly stiffer web. If $K = 2.0$ for the end web, it may no longer be possible to use a round bar for the end web, which is the industry standard. This in turn would change the configuration of other joist components, such as the seat, which would add considerably to cost.

A: The bottom chord goes into compression and is not attached at the ends to the structure; therefore, the horizontal bridging row near the first bottom chord panel point is required for the uplift forces. This row of bridging is cheaper than designing the joist to do the job.

Q: So an option would be to “x-brace” between rows of bridging to transfer the load back to the supporting rafter, where the bracing would be located near the edges of the roof and any intermediate locations if necessary? I’ve heard tying bridging across the building ridge is becoming unpopular if an unbalanced load condition is used on opposite slopes.

A: Yes, the “x” to resolve forces is a good idea.

Q: What’s the status of the conflict between OSHA and SJI?

A: There are no longer any remaining legal challenges between SJI and OSHA.

Q: So SJI now will satisfy all OSHA requirements?

A: SJI will meet the OSHA rules as they will currently be applied. Research is still ongoing relative to column-joist stability and the procedures to be used when this part of the rule takes effect in July 2003.

Q: If I have two joist 26K10 coming from two different suppliers, can I expect to have different chord sizes?

A: Yes—and different geometric panels, too. Each manufacturer will design the joist to take the specified loads.

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