

Top Five Design or Specification Mistakes to Avoid

Construction projects, big and small, have phases. What happens during the early phases can dictate how smoothly the project will go and how much it will cost in the end. Consulting early on with your steel joist supplier can help prevent delays and cost overruns. Joe Penepent, New Millennium Sales Engineer, shares the five most common mistakes made during the design or specification phase of construction projects.

1. Inadequately Specifying Uplift

Sometimes contract drawings will not adequately specify net uplift wind loadings on a roof. For example, the contract drawings may only indicate the components and cladding for a 10 sq. ft. area chart. This information is inadequate to calculate the component and cladding net uplift value for the joists, which are typically based on a 100 sq. ft. tributary area or more. "An owner could be surprised by additional, unexpected costs associated with the need for additional rows of bridging in order to sufficiently brace the bottom chords, or by increasing bottom chord sizes to provide sufficient uplift resistance," Joe says.

2. Specifying the Steel Manufacturer

"Sometimes drawings will list deck manufacturers that aren't even around anymore," says Joe. "Even if the supplier is still operating, specifying only one supplier has the potential of increasing cost because the customer is not going to get a competitive bid." A different supplier may be able to recommend a product that better addresses the design and engineering challenge, and be less expensive. There may also be regional requirements that the specifier is not aware of. "For example, they may specify a product they are familiar and comfortable with that isn't available in their region. They don't realize it's going to cost them more to bring it into their area," Joe adds. It might also be the case that a particular product is patented in such a way that it requires special components and procedures that can add to material and erection costs.

Wind Loads - Components & Cladding

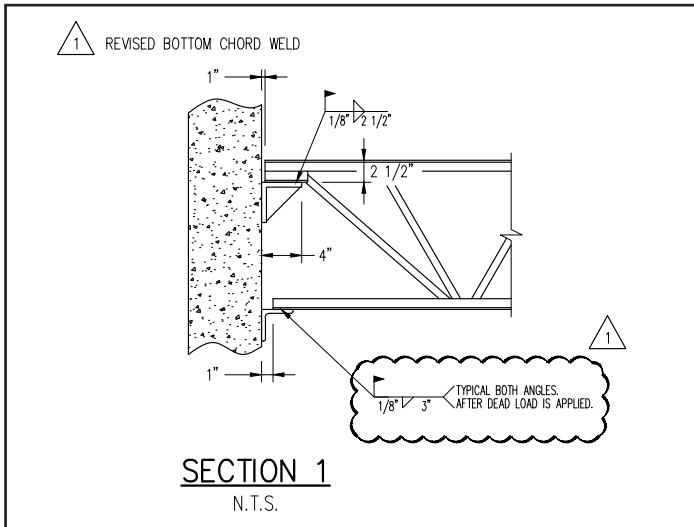
Roof Surface Pressure (psf)			
Affected Area	10 sf	50 sf	100 sf
Negative Zone 1	-14.6	-13.7	-13.3
Negative Zone 2	-24.4	-18.4	-15.8
Negative Zone 3	-36.8	-22.1	-15.8
Positive All Zones	10.0	10.0	10.0
Overhang Zone 1 & 2	-21.0	-20.0	-19.8
Overhang Zone 3	-34.6	-17.3	-10.0
Wall Surface Pressure (psf)			
Affected Area	10 sf	100 sf	500 sf
Negative Zone 4	-14.6	-12.5	-11.1
Negative Zone 5	-17.8	-13.9	-11.1
Positive Zone 4 & 5	-13.3	-11.4	-10.0

Instead of specifying, "Design joist, joist girders, and bridging to resist a net wind uplift load of 7.3 PSF," an engineer may simply include an area chart that does not communicate the needed information.

3. Not Allowing Chord Splices

Sometimes an architect will forbid chord splices for aesthetic reasons. "Perhaps they have experienced a supplier that has used a leftover piece of steel to splice, which may not look aesthetically pleasing," Joe says. "But the Steel Joist Institute does allow for chord splices, because sometimes they are unavoidable," he adds. "Standard raw material lengths and even the length of delivery trucks put a limit on joist length. And if your design calls for a 65-foot joist, then you are going to need a chord splice." The cost for weld splices in

continued...



Indicating revisions with clouding can save project time by making it easier to locate the change.

the factory are nominal. If the concern is about the reliable performance of a chord splice, the joist supplier engineers and manufactures the splice to address this. A shop chord splice weld by itself is typically more than sufficient to handle the load. "We shop weld additional material such as a rod or bar to give extra strength for any splice weld imperfections that may occur." Joe says.

4. Excluding Cold-Formed Angles, Channels, or Members

Much like the mistake of specifying specific manufacturers, not allowing cold-form angles or members is a matter of comfort and preference. But doing so may limit the number

of manufacturers available, hinder the ability to receive multiple bids, and drive up cost. Joe says, "Some specifiers don't like cold-form members because when they have an issue or need to make a modification, they don't know what to do with the cold-formed in terms of properties because they can't go to a book and look it up. But to them I say, just call us and we will consult with you. Including joist manufacturers early in the design process and throughout the erection has well-defined benefits."

5. Not Clouding Revisions on Drawings

The quality of drawings goes a long way in determining the overall outcome of a construction project both in terms of quality and project length. "When revision marks on drawings are not called out with clouding, finding revisions becomes a tedious process," says Joe. "And what's worse, we may miss something. Hunting through 100 pages of detailed drawings to find one changed area requires a lot of unnecessary time and effort. It sounds like a simple thing, but it can increase the time of a project and potentially cause a problem if a revision is missed."

Convenience, comfort, and inertia should never outweigh construction best practices. Taking extra time at the early stages of a project, and consulting with steel suppliers as early as possible, can save time and money and increase safety and quality. "Joist systems are highly engineered components of a building. Don't exclude the experts that you are working with. They have a wealth of knowledge and their goal is to save their customers' money," says Joe.



NEW MILLENNIUM
BUILDING SYSTEMS

Build a better steel experience... visit our website for complete information:

www.newmill.com