

# Panel Power

Linda Norris



New regulations make panelized construction safer, faster and more cost effective.

**T**wenty years ago, when Palmer Construction Company began to erect jobs by panelizing, the economic benefits were clear, but ironworkers in the field were skeptical about whether they could make it work. Now, two decades and 10 pages of regulations later, Palmer and other fabricators/erectors who are good at panelization are on top of their trade—and their ironworkers are safely on the ground. When it works well, the process saves time and money for joist and structural fabricators, erectors and general contractors.

“Back then, it didn’t go over so well, because the workers didn’t have the incentive of safety,” says Bill Palmer, president of the Pennsylvania-based fabrication/erection company he founded in 1978. “Now, they understand that we can get speed out of it, and stay on the ground.”

Information provided by erectors, contractors and fabricators indicates

that panelization is on the rise. Erectors panelize on the jobsite by spacing and bridging the joists (and sometimes the deck) within a ground-level “jig” configured to match the bay size of the project. The panels are then lifted by crane and attached to the structure in a pre-planned order.

The Occupational Safety and Health Administration’s new steel erection standards, which went into effect in January 2002, had prompted a closer look at this construction method for commercial buildings. The Steel Erection Negotiated Advisory Committee (SENAC) helped write the regulations. The actual wording of the regulation regarding panelization is from 29 CFR Part 1926.757 (a) (8)(i):

*“Except for steel joists that have been pre-assembled into panels, connections of individual steel joists to steel structures in bays of 40’ (12.2 m) or more shall be fabricated to allow for field bolting during erection.”*



*Opposite page:* Bratton Steel assembled panels for the Nebraska Furniture Mart in Kansas City, KS for a week before they were erected. In this photo, erectors raise a panel from the stack in preparation for hanging.

*Left:* An ironworker waits for a panel to be set in preparation for welding the joists down.

“OSHA and SENRAC thought they would help [fabricators] eliminate making some of the holes by putting this provision in for panelizing,” said Don Murphy, executive director for the Steel Joist Institute.

And the fabricators are seeing the change in their orders. “Ten years ago, I could count on one hand the number of panelized jobs we were prepping,” says John Love, sales manager for Canam Steel Corporation. “But since the talk of the new OSHA regulations, not only have we completed and booked nearly a dozen jobs around the country in the past year, but our sales force is getting calls asking how it’s done, how to coordinate with us, and if we can include it in our bids.”

Bratton Steel Corporation spent the spring building and setting panels for the first time. The team worked on the almost 800,000-sq.-ft Nebraska Furniture Mart in Kansas City, KS (see “Dynamic Exchange,” p. 28) a panelization

project inspired by the contractors’ insurance requirements. Specified fall protections were equal to or more stringent than those required by OSHA, said Robert Bartley, project manager for Bratton. “This project was so big, it just would have taken a lot of time to do the tie-offs that were required,” he said. “It was a good opportunity to try panelizing.”

Bratton says the job took half the time the project team expected, and he has built a picking rig that he expects to use on future jobs. “The whole secret is that Canam Steel, the joist supplier, bent over backwards to get the joists out to us, so we had plenty of time to build the panels,” he said. “You can’t be building the panels at the same time you’re setting them; we had to be done by then.” Completed panels were stacked two high in preparation for setting them later in April.

The high consciousness of safety expressed in the OSHA regulations is

what Bill Palmer says is his main reason for panelizing. “It’s easier to supervise on the ground, and it keeps my people where it’s safer,” he said.

But time and cost savings are an added bonus.

For example, last year Palmer Construction erected 420 panels for a Unilever warehouse in Carlisle, PA. “We did that in 11 weeks, which was very successful for us,” Palmer said. In the beginning workers assembled one bay per day, and “picked.” They included the deck, a difficult technique that most companies are not including yet in panel assembly. Once construction crews got the hang of things, productivity doubled. After less than two months, deck, girders and 4,157 joists and girders had been assembled for the 1,060,000 sq.-ft building.

Panelization aids in the orchestration of the entire job so that everything goes faster, says Bruce Basden, of Basden Steel. “You can start working on

your panels before the tilt walls are ready, and be all set to drop things in place in a quick order," he said. "It allows you to do some advanced work."

There are things that experienced fabricators and erectors recommend before making the business decision to panelize jobs, especially from an erection standpoint. First, there must be a prospect of a long-term, large-volume job, because there will be some up-front investment in a frame (also called a jig or a pick) to prepare the joists and bridging on the ground.

Second, panelization projects must be carefully selected. Panelization is only cost-effective for certain jobs. Large boxes, such as distribution centers, warehouses, or structures whose bays are as much alike as possible make for extremely cost-efficient panelization jobs.

Third, choosing a fabricator and erector who communicate well on the project is absolutely vital. Steel detailers and engineers must also be in the

loop with erectors and contractors to avoid costly field mistakes. "Usually about 10 percent of a job, even a panelized one, can't be panelized, and someone with the drawings and someone in the field has to be conscious of that because if you don't have the holes [that OSHA requires], you'll be cited," Don Murphy said.

Sometimes general contractors or erectors decide on panelization in the bid process. Whether this is the case or not, the earlier the decision is made, the more time the players have to prepare the product. Tim Holtermann, an engineering manager for Canam Steel Corporation's Washington, MO plant and a member of the Steel Joist Institute's Engineering Practice Committee, has studied the OSHA regulation extensively. "Our engineers and detailers have learned to be ready to anticipate the kinds of things that erectors will need to know to make a panelized job work," he said. The key to preventing field problems is to understand the se-

quencing, where the job is going to start and how it will proceed, he said.

And it takes good planning and careful monitoring to make sure panels stay plumb with girders or column joists. This challenge makes some erectors a bit skeptical of panelization. "You certainly don't want to get out of square," Palmer said. "If that happens, it's all over. You have to plan and simply make sure it doesn't happen."

With careful project selection, advance planning and good communication, panelization can make structural erection safer, faster and more cost-effective. As OSHA and SENRAC regulations keep ironworkers on the ground—erectors and fabricators are choosing panelization to make sure that box structures keep going up.★

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