

Ask the Experts

Early involvement isn't just for fabricators—contacting specialty subcontractors early in your next project can help cut costs and construction time.

BY GEORGE F. WENDT

GETTING STRUCTURAL STEEL SPECIALTY SUBCONTRACTORS INVOLVED IN A PROJECT EARLY CAN BRING ABOUT THE SAME BENEFITS AS EARLY INVOLVEMENT OF FABRICATORS.

Just as early involvement of the steel fabricator on the construction team can reduce both construction costs and construction time (see the series “It doesn't have to be that way!” in the January, February, and March 2003 issues of MSC at www.modernsteel.com), a specialty subcontractor can contribute early on for a smoother-running project. In the experience of Chicago Metal Rolled Products, this has happened when we have been able to answer key questions during the design process:

Is this concept financially feasible? Frank O. Gehry and Associates' design for the Jay Pritzker Pavilion in Chicago's Millennium Park called for 570 tons of steel pipe as large as 20" in diameter, curved in two planes with multiple radii. Long before the design was finalized, engineers at Skidmore Owings and Merrill consulted Chicago Metal Rolled Products about curving the steel pipe. Although Chicago Metal could have followed the original design concept, our architecturally trained estimator suggested that each arch be curved in only one plane and that the radii—ranging from 100' to 1,000'—change at each nodal junction. This design change simplified the geometry for roll-curving, for fabrication, and for erection, thereby reducing costs and construction time without compromising aesthetics. Gehry and Associates agreed to the change and even added their own twist: each arch has a slight sideways tilt.

Can we make it? For the University of Chicago's Gerald Ratner Athletics Center, the initial question was, “Can this be done?” In this case, the design question involved rolling a beam into an S-curve with no weld splicing. OWP&P, architects of record, contacted an engineer at Chicago Metal Rolled Products. Our engineer and the machine operators agreed that we could roll each of eight 93'-long W33 × 169 members to an 85' radius (14' arc), followed by a 22' straight tangent followed by a 146' radius bend in reverse (12' arc).



The trellis geometry for the Jay Pritzker Pavilion in Chicago was slightly modified to simplify fabrication and erection and to reduce costs.

The Ratner Center illustrates an important point: subcontractors have specialized knowledge acquired from years of experience. They maintain detailed records of what can and cannot be done. Furthermore, many subcontractors are willing to experiment, providing sample parts for evaluation. Again, if the subcontractor deems these costs to be a prudent investment, his or her expenditures can reap rewards for everyone.

So what's the downside? Early involvement can have great benefits for the project team, but subcontractors shoulder some risks. For example, there is usually no guarantee that a subcontractor will be awarded a contract. Consequently, considerable time and energy could be spent on a project without bringing any significant benefit to the subcontractor. The worst case for a subcontractor would be for the customer to take his or her best ideas and share them with the competition. Thus, each subcontractor should analyze costs and benefits before expending resources on any



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Photos for this article courtesy Chicago Metal Rolled Products.

The Gerald Ratner Athletics Center in Chicago features members with reverse curvature bends with no weld splices.

given project.

In many cases, the decision to invest in a project is based on the subcontractor's resources. For example, our firm employs four full-time engineers dedicated to providing solutions to our customers.

Teamwork and Problem Solving

Successful early involvement projects succeed because of the spirit of teamwork that develops over the length of the relationship. Teamwork resolves difficult issues by getting answers faster and leveraging the expertise of the subcontractors.

Not contacting a subcontractor early in the design process can result in real problems. In our experience, mistakes have been made when customers make assumptions about our capabilities or processes. We also have seen issues develop when team members try to estimate the costs for curving steel without consulting us.

Relationship Building

From a business perspective, the intangible benefit of early involvement is the relationships developed between the specialty subcontractor and design and construction professionals. Every relationship has potential for future contracts. To that end, and to share our knowledge with a wider audience, we've also conducted seminars for architecture and engineering firms, as well as professional organizations. Such outreach helps convey a subcontractor's ability and willingness to do the "up front" work to demonstrate the value they can add to a given project.