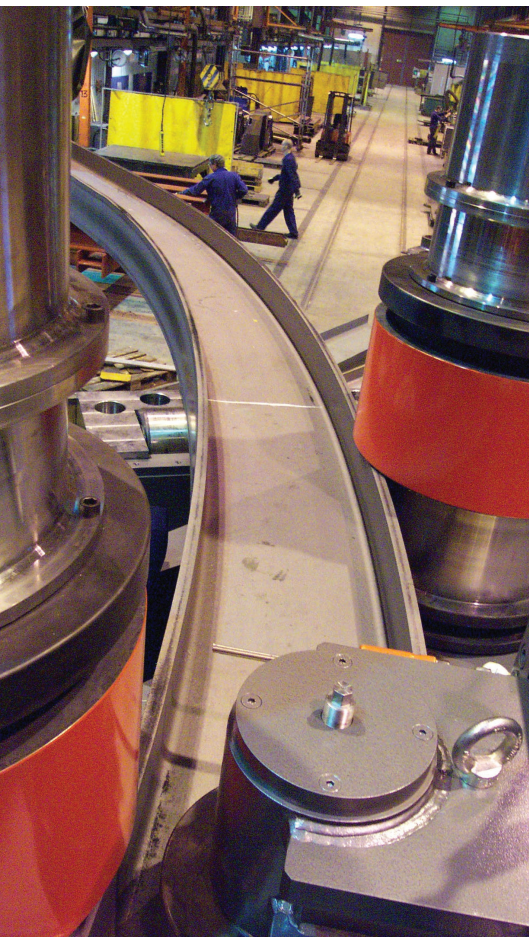


Bender-rollers are very secretive when it comes to their processes, but they're very open about the benefits of bending steel.



Photos: Courtesy Kottler Metal Products



## A Conversation with a Bender

### WHAT DO BENDERS WANT YOU TO KNOW ABOUT BENDING?

Brian Smith, CFO and general manager of Albina Pipe Bending Co., Inc. and vice-chair of the AISC Bender-Roller Committee, offered his insight to MSC on the benefits of bending-rolling structural steel, why there isn't more bent steel out there, and what benders—and engineers, architects, owners, and general contractors—can do about it.

### What can a bender offer a project (besides curvy steel)?

Construction projects often take time in planning and securing a contractor and then the subcontractors. By the time steel fabricators (a subcontractor to the general contractor) issue a purchase order to a bending company, it is quite often very late in the process, and the materials are required quickly. Luckily, this is a situation where a bender can be most beneficial.

Typically, steel is readily available at local service centers and can be sent to a bender within a day of ordering it. If necessary, an AISC bender has the ability to set up a machine and bend steel the day material is received—to a high level of quality and to spec. While this

isn't the cheapest option, it can come in handy when time is crucial. Many benders have the equipment, tooling, and abilities to bend whatever is required in very fast time frames. Because we are typically toward the bottom of the “supply food chain”, we are used to working and performing under considerable amounts of pressure. And in many cases the time it takes to provide the bent materials on a project is miniscule when compared to the duration of the entire project.

An example: We were contacted by a customer in California who forgot to order some spiraled material for a new jazz club. The club had a published opening date and a planned party, neither of which could be negotiated. The fabricator needed some tubing spiraled immediately or they would be faced with significant liquidated damages. We got material the next day from a local service center, spiraled it immediately, and had the bent material for the spiral staircase on-site in time for the fabricator to fabricate and install—prior to the opening.

Benders, if included early in a project, can help provide assistance on what is and isn't feasible concerning a design and can help save time and money as a project moves forward.



In all cases, a qualified bending company is going to know what processes are required, what tooling is required, and what material thickness/size is required to meet an A/E's design and quality requirements. But again, benders are typically not contacted early in a process, and projects (at times) are designed where no one can bend the material to the quality standards that are required.

Consulting a qualified bender early in the design process will allow them to identify potential problems prior to the finalization of a design and provide some potential alternatives when necessary. For example, an architect may want to design a bent section out of HSS 7" x 3" x 0.25" wall material, which, if it can even be found, would be very expensive. The qualified bender could recommend alternatives such as HSS 8" x 4" x 0.25" wall or HSS 8" x 2" x 0.25" wall, which is more readily available, will bend easier, and will cost less.

Length can also be an issue. At times, designs are finalized using uncommon lengths or require arc lengths that are not possible from assumed lengths. For example, a building may require HSS 12" x 12" x 0.375" wall to be bent, and the design requires 21 ft of arc (bent material). The architect assumes that a 24-ft length (which is available) will be required. If a qualified bender is consulted, the bender can explain the bend process and the requirement for tangent/straight material on either side of the arc section—and in this case, the bender will point out that a 24-ft length would only result in 17 ft to 20 ft of arc (depending on the bend process employed). To generate a 21-ft arc, 28-ft to 32-ft lengths would be required. By contacting a bender early, not only would the A/E be aware of this requirement, but also the material size or arc section could be altered to save in wasted "drop" material.

### What are your thoughts on "fake" bending?

Rolling a length of material into a circle, utilizing a consistent radius and a consistent smooth finish, is really not (in many cases) an extremely time-consuming process. However, if you were to take many smaller, miter-cut pieces and put them all together with welding, it will be much more time-consuming and in turn, much more expensive. Furthermore, it will be very difficult to achieve the quality

and consistency the bending process could have offered; the finish will not be consistently smooth and there won't be a consistent radius over the entire arc. Besides that, it's a waste of resources (welding wire, welding gas, power, etc.). Unfortunately, while this seems like a basic concept to benders, it isn't always so obvious to others.

Bending material with the proper process (many processes are available), proper tooling, and proper expertise will result in a product that is smooth throughout the entire bent section of material and has a consistent radius over the entire arc. Furthermore, bending a length of material will use less resources and can be produced in a quicker time frame.

### What will it take to get more A/E's to request bent steel in a project?

I would hope that early involvement would help change old opinions and misconceptions about bending. If a bender is consulted early in the design process, it will allow them to provide pros and cons associated with the bent material in that particular design. By educating A/E's on the availability of benders, I would hope they would start to use our knowledge to help with the design.

We rarely deal with A/E's directly—which I hope will change. Our main customers are steel fabricators, who are hired by the GCs, and the GC is the direct contact with the A/E. Benders are often twice removed from the A/E's and have little to no contact with them. By the time a bender is given drawings, the design is typically finalized. If the bender has issues with a particular design, it is almost too late at that point to assist.

The more A/E's know about bending, the better it will be for our industry. In most cases, professionals do not know that many different bending techniques exist, each one resulting in a different level of quality and consistency. Furthermore, within a process different types of tooling can be used, again, resulting in different levels of quality and consistency. By educating A/E's about the bending process, it will help them ask the proper questions early in the process. It can help identify quality requirements on a project and confirm whether those requirements are achievable. Hopefully, understanding the bending process



Courtesy Chicago Metal Rolled Products



Steven Brooke Studios



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and understanding that there are many qualified AISC Member benders readily available to talk to will help A/Es feel more comfortable designing with bent material.

The other key element is to share the above information with GCs. Some GCs are not comfortable taking on steel jobs, especially those that include bending; they are more comfortable working with concrete or other materials. If A/Es continue to work with GCs that are not willing to pursue projects that include bent steel, we will continue to have a problem. Communication with GCs and A/Es will result in knowledge of the bending industry, which should equal more projects being designed and built out of steel (and in particular, bent steel).

**So are benders making an effort to get "closer" to the owners, and therefore, the decision-making process on projects?**

Our firm tries to get our name in front of anyone who will listen, and educate them on what we do. Obviously, our major focus is the steel fabrication market, but we do not limit our marketing efforts to just fabricators. There is a massive group of individuals to market to and educate, and there needs to be a collective effort of everyone in the steel industry. Steel needs to become a more common concept to owners, and the strengths of steel need to become common knowledge.

The fact is that many potential "owners" have no idea that that steel is bent by a bending company. We hear: "You mean it just doesn't come that way?" and "Wow, there is a lot of bent steel around, but I never noticed it before you mentioned what you do." The best way to get owners to ask for a project to be erected from steel, and to include bent steel, is to help open their eyes to the readily available options that steel can provide.

But if an A/E or GC is not willing to design with bent steel, unless an owner is adamant about it the design will shift to other alternatives. In our opinion, the other options are typically not the best options, but are comfortable. Benders need to make everyone involved with the process feel comfortable with the bending option! **MSC**

*If you have any questions on bending-rolling or are looking to use curved steel in a project, visit [www.aisc.org/benders](http://www.aisc.org/benders) or contact the AISC Steel Solutions Center at 866.ASK.AISC.*