

Building Your Dream Shop

The circuit breaker trips, there's a traffic jam outside, and your workers seem to be walking in circles all day. Suddenly you realize it's time to MAKE YOUR MOVE.

By Todd Daniel
Editor

Many fabricators start their businesses in small shops and build additions as their firm grows. At some point, you may find that it's more cost-effective to completely remodel your plant or construct a new building. Making such a major change is exciting because you have the chance to build your "Dream Shop."

The design for a Dream Shop typically comes from a collection of ideas gathered over the years. The goal is to create a facility that's safe, efficient, financially sensible, and fairly comfortable. Prior to designing your shop, it's a good idea to read books on the topic and visit other shops. After all, one good idea can result in a major dollar savings.

Those fabricators who regularly tour shops during the METALfab conventions have the advantage when it comes to shop design. That's because they get to see what works and what doesn't work at fellow member shops. Chances are, if the same idea is used in many member shops it probably works very well. Some of the innovations regularly seen at NOMMA shops include mounting welders above layout tables on a swing rack, placing wheels on all equipment for flexibility, and using a "flow" system for handling jobs. Other things you'll frequently see at a NOMMA firm are carts for moving all materials (reduces back injuries) and high-ceiling areas for as-

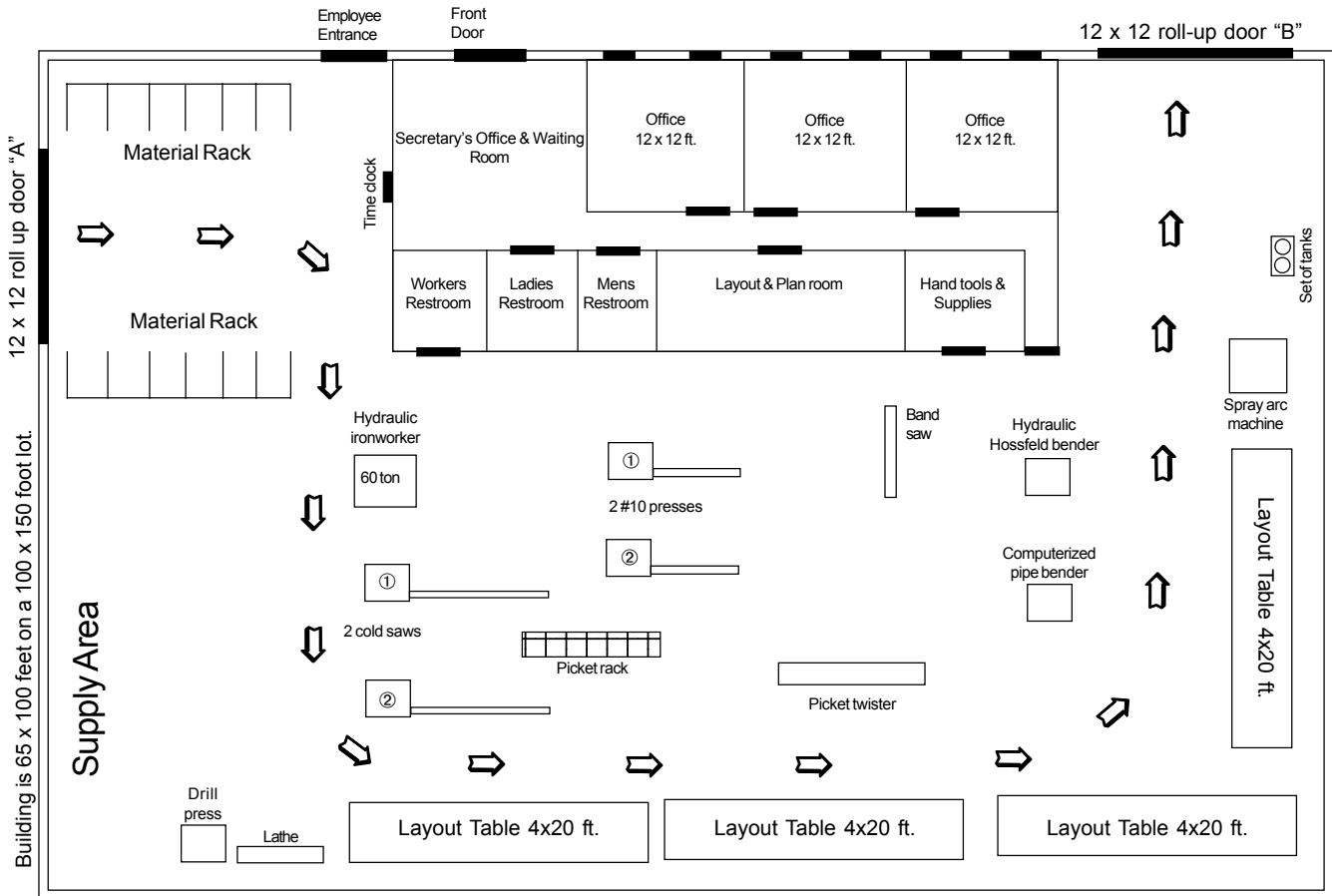


The showroom of Duke of Iron in Smithtown, N.Y., is both attractive and well organized. In the room are samples of fencing, handrails, railings, and castings.



Perhaps the best way to get ideas on shop layout is to attend the annual shop tours at the NOMMA conventions. After spending years visiting other shops, Red Sojka [center] opened up his own facility for a tour in 1992.

Figure 1: A Model Shop Designed By Red Sojka



Though only average in size, this hypothetical shop makes exceptional use of existing space. General equipment is placed in a centralized location that is convenient to each of the four fabricating stations.

sembling spiral stairs and other big jobs.

Another common thread for all shops is a general lack of space. Open floor space has a way of attracting stock and equipment like a magnet. This is all the more reason to keep things organized and efficient.

One book that's handy for assisting in building your Dream Shop is "A Practical Guide for Improving Your Metal Fabricating Shop Layout." This publication is available from the Fabricators & Manufacturers Association International.

According to the book, there are four things to consider when designing your shop: efficiency, reduction of delays, good flow, and creating an environment that keeps quality up.

If you are experiencing some of the following inconveniences, it may be time to begin planning your Dream Shop:

- There's a constant traffic jam outside your shop as delivery vehicles and installers compete for the same door.
- Jobs are constantly getting mixed

up. Or, worse yet, you must move one project to get to another.

- The circuit breaker trips 10 times a day, and each time your whole line must

stop and wait for the breaker to be reset.

- The only "flow" in your shop comes from a leaky faucet.

Case Study A

One NOMMA member who's shown a particularly strong interest in shop layout is Red Sojka of Red's Iron Specialties. Red is now semi-retired and serves as a consultant to his sons who are running the business. For this article, we asked Red to make a sketch of his Dream Shop [Figure 1].

When planning the fictitious shop, Red had a major advantage in his favor. For 13 years in a row, he attended NOMMA conventions and absorbed ideas during the shop tours. Over the years, he has put these ideas to good use. According to Red, "The most important things I learned were from shop tours. While there are some people who don't want to let their secrets out, the individuals who impressed me the most were the ones who opened up their shops and shared their knowledge."

A Book on Shop Layout

Practical Guide for Improving Your Metal Fabricating Shop Layout is a 524-page book that's geared toward an industrial setting, but much of the information relates to ornamental shops as well. Included with the book is a drawing kit that includes templates of machinery and graph paper. The book is written by Richard S. Budzik and George Kuprianczyk. Cost: \$85. Contact: Fabricators & Manufacturers Association International, 833 Featherstone Rd., Rockford, IL 61107-6302. Phone: (815) 399-8775. Fax: (815) 399-7679. When ordering, be sure to request their free catalog.

Figure 2: Duke of Iron Inc., Smithtown, N.Y.

Building: 8,000 sq. ft.



A nice feature of this building is five overhead doors, which makes it easy to simultaneously unload delivery trucks and ship out finished jobs. The garage at top right is used for fabricating large jobs during the day.

Of course, Red has also picked up ideas from trial and error. The following are a few of Red's suggestions for new shop design:

- Use lots of skylights in the ceiling. Ideally, 4 x 8 foot skylights should be placed every 10 feet. On a sunny day,

you may not even need electric lights.

- Don't put windows in the shop to avoid possible break-ins.
- The ceiling should be at least 16 to 20 feet high.
- Provide plenty of power. Place a separate circuit breaker in the back of

each workbench, which includes both 220V for welders and 110V for smaller tools like grinders and drills. In this way, one breaker trip doesn't shut down the whole line.

- Install overhead drop lines to each piece of equipment to keep the exten-

The "Flow" Process at Duke of Iron



1) Once stock is put up, it can then be taken from the material rack to be cut and punched. Shown: Julius Molnar.



2) A layout area is at left, and the forging and punching stations are at right. Shown: Julius Molnar.

sion cords off the shop floor.

- Keep flammable materials outside in a separate storage area, such as a rented container.

- For your welding tank hoses, protect them by placing 3-inch sections of PVC pipe over both the green and red hose. This protection greatly extends their service life.

As Figure 1 shows, the key elements of this building are two overhead doors on each side which allows jobs to “flow” through the facility. The process begins when a delivery truck backs into the overhead door at left. A forklift or overhead crane is used to put material in racks. Each fabricator is responsible for pulling his own stock and cutting or punching it. Completed jobs then go out the right door for grinding and finishing.

The facility shown in the diagram is 65 by 100 feet and sits on a fairly small 100 by 150 foot lot. All supplies and stock are kept near the main loading door. Cutting is performed in the center of the plant and then completed stock is taken to four layout tables for fabricating. Jobs then “flow” to the spray arc machine at far right for finishing.

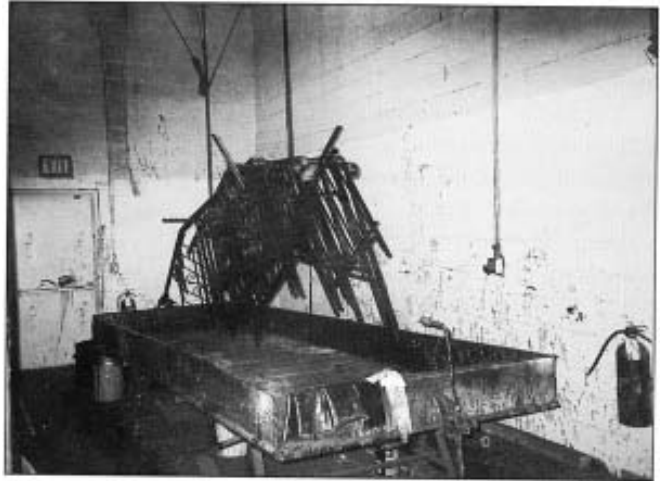
Case Study B

On the opposite side of the country, longtime NOMMA member Dick Schumacher of Duke of Iron Inc., Smithtown, N.Y., has also based his shop entirely around the “flow” concept [Figure 2]. In 1984, Dick constructed his facility literally over and around an old diner. The diner now houses the showroom, kitchen, and office area. Duke of Iron is next to an expressway, and like the majority of NOMMA shops, space is limited.

According to Dick, nearly every item made is routed through the “flow” process. “Most raw materials enter the large bay door to the left and are off-loaded with a 2-ton crane and stored **inside** the

The “Flow” Process At Duke of Iron, Cont.

3) Once fabricated, an assembly is then moved to the paint booth for finishing.



The “Flow” Process At Duke of Iron, Cont.

The garage area features three large overhead doors. This area is used for finishing and assembling large jobs. Shown: Evenor Melgar.



building,” Dick says.

Once stock is delivered, initial cutting and punching is done near the off-loading area, and then the stock is moved to one of five different layout tables. Following fabrication, the completed assemblies are moved to the right for finishing. After making a stop in the paint shop, items are moved to the garage area. Trucks can then back up to any of three large doors to load up the finished work. The three doors allow for easy loading without getting in the way of other deliveries and pick-ups.

The garage is an especially nice fea-

ture of this building. During the night, trucks are backed into the area to keep them safe. By day, the garage provides an open area for larger rolling and fabrication jobs.

Conclusion

While nearly every metal fabricating shop has some segments of a flow system, both shops profiled in this article take the process from beginning to end. Essential to a good material flow are plenty of overhead doors and sufficient floor space. Overhead cranes are also a nice touch for your delivery area. □