



Schwall's *Grand Entrances*

A small, Massachusetts-area shop builds custom stairs and handrails using its 5-axis CNC machining center.

BY MICHAELLE BRADFORD

Schwall & Sons fabricates custom stairs and handrails, like the one pictured above.

A well-crafted staircase not only sets the mood of a home, but it can make a dramatic statement about its owners, as well. Who can forget Rhett Butler's exit from Tara in "Gone with the Wind?" Would it have been as emphatically impressive without the staircase? What could better sum up Jed Clampett and his clan's new found fortune and status in life, as well as a mansion with a foyer and a winding staircase?

In many high-end homes, the staircase is the focal point of the entryway, making it a vital design feature. One company making a grand statement with its custom stairs and handrails is Schwall & Sons Woodworking, located in Stow, MA.

Walter (Wally) Schwall says he has been making custom stairs all of his adult life. Over the past 18

years since he started the company, Schwall has developed a system that he says creates custom stairs and handrails that fit accurately on the job site.

Schwall credits his accuracy to his background as a cabinetmaker. "I went to school for cabinetmaking," he says. "But my teacher was a coffin maker. That sounds dreary, but coffins are very precise. I was taught in my teenage years that you have to be very precise."

19th Century Craftmanship

Initially, Schwall made his handrails by hand from a solid piece of wood, with no laminations. So the woodgrain can be seen throughout the entire piece.



Wally Schwall says that his resaw machinery gives him the ability to manipulate and blend difficult woods, making the grains appear seamless.

That is something few stair builders do nowadays, he notes.

Although it looks beautiful, this process of 19th century stairbuilding is arduous and labor intensive. There are also safety concerns because of the tight tolerances that are required in the wood.

"At the end of the day when you go to make these fancy products that we make, a piece could blow up. It could break, and you would have to start all over again the next day," Schwall says. "You didn't go further along, you went backwards. And at the end of the day, you still have the builder wanting you there on schedule."

This is why a longer time-frame is needed to produce such products, he adds.

"I would take a job on, but I would tell the (customer) right off the bat, 'This is what I have on my plate. If you wait a month-and-a-half, two months, I'll be able to do it, but I can't squeeze it in before that because I have a schedule to meet,'" Schwall says.

Investing in New Technology

The enormous amount of time that it takes to fabricate a staircase by hand is one of the reasons Schwall decided to invest in a new machine, the Busellato 5-axis CNC machining center from Delmac Machinery Group.

"Usually we're moving the parts around a machine, and when you move the part around a machine, a lot of things can happen. Some of them are good, but most of them are bad,"

Schwall laughs. "I needed to get to a more consistent way of doing things and the (5-axis) was the answer."

Schwall purchased the machine last July. Since then he has been integrating it into his work cycle by having his son Jonathan take what he had been doing by hand and translating it to 3-D visual software.

"He's been working day and night trying to get this software up and running so we can be able to know that we can have a twisted stair handrail system out at a certain time," Schwall says.

It was a big decision to purchase the Busellato, Schwall notes. Also, there was a learning curve to get the machine to operate according to the manufacturer's standards.

"There was a huge down-time in terms of the learning curve for us. That was the biggest killer," he says. "We've just been persistent and consistent. I would say it was probably by the end of January that we started getting it down to a science."

Special care was taken while running the railings to make sure that the heads on the 5-axis were not crashed, Schwall adds.

According to Jonathan, they have been pushing the limits of the software, trying to get the 5-axis to machine very complex designs that they had been doing by hand.

For example, Jonathan was working on a 3-D visual for about a week, Schwall says. He sent the file to the manufacturer's technical representative in Italy, but at the end of the day he could not get it to run on the 5-axis machine. Jonathan got the



Staircases in large foyers with tile can present a challenge if the tiles move. To ensure this does not happen, Schwall & Sons works closely with building framers prior to installation.

piece to a certain point and then he finished it by hand. He was then able to get the piece to the client who needed it the following Tuesday for a job in Nantucket, RI.

"The file was so complex that the 5-axis guy in Italy said that he can't possibly conceive how it could come out perfect even off the machine, because on the inside curve, so many things are happening. It's coming through straight, it is coming into a radius and it's ramping up at the same time. It was just real tight in there," Jonathan says.

But the plus side of having the 5-axis has proved beneficial to the company in many ways. With the increased technology and capabilities, a customer can call or send over a fax or send a CAD file of a stair by e-mail. Schwall will then take that information and put it into the software to design the handrail per the job.



Schwall & Sons often fabricates staircases that have challenging support issues, requiring the company to come up with creative solutions to make sure the stairs are solid.

"I had a guy come in on Saturday, drop off an old-style laminated handrail. He needed the handrail like yesterday. He went to several different shops and they all said six to eight weeks. That was on March 31. He picked up the handrail April 6 at 8 a.m. We handed the handrail to him at 9 a.m. because we had a couple more small parts to make. I told him, explained to him two times how to hang that handrail because it is difficult to hang on the job," Schwall says. "He called me back in the afternoon and said it 'fit like a glove.' The building inspector came in a half hour later after they had hung the handrail."

Other Machines in the Shop

Machines in Schwall & Sons' shop include a Paolini P 260 sliding table saw, a Meber band resaw SR- 900, a Laguna 24 bandsaw and a Jet/Powermatic widebelt sander. Schwall says that he had to decide what machines to keep when he purchased the Busellato.

"We didn't know what we were going to need and what we weren't going to need. We didn't want to get rid of anything until we were confident that what we thought we needed would work," Schwall says.

Keeping machines like the resaw, was a decision he made because it can do work, like a straight handrail, efficiently and save excessive wear-and-tear on the 5-axis. The resaw also allows him to manipulate wood in such a way that he can take a piece that is 20-feet long and cut it down into veneer. For one job, he did this with a piece of walnut and laid it upon poplar with a vacuum bag. The end result was a staircase in walnut, a tough wood to match, that blended from top to bottom.

"From the client's point of view, the staircase looks like the same piece of wood," Schwall says.

In addition, he says he can significantly upcharge a job for a stair with a furniture-style look.



Schwall & Sons fabricated stairs for Ruth Pointer of the Pointer Sisters. This project included two stairs stacked over each other.

Schwall also stresses the importance of having the resaw because it gives him the “ability to be in control,” he says. There are a lot of environmental factors, depending on the region of the country, to consider – “being hot, being cold or being moist, being dry. If I take a piece of wood and resaw it today, I want to be able to glue it up today. Some companies get the wood already resawn, and it sits around and becomes a sponge in the shop. Or it could dry out, and when you go to clamp it up, it’s going to eventually be a problem down the road and crack.

“I know from (experience) that when I go to laminate a stringer up, I need to be able to have my fixture all set to glue up and have all my clamps in a row. And the last thing I do is resaw the pieces, plane them, sand them and get them ready to put on a wall,” he adds.

Stair Trends and Challenges

Many of the stairs Schwall fabricates are challenging and have little “quirks,” like lack of support. Schwall’s clients are mostly in the Boston area, within a 50-mile radius, and have included such celebrities as Ruth Pointer from the Pointer Sisters.

“I did her stairway about 10 years ago. She’s tall,” Schwall laughs.

“Ruth Pointer’s staircase was a major support issue. It was challenging to get that staircase so that it was solid. The foyer is 33 feet by 26 feet. That is the size of most houses,” Schwall says. “It is all tile, so if the stair moves, you would be popping



tile. We have a system of getting in there ahead of time and working with the framers to incorporate sufficient framing in the area where the stairs will be.”

Over the past 20 years there have been significant changes in the style and size of most homes. That has effected the design of staircases.

Schwall says that when he first started out in the mid ‘80s, most houses were probably 3,500 to 4,500 square feet.

“They were very similar. Each house was like a cookie cutter. The radius and geometry changed, but the makeup of the stairs was the same. The handrail was the same and the baluster was usually red oak,” he adds.

In the early ‘90s, Schwall says he noticed more mahogany and elaborate handrails and different turned balusters. During the mid ‘90s the handrails and profiles became more ornate and the handrails were wider.

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Wally Schwall and his son Jonathan stand in front of the Busellato 5-axis CNC machining center they purchased last July.

"That was the dot.com era. I did work for a dot.com company. You couldn't put enough hours in the day then. I was working day and night, seven days a week. We couldn't keep up with the work around here," he says.

Although that work died off after the dot.com bubble burst, the transition brought to the table more ornate and different designs for stairs.

"A guy that just came into new money was trying to outdo his buddy," Schwall says. "He was trying to get it where his place was a step up from that guy's place."

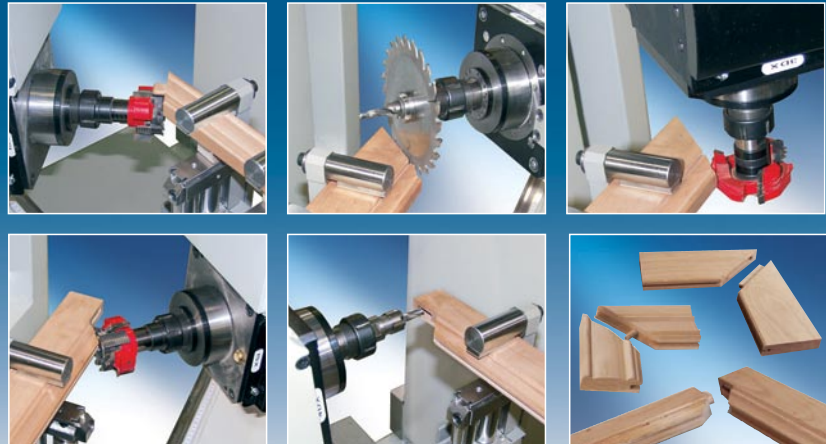
According to Schwall, all of those design trends have led to builders putting more effort into the homes they are now building. There is a lot of design and research. The size of the homes are bigger, and people are putting a lot of detail and thought into each project.

"There is a lot of analyzing about every detail. That being said, it seems like a lot of the decisions are last-minute. That's one of the reasons we wanted to get the 5-axis, because we want to be able to produce a (stair) once the decision is made," Schwall says.

The overall aesthetics of a stair is very important to Schwall because he says that he "tries to build a piece of furniture that will be staying with a house."

"I would say that the stairs and the wood and material that are in the homes now are going back to what (craftsmen) used to produce in the 1900s, where the labor was cheap and they had a lot of wood and they were able to put a lot of detail in the house. That's what these houses have — a lot of workmanship, a lot of craftsmanship and a lot of detail, which is very expensive to fabricate today," Schwall adds. ❁

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