Railroad Modelers Cut Metal Production Facilities Down to Size

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**INTRODUCTION**

“Where men are men when the heat is on. Sulphur City U.S.A.”

Graffiti that once decorated a wall in the now defunct Sharon Steel Mill complex in Farrell, Pennsylvania, lives on in the small-scale replica of the Sharon Steel Mill at the Carnegie Science Center’s Miniature Railroad & Village in Pittsburgh, Pennsylvania (Figure 1). That is, if you know where to look.

Painted on a wall not visible to the casual observer, the graffiti is only one of many details recreated in this miniature model replica, which was built from blueprints of the original mill.

The Sharon Steel Mill replica is not alone in the modeling world. Whether for public or personal display, model railroaders take a serious interest in recreating metal production. For many modelers, reproducing accurate and detailed metal production facilities is more than just a hobby. Painstaking detail and immense amounts of research go into each piece of these displays.

**MODELING THE SHARON STEEL MILL**

In designing the Carnegie Science Center model, Michael Orban, manager of the Miniature Railroad & Village and one of the modelers of the steel mill, took original blueprints from the Sharon Steel Mill, reduced them on a photocopy machine, and used the shrunken blueprint as a pattern to build elements of the mill. Prior to his work at the Carnegie Science Center, Orban worked creating scale models for architects.

How much work went into this project? Orban pulls out a three-ring binder stuffed with handwritten notes, photocopies of original blueprints of the Sharon Steel Mill, pages from books on steelmaking, articles from the era depicting the human side of the steel industry, poetry and legends associated with the steel industry, photographs—all research for building the model steel mill. Orban toured the original mill as well, taking notes and plenty of photographs.

He even found an early edition of U.S. Steel’s *The Making, Shaping and...*
Treating of Steel, the steelmaker’s bible, according to Orban. This edition, published in the early 1900s, lent the modelers valuable insight into how steel was made at the time, a necessary detail if the mill was to fit in with the turn-of-the-century theme of the rest of the village.

The model includes a number of moving parts that simulate a working steel mill. A clamshell bucket lowers from the long ore bridge, scoops the ore from the trenches, and carries it to the skip cars, which transport the ore to the top of the blast furnace and dump it in. Orange lights glow from the casthouse floor to simulate flowing molten metal, and orange ingots appear to shine as they cool (Figure 2).

The display even featured a mechanism that would lift entire hopper cars filled with ore and dump the ore for distribution in the ore yard, as in the car dumper of the original Sharon Steel Mill. “But that only worked for about an hour,” Orban said.

All in all, the project took about two and a half years, Orban said. But even now the complex is a work-in-progress. Empty spaces in the model stand waiting for the Bessemer converters that will eventually be installed—once the modelers decide how to best recreate them, that is. The problem is recreating the colors of the molten steel and the smoke the Bessemer gives off. Orban says the museum is considering using fiber optic strands to create the needed shifting colors.

The entire village is built on what modelers call an O-scale, where 1/4 inch equals one foot, but the steel mill had to be shortened a bit in the interest of space. The production process shown on the railroad platform depicts the transformation from raw material to ingot. While the model could depict further processing of the ingot, it would take up too much of the display, Orban said.

See figures a–g for additional photos.

MODELING FREELANCED METAL PRODUCTION FACILITIES

While the Carnegie Science Center display recreates a specific steel mill, other modelers choose to create fictional facilities, called freelance displays. Dean Freytag, a model railroader in Ashland, Ohio, built an entire fictional steel complex in the basement of his home and called it Davies Steel, after his late wife’s maiden name (see figures h–k).

Freytag, who has authored more than 60 articles and two books on modeling the steel industry, says he chose not to base the plant on any particular mill, so that no one could point at it and say, “That’s wrong.” Though Davies Steel is a fictional company, it is the result of the careful research of actual steel mills, mostly through first-hand observation. Freytag and his wife, Ann, took many field trips to steel mills in surrounding areas such as Cleveland and Youngstown. Freytag, too, owns a copy of U.S. Steel’s The Making, Shaping and Treating of Steel for reference, this one a more modern edition.

Though modelers creating freelance