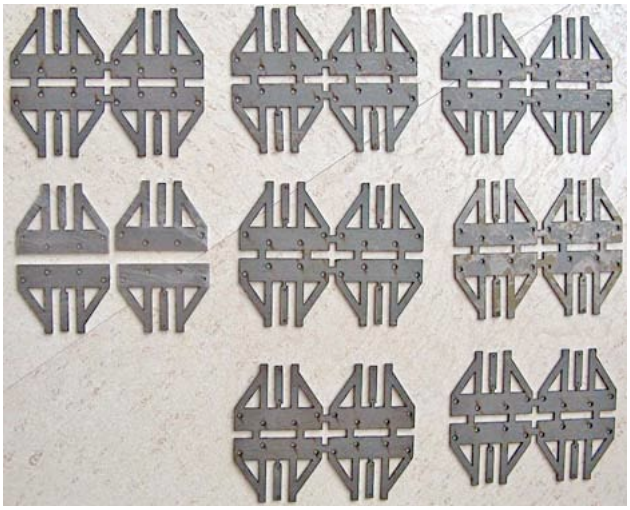
Steve King's Introduction to Laser Cutting for Larger Scales

Laser cutting of metals has become fairly common in 'garden rail' sizes and I have used it extensively in 7/8 (1:13.7) scale. The laser cutting process described here is for carbon steel and stainless. Cutting wood, plastics, etc. is a slightly different process. Laser cutting is not suited for aluminum, copper or brass [as they reflect the laser beam].

The process involves finding a metal working shop with a laser cutting machine that is willing to do small lot jobs, and supplying them with a line drawing or a CAD file (usually .dxf format).

I am just an amateur 2D CAD operator, and take many hours drawing and redrawing and designing some of these parts, but I have learned a lot on laser cutting by trial and error. I had to switch shops, for example, because one kept cutting my parts on dirty metal, and the edges got re-welded together.

Designing the parts correctly for laser cutting is an involved subject, but simple parts such as side rods are fairly easy for the beginner to draw. Some laser shops will convert the users' drawings to CAD as part of the job.



Laser cut 'W' irons for 7/8 scale logging disconnects

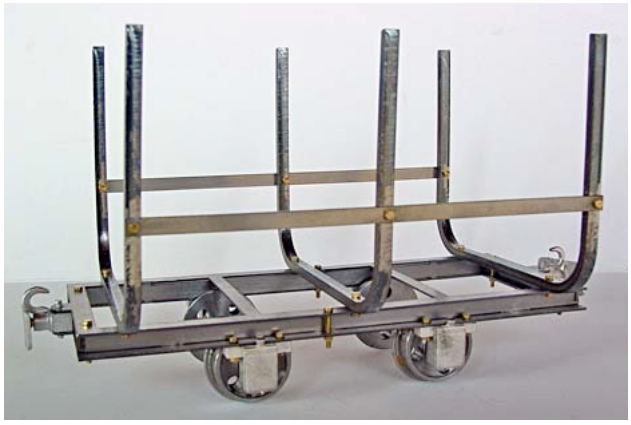
Often a modeller making a 'one-off' project can justify the cost of laser cut parts, since the shop's minimum is based on cumulative length of line cut plus number of 'pierces' (holes or openings).

The great news for modelers is that laser cutting technology has advanced such that there are now five-and six-axis laser cuttings, and many of the older machines are migrating to small shops as second hand units and thus are available for small jobs. Best bet is to find a shop with a metal cutting laser and discuss your project with them.

Laser cutting limitations: Holes may be accurately located in the part, but hole diameter may not be smaller than the metal thickness. I have had parts cut in metals from .020" to 1/4" for model building with excellent results.

The cut edge is 'hardened' about .002", and there may be a 'sawed' pattern on the edge from the laser. This may be filed away if allowance has been made for it. In most cases on thin gauge metals, it is not noticeable.

Very small parts such as coupler links should be 'tabbed' into a sheet and may be broken out by the user.



Steve's wholestick sugar cane truck in 7/8 scale using laser cut components; model is ~6" long and ~5" high

Javanese prototype for Steve's wholestick cane truck. Photographer unknown; other photographs by Steve King

[More information can be found with a web search.]