

# Modeling industrial railroads in 7/8" scale

Large models of small equipment make this  
scale/gauge combination attractive

by Rich Chiodo | Hampton, New Hampshire  
Photos as noted



**M**odeling industrial railroads is not new. British modelers have been doing it for some time, as their heritage is rich with railways employed at slate quarries, clay pits, coal mines, peat bogs, gas works, foundries, and the like.

Industrial lines were mostly private endeavors operated by a parent company to move whatever bulk or finished commodity necessary. For instance, China clay had to be moved from the clay pit to the canal dock for transshipment to the refractory.

Almost universally, these private lines were of very narrow gauge and light rail. A gauge of two feet was considered heavy duty, with gauges of 21", 20", 18", 15" and even 12" seeing use. Industrial railroads were supported by several large British, Continental, and American manufacturers who supplied track components, rolling stock, and locomotives.

Modeling these little railroads has some extremely appealing attributes. The lines tended to be compact, with minimal infrastructure. Modeling a few buildings, a passing siding, a handful of rolling stock, and a single locomotive would get you up and running. Because of the homebuilt nature and light construction inherent in most of these railroads, character abounds, as does modeler's license. Pretty much anything goes as long as you don't violate any laws of physics. This frees the modeler from that monkey of prototypical correctness that burdens those modeling the Pennsy from Altoona to Harrisburg.

To date, most industrial model railroad-ing has been executed indoors in the smaller scales. These model railroads tend to be compact, diorama-like jewels featuring one or two tiny steam or gas-mechanical locomotives and a handful of cars. The modeling tends to be exquisite, with levels of detail not often found in the vast expanses of the mainline plywood dragons that occupy basements across the USA.

This brings us to what is currently a small but very active group in the States (and elsewhere) who have combined two model railroad genres and a new scale,

**The engineer observes the line as he waits for the switch to be changed on Charlie Lix's 7/8"-scale Excelsior Estate Railway. This line models 18"-gauge equipment. The size of the figures is a clue to the diminutive nature of the trains.**



Marc Horovitz

**The difference in size is evident when 7/8" scale is compared with G scale. A scratchbuilt 7/8"-scale engine by Marc Horovitz stands next to an LGB G-scale engine of similar proportions. Both run on gauge-1 track.**

creating narrow-gauge 7/8" (1:13.7) industrial garden railroading. We have a fondness for narrow-gauge industrial lines and models of them. We have moved away from the smaller scales for a variety of reasons: fiddliness of anemic motors, poor drives, wheel wipers, and tiny couplers, and all the operating headaches of small scale, indoor, electric model railroading. Seven-eighths scale allows the use of large electric motors and sizable battery packs, all carried onboard even the smallest of prototypes and usually leaving room for a fully detailed cab and engine compartment.

Live steamers can now enjoy a properly sized boiler and better slow-speed operating characteristics that come with more mass and increased steaming capacity. Rolling stock has mass and detail, with none of the delicate fragility sometimes seen in other large-scale models. This stuff is right at home outdoors.

As I mentioned earlier, 7/8" scale allows accurate modeling of small prototypes. You get very big models of very small cars and locos that operate superbly. Since the prototypes were compact and used tight-radius curves and low-numbered switches, the space consumed by a believable industrial garden line is no more space than is used by for a typical Colorado narrow-gauge railway in G scale. And, if all you desire is a small switching line, 7/8" lends itself well to an indoor shelf layout.

It does pay to get the proper look and feel of the track. I recommend handlaid track using properly spaced and sized ties, with code 250 rail or smaller (though code 332 scales out to only 72-pound rail in the prototype, and well within reason for a heavy-duty two-foot line).

You will find shrubs and groundcover now take on a more prototypical scale and proportion, and that the urge to fill all the space available with railroad is diminished. After all, a little gas mechanical 0-4-0 with a string of 9' flat cars completely fills your field of view. Truly, less is more!

This is still a scratchbuilders and kit-bashers scale. However, the garden-railroad trade is beginning to support the effort (see sidebar). Other sources include vendors that support the 1"-scale dollhouse hobby as well as those that support the ride-on live-steam hobby. However, much of what you need can be made at home with your table saw and hacksaw. A visit to your hardware store will net much that is usable in the way of fasteners and such.

These are but a very few of the advantages 7/8" scale has to offer garden railroaders, particularly those with limited space and budget. It's a wonderful paradox, this largest of scales for the smallest of prototypes. The six 7/8"-scale garden railways featured on the following pages will give you an idea of the potential.



# The Port Clyde Light Railway

by Carl Spirito | Saco, Maine  
Photos by the author

My interest in  $\frac{7}{8}$ " scale came about during discussions with Rich Chiodo, Charley Lix, and others about the best scale for building and operating an outdoor steam- or battery-powered industrial railway. I wanted very big models of very small prototypes. Other factors included the desire to have reliable outdoor operation and to be a little different from the rest of the crowd. An ideal

solution seemed to be  $\frac{7}{8}$ " scale running on 45mm-gauge track.

Whenever I start a new scale, I need some physical reference to get the feel of it. To me, nothing fills this need like a human figure. Since none existed in this scale, and since I had been sculpting 1:20.3 figures in Sculpey polymer clay (April 1999 *GR*), one of my first models was a figure, a standing driver for my first engine, a

kitbashed (Lehmann/Bachmann) Porter.

My second locomotive was a freelance internal-combustion "critter," which started with a roofed cab, but was later converted to an open cab. A new driver was carved to fit this engine. Since then, I've built a battery-toting follower car, which works with either locomotive, and I'm working on a string of flatcars and a British Motor Rail Simplex locomotive.

My figure sculpting has continued, and now I'm casting them in resin and selling them to other  $\frac{7}{8}$ " scale modelers. I have also created a new electronic magazine on the World Wide Web for  $\frac{7}{8}$ " scale (<http://www.7eighths.com>). This site contains photos, commercial ads, and descriptions of  $\frac{7}{8}$ "-scale models built by many modelers.



LEFT: A  $\frac{7}{8}$ " scale, live-steam locomotive based on a Midwest marine steam plant. This engine is typical of a homemade, backwoods locomotive.

BELOW: Port Clyde No. 3, a heavily kitbashed Lehmann locomotive, tows a supply car that houses the batteries that power the engine. The author made the engineer from polymer clay.





# The Isle of Shoals Light Railway

by Rich Chiodo | Hampton, New Hampshire  
Photos by the author

The 1/2", Isle of Shoals (IofS) Light Railway is the culmination of almost a decade of my finding my way in garden railroading. My deep model-railroader roots had much to do with the refinement of purpose and image I was attempting to achieve in the backyard.

After several starts and rebuilds, and through an ever-increasing attempt to be more true to a scale and maintain a certain look and feel, it occurred to me, as it has to others here, that the great outdoors lends itself well to *big trains*. My dilemma had been in fitting the Pennsy mainline behind the garage. In parallel with this seminal moment came my increasing fondness for all things related to very narrow-gauge industrial railways. Thus, the marriage of a desire and a passion: very large models of very small prototypes operating on prototypically dimensioned and laid out right-of-way.

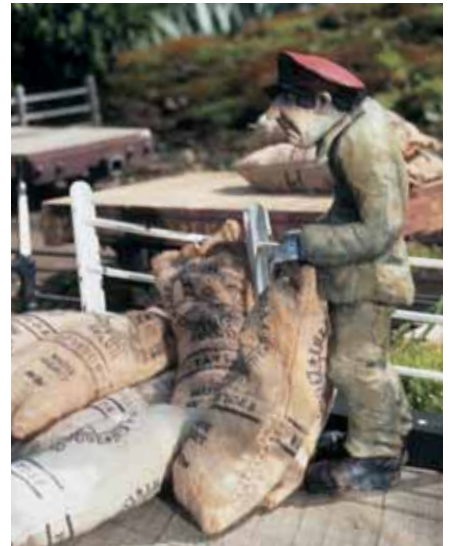
The IofS represents an island belt line off the coast of New Hampshire. It represents a fictitious two-foot gauge railway that once was operated by the US Army Coastal Defense and now serves the tourist-hotel trade.

Track is brass, code 332, handlaid to typical two-foot-gauge standards. Motive power and rolling stock are a combination of scratchbuilt and heavily modified commercial products. Since the rails are unpowered, only steam or batteries power the locomotives.

**RIGHT:** Enniss Plammer, cheerful as ever, prepares sacks of spuds for transshipment. The 1/2"-scale figure began life as a wedding-cake decoration.

**BELOW:** Enniss carefully pilots a trainload of potatoes over the two-foot rails. The locomotive is a much-modified Berkeley Locomotive Works *Cricket*.

After all these years, both indoors and out, I am having the time of my life with these large models of small prototypes—and that's what it's all about!





# The Sierra Excavation Company

by Gary Watkins | Merced, California  
Photos by the author

The equipment on my  $\frac{1}{16}$  scale railway is of freelance design and is based on the cars that I offer commercially in my 1:20.3-scale Munger Mining Co. industrial series. These little four-wheel cars vary in length from nine to eleven scale feet.

The Sierra Excavation Co. 1:13.7-scale equipment is basically 50% larger than 1:20.3-scale trains, but still runs on the same 45mm-gauge track. This makes the

1:13.7 models two-foot narrow gauge rather than three foot. These larger scale models allow details and wood grain to be seen much more clearly in an outdoor environment, adding to their character. The larger-scale trains appear more realistic when viewed in the 1:1 scale, garden-railway environment.

My  $\frac{1}{16}$  scale railway is in its infancy, with very little  $\frac{1}{16}$ -scale track actually installed

at this point in time. My outside railway is still 1:20.3 scale, with the smaller ties and code-250 aluminum rail. I intend to install larger ties and code 197, nickel-silver rail. I have not had the time to design and build the structures that will eventually be a large part of the line.

My focus so far in the development of this railway has been almost entirely on the equipment and rolling stock. My roster already includes six different types of four-wheel cars and two engines, including an 0-4-0 Porter saddle tank and a  $2\frac{1}{2}$  ton Plymouth gas-mechanical. The cars currently in use are flats, three types of gondolas, side-dump ore cars, and an oil-drum maintenance car. All of these cars are offered by the Seven Eighths Consortium as kits or built-up models. I plan to build some additional eight-wheel rolling stock in the near future, including box cars and some very small passenger equipment.

LEFT: Sierra Excavation Company's N° 1, an 0-4-0 Porter saddle-tank rebuilt from a Bachmann engine. The saddle tank is made from PVC tubing and wood, with a styrene wrapper. The cab is mahogany.

BELOW: N° 1 with a train of four-wheel cars.



# The Excelsior Estate Railway

by Charlie Lix | Sparks, Nevada  
Photos by the author

My railway interest is narrow gauge and small equipment, and the correct scale/gauge combination has always been of primary importance to me. I built one battery-powered locomotive to test  $\frac{7}{8}$ "-to-the-foot scale and liked the possibilities so much I built another. I have since changed my railway's genre to model an estate railway, entirely to take advantage of this new, larger scale.

The battery-powered, manually-controlled engines I've built represent locomotives in the four-ton range. These, coupled with diminutive rolling stock, exactly capture what I've been striving for these many years. LGB's tipper cars are spot on for  $\frac{7}{8}$ " scale. I do a few modifications to them, but the basic car is just right. A lot of LGB's Feldbahn-series scales out just right as well.

I have an extant gauge-0 garden railway. The 32mm gauge equals 17.06" in  $\frac{7}{8}$ " scale, which is close enough for me to call 18". Code-172 rail is exactly 20-pound rail. Because of the large size of the equipment, no compromises are necessary to accommodate mechanisms, and onboard batteries provide absolutely flawless operation. My major complaint of track wiring is banished forever.

## Understanding the scale and gauge

The  $\frac{7}{8}$ "-scale railways featured on these pages run on gauge-1 (45mm) or gauge-0 (32mm) track. In this scale, gauge-1 track represents two-foot-gauge, while gauge-0 track represents 18" gauge (while not exact, it's close enough for most).

This scale was derived by calling gauge 1 (which is approximately  $1\frac{3}{4}$ " two-foot gauge. Thus, if the gauge is divided by two, the result is  $\frac{7}{8}$ ". So the scale becomes  $\frac{7}{8}$ " = 1'-0". The proportion of  $\frac{7}{8}$ " to full size works out to an awkward 1:13.7.

In the smaller scales there is a convention of using a lower-case "n" after the scale designation to indicate narrow gauge. This is followed by the full-size gauge represented. So,  $\frac{7}{8}$ n2 means  $\frac{7}{8}$ " scale, narrow gauge, representing a two-foot-gauge railroad.

## Internet and other information sources

[www.7eighths.com](http://www.7eighths.com)

A web site dedicated exclusively to  $\frac{7}{8}$ " scale industrial railways

[www.largescale.com/seven8n2/index.htm](http://www.largescale.com/seven8n2/index.htm)

Large Scale Online's page on  $\frac{7}{8}$ " scale activity

[7-8InchScaleTrains@onelist.com](mailto:7-8InchScaleTrains@onelist.com)

An e-mail list hosting conversation among those interested in  $\frac{7}{8}$ "-scale modeling.

$\frac{7}{8}$ n2 Newsletter

c/o Steven King

54 Claybrook RD

Rocky Mount VA 24151

A newsletter mostly dedicated to Maine two-footers in  $\frac{7}{8}$ " scale. (Steve may have moved this newsletter to the Internet by the time of publication.)



Arthur is a battery-powered, scratchbuilt locomotive on the 18"-gauge Excelsior Estate Ry. The locomotive is constructed almost entirely of brass. Careful weathering and attention to detail give this engine veracity.



The owner of the line lounges in the passenger car. Both the barrel car and the diminutive coach are built on modified LGB chassis.



# The Glendoric Tramway

by Peter Bakke | Aberdeen, Scotland

Photos by the author

The Glendoric Tramway was inspired by 18"-gauge lines that used to exist in the United Kingdom. The Ministry Of Defense had a number of these lines in their munitions factories during the early 1900s and there were a small number of privately owned 18"-gauge estate railways. Both types of railway carried both passengers and freight and the locomotives and rolling stock were similar in size to many two-foot-gauge railways.

I started out in 16mm scale, but was attracted to the idea of  $\frac{7}{8}$ " scale following articles in *Garden Railways*. I worked out that in  $\frac{7}{8}$ " scale, 32mm gauge is about 17" gauge. I would have preferred to use 45mm gauge to represent 2', but I already had about 100' of Peco 16mm scale, 32mm gauge (SM32) track laid out. However, every cloud has a silver lining, and the 2' minimum radius I was using is now entirely to scale (the real 18"-gauge lines had curves down to 25').

**RIGHT:** This live-steam 0-6-0 locomotive is based on a Roundhouse *Lady Anne*. The proportions have been increased to  $\frac{7}{8}$ " scale. The scratchbuilt coach is based on one used by the Royal Navy.

**BELOW:** A freelance diesel switcher with a short freight on the author's line. The tipper cars are modified LGB products.

An additional advantage for modelers of the UK scene, when combining  $\frac{7}{8}$ " scale with 0-gauge track, is that the proportions of Roundhouse live-steam locomotive chassis and boilers are just right for small 18"-gauge engines, and putting one's own scratchbuilt body onto a Roundhouse base is relatively easy. The photo shows my first effort in this direction—a converted Roundhouse *Lady Anne*. The coach is based on a convict workers' coach used by the Royal Naval Dockyard at Chatham on the south coast of England.

Because of the sheer size of the models, all but the smallest of buildings would be too big for my line. However the large size also means that the line blends in so well with the garden itself that I need only a small number of buildings—too many would ruin the effect. Many items from the 1"-scale dollhouse trade are quite suitable for  $\frac{7}{8}$ " scale.

My main goal for the future is to build some scale models of prototype steam and diesel locomotives and also to tackle the problem of people for my railway!



# The Compañía Minera de Sonora

by David Gast | La Mesa, California

Photos by the author

Since 1990 I've been building Welsh two-foot, narrow-gauge trains in 16mm-to-the-foot scale, to run on 0 gauge track. However, I've always been fascinated with 18"-gauge railways used in mining, industrial, and estate operations in the US and Great Britain. Several years ago I figured that by using  $\frac{7}{8}$ "-to-the-foot scale, 32mm gauge track would shrink to approximately 18" narrow gauge. Since then, Charlie Lix and I have been major proponents of what might be called  $\frac{7}{8}$ "18".

I model a fictitious Mexican mining operation in the mineral-rich borderlands of Northern Sonora, circa 1900-1940. The Compañía Minera de Sonora, originally an English-owned venture, operates an extensive 18"-gauge mining line locally nicknamed "El Ferrocarril Infantil" (The Baby Railway). Rolling stock consists of slightly modified LGB #40190 gable-bottom mine cars with operating doors. These have been equipped with Sierra Valley wheelsets and Hartford link-and-pin couplers. A scratchbuilt explosives van is

similarly equipped. My motive power is a battery powered "critter" (diminutive internal-combustion locomotive), custom built by Charlie Lix, and a soon-to-be-modified Berkeley Locomotive Works live steam, gear-driven *Cricket*.

Seven-eighths-inch scale is a perfect choice for small industrial models. The rolling stock has enough heft to clatter down the track like the real thing. Don't let the large size intimidate you. My  $\frac{7}{8}$ "-scale models will take a 15"-radius curve (or smaller!), if necessary. **II**



Shop foreman Refugio Esparsa is proud of the Compañía Minera de Sonora's explosives van, which is patterned after a Welsh prototype. The company's 18"-gauge locomotive, from the Lix Works, will pull a long string of mine cars.

## Suppliers for $\frac{7}{8}$ " scale

### Seven Eighths Railway Equipment Company

54 Claybrook Road  
Rocky Mount VA 24151  
Maine two-foot car parts, trucks, and details

### Northeast Narrow Gauge

PO Box 191  
Wiscasset ME 04578  
Kits for rolling stock and a diesel critter

### Sierra Valley Enterprises

2755 Saratoga Ave.  
Merced CA 95340  
Metal wheels and resin and metal detail castings

### Hartford Products

18 Ranch Road  
Cedar Crest NM 87008  
Detail parts, rolling-stock kits

### SEC (Seven Eighths Consortium)

2755 Saratoga Ave.  
Merced, CA 95340  
A consortium made up of Sierra Valley Enterprises and Hartford products. SEC supplies detail parts, kits, and built-up models of industrial rolling stock.

### Ozark Miniatures

PO Box 107  
DeSoto MO 63020  
Detail parts for Maine two footers (also applicable to industrial stock)

### Muddy River Lumber Company

13 Elm Street  
Brookline MA 02445  
Scale lumber and a built-up frame station

### Figures by Carlo

11 MacArthur Ave.  
Old Orchard Beach ME 04064  
Detailed cast-resin figures

### Mike Decker

Rte 1, Box 102-E  
Hot Springs SD 57747  
Cast bronze switchstands suitable for  $\frac{7}{8}$ " scale