

# A 'plug-and-play' industry

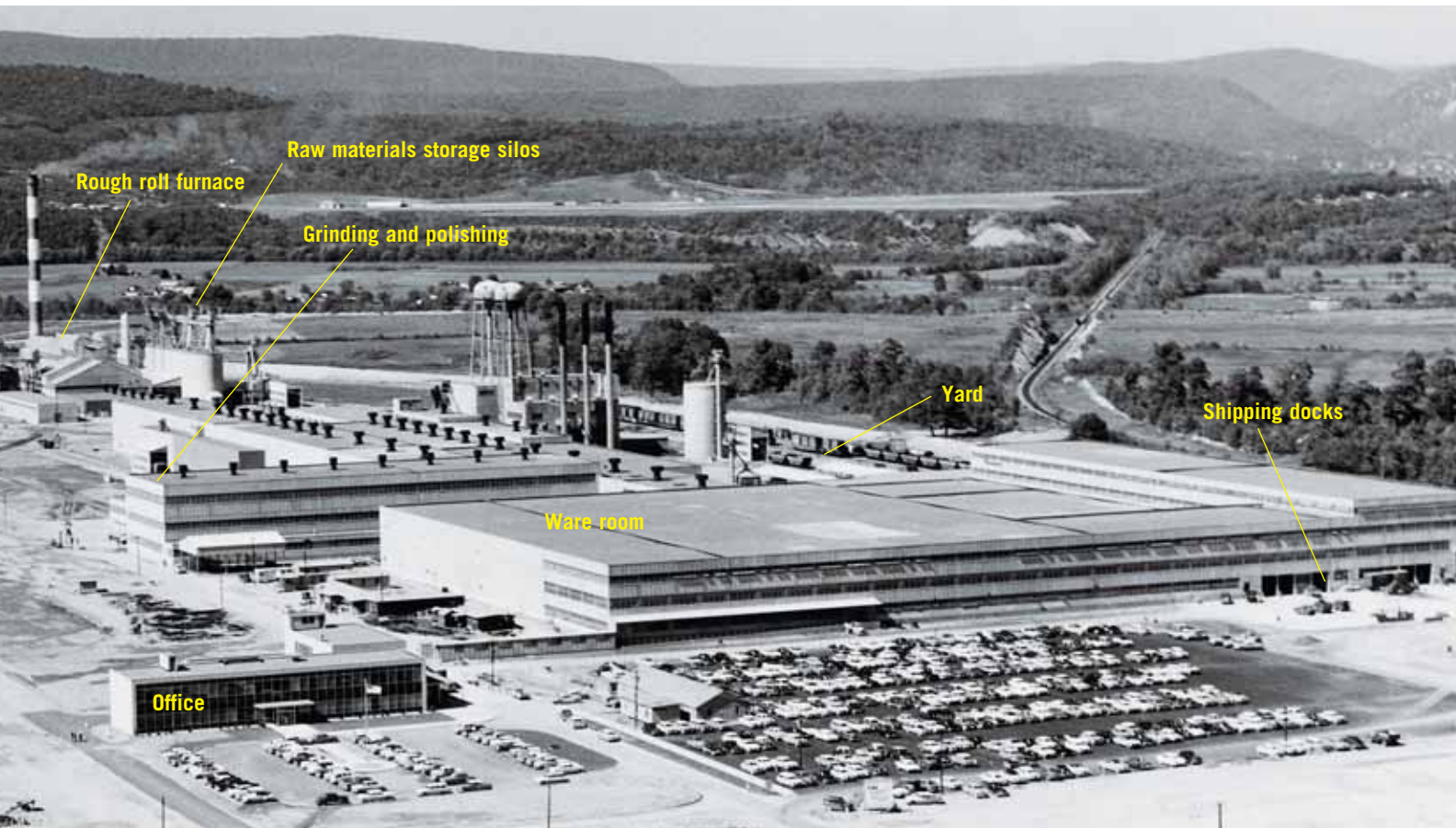


PHOTO COURTESY OF PPG INDUSTRIES

## By Henry Freeman

**L**ike many young model railroaders, I started with a basic loop of track on a 4 x 8 sheet of plywood. Years later, as my friend Bill Chapin and I worked on designs to add a major industry to my HO scale Baltimore & Ohio Cumberland Division, we realized the best approach to solve my space problem was to return to the 4 x 8 layout concept. As a twist on the traditional plan, however, our self-contained industrial plant is made to “plug in” to the rest of the layout when needed and be moved out of the way when it isn’t.

### A plug-and-play layout

By itself, my 4 x 8-foot Pittsburgh Plate Glass Works No. 7 plant is a self-contained industrial switching railroad, complete with a small interchange yard. The layout can provide hours of fun for a switch crew moving cars of time-sensitive raw materials in and around

the glass factory. In fact, the plan only varies from a traditional 4 x 8 design in two ways: It has a three-foot single-track tail serving as the drill track for the plant and there is no loop.

When plugged into my B&O Cumberland Division during an operating session, the PPG plant provides a steady stream of incoming and outgoing traffic for the rest of the railroad thanks to a connecting track at the end of the interchange yard. When the session is over, I unplug the 4 x 8 plant from the layout and store it, freeing up valuable floor space in my layout room for working on other projects.

### The prototype

Pittsburgh Plate Glass started construction on the Cumberland Works No. 7 plant in 1954, installing a rough roll, flat glass furnace with a chemical polishing system. In 1963, PPG added the world’s first float line furnace, opening a new era in plate glass manufac-

This is how Pittsburgh Plate Glass Works No. 7 plant in Cumberland, Md., looked in the late 1950s. At this point in its history, the float glass system has yet to be installed. Most of the plant could be kit-bashed using various manufacturers’ stock kits and styrene shapes.

turing technology. Once the furnaces were fired, plate glass production went on 24 hours a day, 365 days a year, and consumed huge amounts of raw material. PPG closed the Cumberland plant in the 1970s.

A glass plant receives its raw materials by rail and stores them in a series of silos. An intricate system of conveyers automatically gathers the materials from storage, weighs each to a specific formula, mixes them in a batch, and carries them to the melting tank.

Timing and continuity of the railroad shipments are of vital importance to keep a glass plant running. Soda ash, limestone, and sand are all delivered in

# for your railroad

An HO layout doesn't have to be a loop of track

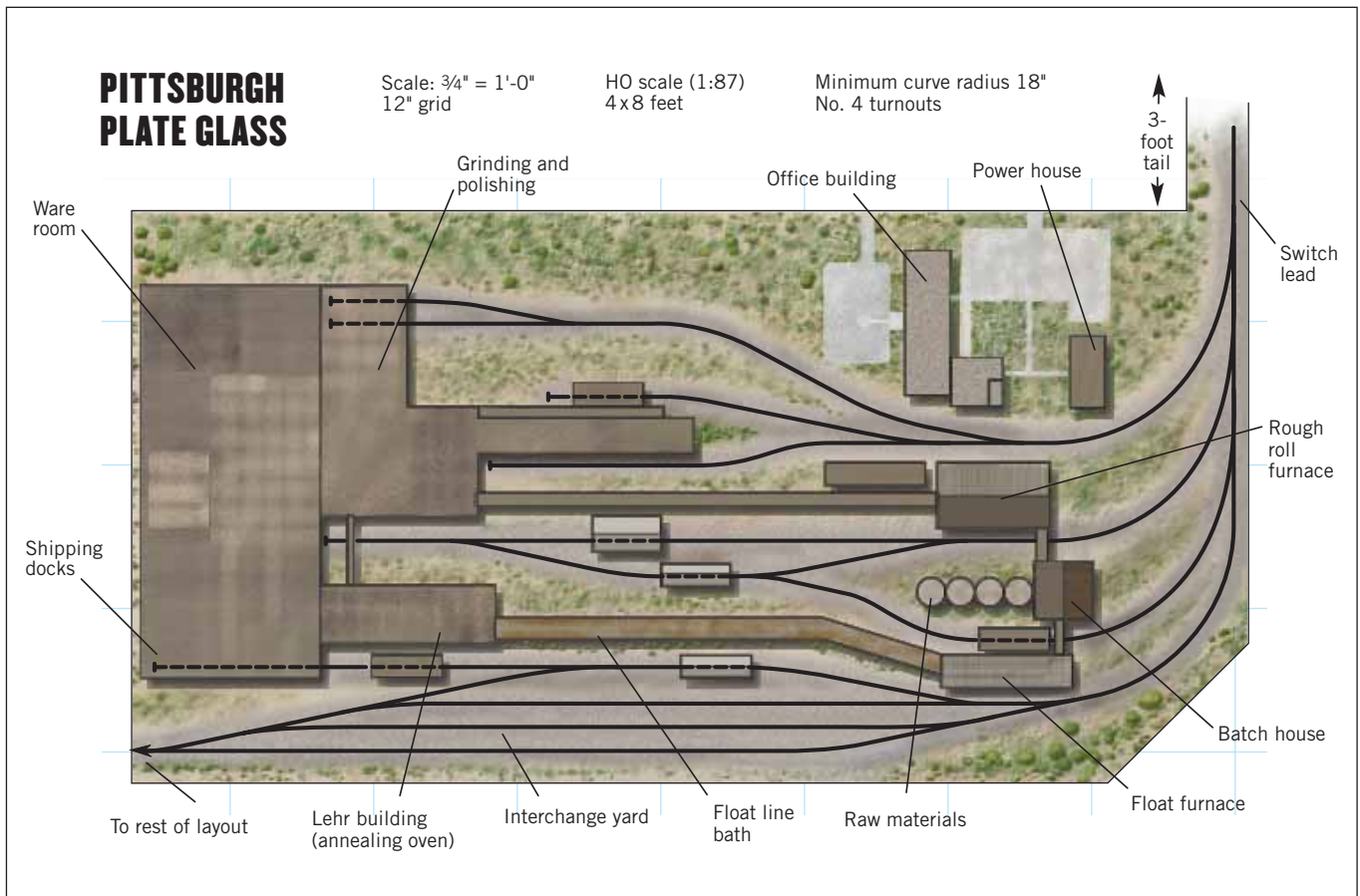


ILLUSTRATION BY JAY SMITH

covered hoppers. Salt cake, needed in the manufacturing process, rouge (iron oxide) and felt for the polishing process, and packing material for outbound loads are shipped in boxcars.

The Cumberland plant made plate glass from  $\frac{1}{8}$ " to  $\frac{3}{4}$ " thick and shipped it by truck, boxcar, and flatcar to customers for installation in store fronts and office buildings, processing by mirror manufacturers, and fabrication into automobile safety glass.

## Industrial layout potential

Though most of my PPG plant would involve scratchbuilding or kit-bashing structures, you could apply the concept to other heavy industries. Currently there are structure kits available for automobile plants and steel mills.

Perhaps a plug-and-play industry is just what you need for your existing layout. Or it could be the starting point of your first model railroading adventure with plenty of room to grow. 🚂

## MAKING GLASS

**A**t one point in its history, Pittsburgh Plate Glass Works No. 7 plant was the only factory in the United States producing plate glass using both the traditional flat process and the new float technology side-by-side.

The major steps in traditional flat glass production begin with mixing and melting raw materials into molten glass. The molten glass is then rolled into a continuous solid ribbon, ground to a uniform thickness, and polished. The final steps include cutting, inspecting, and packing for shipment.

In the float glass plant, raw materials (largely sand and soda ash) are melted in a gas-fired furnace at over 2,800 degrees Fahrenheit. The molten glass flows out of the furnace as a continuous ribbon of flat glass that floats on a bath of molten tin (which has a much lower melting temperature) until cool enough to hold its shape. Final processing further cools the ribbon, then it is cut into uniform sheets which are trimmed to sizes specified by customer orders.

Unlike the flat process which uses rollers to physically shape the glass, the float system produces glass with a perfectly flat surface. — H. F.

*Henry Freeman is a newspaper executive in Westchester County, N. Y., and was the founding sports editor of USA TODAY. He is a member of the faculty of the Model Railroad Skills Institute, and*

*his article on "Research in the Information Age" appeared in Model Railroad Planning 2001. He got back into model railroading 15 years ago when his wife gave him a train set for Christmas.*



# Decaling

**Fig. 1 TOOLS AND MATERIALS.** Along with decals you'll need a shallow container for water, decal setting solution, brushes, tweezers, hobby knife, and small scissors.

The wide variety of decals available these days makes it possible to model cars and locomotives from hundreds of railroads and private owners. Many of these aren't available in factory-painted versions, so learning to decal your own equipment gives you many additional model options.

## Preparation

Figure 1 shows the tools and supplies you'll need, starting with a shallow, flat container for water. An upside-down plastic can lid works well. A dark-colored container makes it easier to see light-colored decals.

Always use distilled water. Tap water has minerals that remain on the model when the water evaporates. Try distilled water and you'll find that most of what you thought was decal glue residue is no longer a problem.

I use a hobby knife and scissors to cut decals (fig. 2). A clear drafting triangle works well as a knife guide, allowing you to see exactly where you're trimming in relation to the lettering. Small scissors are handy for cutting smooth curves.

You'll need decal setting solution. I recommend Microscale's solutions for thin-filmed decals such as Microscale, Oddballs, and others, as well as stronger solutions such as Champ Decal-Set and Walthers Solvaset for Champ's and Walthers' decals.



**Fig. 2 CUTTING DECALS.** A clear drafting triangle works well for guiding the blade, and a self-healing cutting mat is a good surface.

I use two brushes: one for water, one for setting solution. They should be decent-quality soft-bristle brushes, and they should be used only for decals.

## Adding decals

Only apply decals over a gloss or semi-gloss surface. If the model has a flat finish, start by spraying on a coat of clear semi-gloss or gloss.

Trim the decals from the sheet. Some decals have clear film over the entire sheet; others (namely Microscale) have film only under the lettering and graphics. See fig. 3.

If the clear film covers the entire sheet, cut the film as close to the lettering as possible. If not, cut outside of the film, as the outside edge will blend in better with the model's painted surface.



**Fig. 3 DECAL FILM.** Microscale decals (at left) have decal film only under the lettering and graphics. Other brands, such as Champ (right), have film on the entire sheet.

Place the decal in the water and let it soak for ten to 20 seconds until the backing paper is completely saturated. Take it out of the water and place it on a paper towel for a minute. Let Champion and other thicker decals float off the paper, then move the decal to the model with tweezers.

In the meantime paint a small puddle of Microscale Micro Set on the area where the decal will go. Micro Set is a weak solution that will begin to soften a decal, but not to the point where you'll be unable to move it.

Position the decal over the car, then slide the decal into place as fig. 4 shows with your finger, a brush, tweezers, or a toothpick. If you're using tweezers, be especially careful not to tear the decal. If the decal doesn't slide easily from the backing paper, let it sit for a few more seconds. If the decal doesn't want to move, add water or Micro Set with a brush.

Once the decal is in place carefully blot away excess Micro Set and water with the corner of a paper towel. Don't blot the decal itself – just touch the area near the decal.

Add a setting solution, such as Micro Sol, with a brush around the edge of the decal, being very careful not to disturb it. Capillary action will draw the fluid under the decal. Once you've added setting solution, **DO NOT** touch the decal. It may shrivel a bit at first, but that's normal – it will straighten out as it dries. Set the car aside for a few hours.

### Final steps

After the decal dries you might see air bubbles trapped underneath it (especially around raised details) or a silvery sheen on flat areas (fig. 5). Gently prick the bubbles or silvered areas with a pin or the tip of new hobby knife



**Fig. 4 REMOVING BACKING PAPER.** Gently slide the decal from the backing paper to the model.



**Fig. 5 AIR BUBBLES.** Trapped pockets of air show up as raised bubbles (at the point of the knife) or silvery areas (on the right of the F). Prick them with a knife.



**Fig. 6 FINISHED DECAL.** Keep pricking the bubbles and reapplying solution until the decal appears to be painted on.

blade, then apply more setting solution.

When the decal is dry, the lettering will look as if it's been painted on (fig. 6). Allow the car to dry at least 24 hours before applying a clear finish. Then spray on a light, clear coat of flat, satin, or semi-gloss to give the car a uniform finish.

You're now ready to turn more undecorated models into custom cars for your layout. ♣



PHOTOS BY JEFF WILSON

# Personalizing structures

**S**tructures can play a big role in giving your layout personality. Detailing and improving commercial structure kits will make your buildings different from all of the otherwise identical buildings on layouts across the country.

First, paint all plastic structures to kill the plastic shine and to make the building more realistic. You can often

use the same building in multiple locations if you give it a different paint scheme in each place.

As you build each structure, decide what you want the building to be. For example, is it going to be a furniture store, drugstore, grocery store, or barber shop?

Signs are probably the most important detail when it comes to providing



**Fig. 1 FALSE INTERIORS.** Sometimes by placing a few items close to the windows, we can make a viewer “believe” the building has a full interior. This DPM grocery store has just a few Preiser crates in the window (along with lots of signs) hiding its bare interior.



**Fig. 2 WINDOW SHADES.** Pieces of colored paper or manila file folders work well for simulating shades.

an identity for a structure. A wide variety of signs is available from companies like Bar Mills, Blair Line, JI Innovative Design, Microscale (decals), and Woodland Scenics (dry transfers).

You can also use individual decal or dry transfer alphabet sets to make signs, or you can take a photo of a real sign and reduce it (or scan it into a computer and resize it) to use it on a model. [See Jeff’s feature on structure signs in the May 2001 issue of *MODEL RAILROADER*. – Ed.]

Window treatments make buildings look lived in. You don’t necessarily have to detail a building’s interior – you just need to give the impression that it *has* an interior. The grocery store in the lead photo is an example. From the outside it looks busy, with all the signs on the windows. However, the view in fig. 1 reveals that the only interior



**Fig. 3 VIEW BLOCK.** A roughly diagonal wall made from black construction paper keeps viewers from looking through the structure and hides the lack of interior detail.

**Fig. 4 ROOF DETAILS.** Jeff adds items such as an air-conditioning unit (Walthers), vent (Campbell), pipes (plastic tube), and a roof surface of fine cinder ballast to add visual interest to his roofs.



details are a few vegetable crates (from Preiser) on a makeshift window ledge.

You can make window shades of various types, as fig. 2 shows. All it takes is thin cardstock and paper glued behind the glazing across the openings. Manila file folders work well, as does construction paper or plain paper in various colors.

For structures without interiors, it's a good idea to use a view block to keep viewers from looking in through a window and seeing out through a window on a different floor. Figure 3 shows how to do this with a piece of black construction paper cut slightly longer than the diagonal distance between corners.

### Roofs

Roofs are important, since we spend a lot of time looking downward on our layouts. As fig. 4 shows, a few vent pipes (brass or plastic tubing painted black, gray, or rust colors), TV antennas, or air conditioning units make the roof look busy. Appropriate detail items

are available from several manufacturers, including Campbell Scale Models, Design Preservation Models, Gold Medal Models, Grandt Line, JL Innovative Design, Scale Structures Ltd., Walthers, and others.

Many injection-molded styrene kits include roofs that are textured to resemble tarpaper or asphalt roofing. Paint these a flat black or dark gray color (such as Modelflex or Polly Scale Grimy Black).

Another approach, used on the DPM building in fig. 4, is to simulate a gravel roof. Start by painting the roof with a heavy coat of Grimy Black, then – while the paint is still wet – sprinkling fine ballast on the wet paint. Push the ballast firmly into the paint. When it dries, shake off the excess ballast. You can use various colors – cinders and gray blends are effective.

Nothing difficult about any of this. You'll be surprised how easy it is to turn the common model structures on your layout into signature pieces. ♣

# Cleaning wheels

I'm always surprised at the lengths model railroaders will go to for clean track while completely ignoring the other half of the equation – the wheels. This month I'd like to offer tips for keeping those wheels dirt-free.

## When to clean?

For me, it's about once a year for cars and every six months or so for locomotives. Sound-equipped engines need cleaning when intermittent contact causes the sound to cut in and out. Locomotives without sound need cleaning when they stall and stutter on clean track.

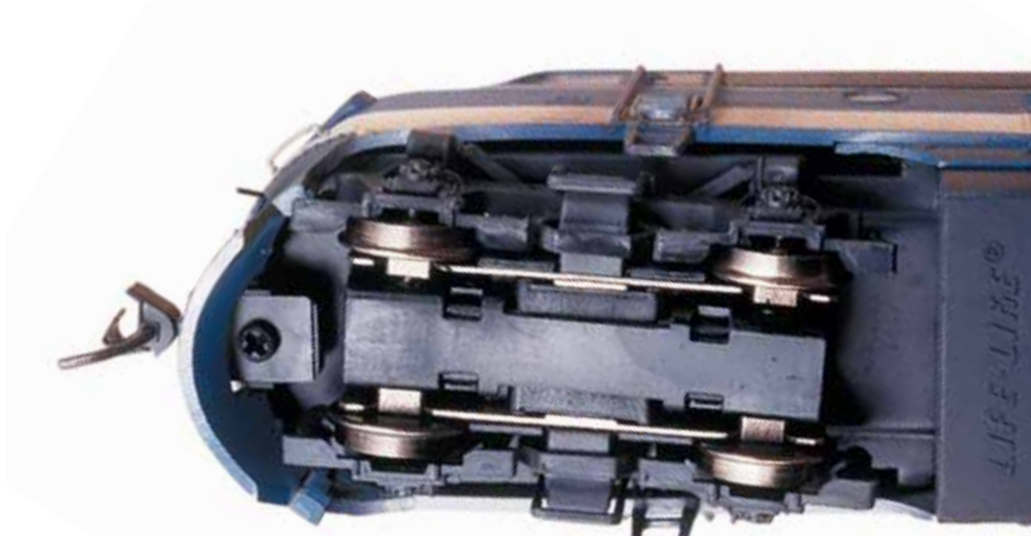
The frequency of this cleaning regimen is influenced by other factors, the two most important being the cleanliness of

the layout room (a finished ceiling will pay big dividends!) and the frequency of operation – more is better.

## Rolling toward clean wheels

There are two approaches to wheel-cleaning: dry and wet. I don't like dry cleaning with an electric wheel-cleaning brush since I don't want to scratch the plated surface of the wheels.

The photos show three wheel-cleaning rigs. The first is the Loco Wheel Cleaning Station from Micro-Mark (800-225-1066 or visit [www.micromark.com](http://www.micromark.com)) and the second is the Gumbuster 2000 from F. Skidmore Products (41 S. Hickory St., Palatine, IL 60067, 847-934-9685). The third is a simple affair – a bottle of rubbing alcohol and a piece of old cloth. ☘



### MICRO-MARK WHEEL CLEANING STATION

Includes several pieces of track, cleaning fluid, and pads attached to the track with Velcro. For use with HO only.



PHOTOS BY BILL ZUBACK

Soak pad with cleaning fluid. Connect the wires to a power pack. Place one truck on track and the other on the cleaning pad.



The wheels rotate, leaving dirt on the pad. Repeat the process with the other truck. New pads are available from Micro-Mark.

### GUMBUSTER 2000

Foam mounted to board with metal tabs for electrical contact. Includes Goo Gone fluid. Use with Z, N, and HO scales.



Place the metal tabs over the track (can be used anywhere on the layout) and position one truck on the metal strips.



The wheels on the pad spin, leaving dirt and crud on the foam. Clean foam pad using Goo Gone or similar cleaner.

### GRANDPA'S WHEEL-CLEANING MACHINE

Rubbing alcohol and a piece of cloth (an old cotton T-shirt is ideal). Works with all scales. Use anywhere on the layout.



Place a dab of alcohol on the cloth and stretch it over the rails. Put one truck on the cloth, other on rails. Apply power.



Remove the locomotive and move the cloth slightly. Then repeat using the other truck. Add more alcohol if needed.