

# FAVORITE PROJECTS



A coal truck dump is a compact, prototypical industry that can add a loading spot for coal hoppers without having to model the coal mine on the layout. Beginning on page 38, contributor Ken Kyser tells how he scratchbuilt this realistic truck dump for his HO scale Backwater Division layout from stripwood. Photo by Ken Kyser

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Pelle Søbørg likes to shoot photos at an angle that shows off his trackwork. Turn to page 23 to see how he makes turnouts picture perfect. Photo by Pelle Søbørg



Starting on page 64, M.R. Snell explores the pros and cons of three methods of weathering cement hoppers: theatrical powders, pigment ink, and acrylic craft paints. Photo by M.R. Snell



Jim Ferenc explains how he scratchbuilt this wooden beam bridge based on prototype photos he shot 20 years earlier in his article starting on page 49. Photo by Paul Dolkos

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**ON THE COVER:** Kim Nipkow traveled from his home in Switzerland to Utah so he build more accurate desert scenery, like this. See page 54. Photo by Kim Nipkow





# How to make OLDER TURNOUTS DCC-FRIENDLY

Reduce the potential for short circuits by following these easy techniques

By **Larry Puckett** • Photos by the author

In the September and October 2014 issues of *Model Railroader*, I wrote about how I modeled the Rockfish River crossing on my HO scale Piedmont Southern layout and built a gantlet track over the bridge. Since I use Digital Command Control (DCC) on the layout, I wanted all the track and wiring to be “DCC friendly,” a term coined by Allan Gartner that I introduced to the hobby press in my March 1998 “DCC Update” column in *Model Railroading* magazine.

The basic idea behind the DCC-friendly concept is to reduce the potential for short circuits to occur. One thing to keep in mind is that you can usually convert a DC-powered layout to DCC without going back and modifying all of the track and turnouts. However, addressing some of the topics covered in the following paragraphs may make things easier in the long run, especially if you are building a new layout. In this article I’ll cover various things I did to

make the installation of the gantlet track as DCC friendly as possible. For more information on DCC-friendly practices, see Allan Gartner’s “Wiring for DCC” website ([wiringfordcc.com](http://wiringfordcc.com)).

## Turnouts and frogs

I’ve redrawn an illustration from my March 1998 column showing what a DCC-friendly turnout should incorporate. See **fig. 1**. Several years ago I bought a collection that included old



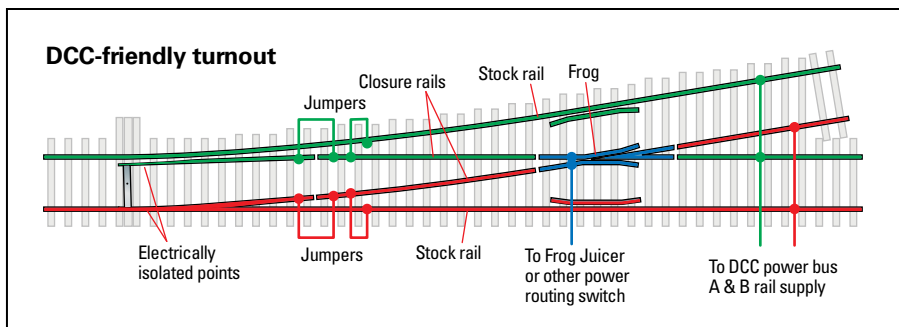


**Southern Ry. Alco RS-3 no. 2143 passes over an older HO Shinohara turnout on Larry Puckett's HO layout. He explains how to make older turnouts DCC-friendly.**

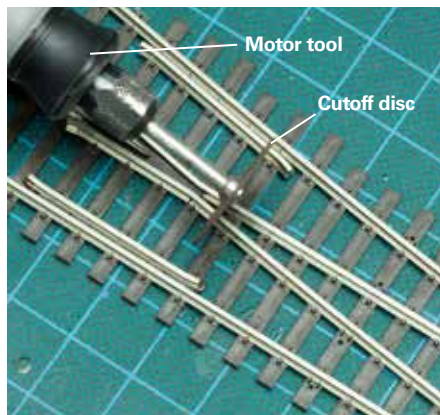
Shinohara turnouts, which definitely weren't DCC friendly [new HO scale code 83 Walthers Shinohara turnouts are offered in a DCC-friendly design. – Ed.] I converted them for use on my DCC layout using a multi-step process: I isolated the frogs, powered the frogs using a mechanism to switch polarity, reinstalled the point rails so they're powered independently, and tied the closure and point rails electrically to the stock rails.

I isolated all the frogs by cutting through the rails on each side using a motor tool with a cutoff disc, as shown in **fig. 2**. To prevent any short circuits from occurring at these gaps due to rail expansion or movement, I glued a small black styrene shim in each opening and trimmed it to match the rail profile, as seen in **fig. 3**. After I painted the rails, the shims were barely noticeable.

In the leads to my gantlet track are two turnouts on the southbound main, which lead to two short sections of track left over from the old bridge approaches. I included



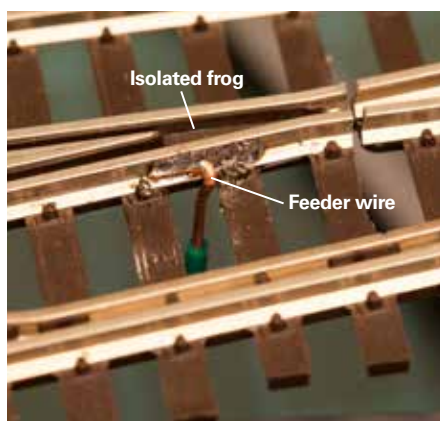
**Fig. 1 Key ingredients. Here's what it takes to make a turnout DCC-friendly.**



**Fig. 2 Isolating the frog.** Larry isolated the frog with a motor tool and cutoff disc. The thin disc is fragile and may shatter when cutting rail, so wear personal protective gear (especially safety glasses) when making the cuts.



**Fig. 3 An easy fix.** To prevent the rails from closing up due to expansion or movement, Larry installed styrene shims in the gaps. He trimmed them to match the profile of the rails with a no. 11 blade.



**Fig. 4 Hidden feeders.** Larry soldered a feeder to the side of the isolated frog facing away from the aisle. The feeder connects to the Tam Valley Depot Mono Frog Juicer.

them to allow the track crew to move in a heavy crane for removing the old bridge, adding interest to the scene.

I line the turnouts with Caboose Industries ground throws with no auxiliary contacts to switch polarity. I wired the isolated frogs in these turnouts using a feeder wire soldered to the side of the frogs away from the aisle where it wouldn't be seen. See **fig. 4**. I connected them both to



**Fig. 5 Mono Frog Juicer.** This Tam Valley Depot product controls frog polarity in installations where a turnout with auxiliary switching contacts are not used.

a Tam Valley Depot Mono Frog Juicer (no. MFJ003U) to control polarity.

To prevent shorts in the gantlet track frogs, I isolated them the same way and powered them using another Mono Frog Juicer, as seen in **fig. 5**. I was able to use a Mono Frog Juicer for each pair of frogs because they always need to be the same polarity, since either a northbound or southbound train will be using the pair of

## APPLYING ACRYLIC MEDIUM



Jeff lays the image on a piece of glass. Using a foam brush, he then applies the acrylic medium.



After removing most of the excess acrylic medium, Jeff uses tweezers to lift the paper and apply it to the wall.



With the image in place, Jeff burnishes the paper. The cap end of a pill bottle works well for this task.

I've used both liquid and gel acrylic media for my sign projects. The thicker gel doesn't absorb as readily into paper. This provides some instant weathering when modeling an old and worn sign.

I place the cut-out reversed image face up on a small piece of glass from a picture frame. I work on glass because the paper won't stick to it when wet.

Next, I use a foam brush to apply a thick coat of acrylic medium and let it soak into the paper for 30 seconds. Then I remove as much excess medium as I can. The acrylic needs to be thin enough to conform to the brick texture of the plastic structure wall.

I use tweezers to lift the wet paper off the glass and lay it face down on the structure wall.

Working from the center to the outer edges of the image, I use my fingernail to burnish the paper down onto the wall. I use light pressure at first, then gradually press down harder. After a minute, I switch to a burnishing implement, usually a cap of a medicine bottle, a screwdriver handle, or a tube of lip balm.

After another minute, I see the faint outline of the artwork through the paper. If the paper tears, I avoid the torn area and continue burnishing. Once the entire image is visible, I let the acrylic medium set for 5 minutes.

## FINISHING THE SIGN



If an image hasn't transferred completely, Jeff uses a toothpick to add a dab of acrylic medium.



After removing strips of paper with tweezers, Jeff scrubs off the remaining paper pulp with a foam brush.



After 30 to 45 minutes, the sign should be completely cured. Jeff then removes the drafting tape.

Using tweezers, I lift up the corners of the paper. If I notice that the image hasn't transferred, I use a toothpick to smear a dab of acrylic medium under the paper, then burnish that area again and let it set.

Starting along the corners and edges, I lift the paper away in large sections. I then take a moist foam brush and gently scrub away any remaining paper, working from the center out toward the edges. I'm careful not to rub too hard, or else I could inadvertently scrape off some of the sign. At a certain point whatever paper is left is so small it's virtually unnoticeable. Once I've removed all the residue I can, I let the acrylic medium fully cure for 30 to 45 minutes.

I can then remove the drafting tape and apply any additional weathering or touchups as needed.

If I'm not happy with the results and want to start over, I'll spray the sign with isopropyl alcohol or household cleaner. As long as the acrylic medium hasn't fully cured, I can scrub off the sign with an old toothbrush.

If the acrylic has fully cured, I spray the image with oven cleaner and place the wall in a resealable plastic bag. After 15 minutes, the acrylic should be soft enough to remove. I make sure to work in a well-ventilated area and wear gloves and eye protection. Once the bad sign is removed, I'll wash the wall with soap and water. I'll then repaint the wall and start the process over again.



## SIGN GALLERY – TRIAL AND ERROR

Even when things haven't gone as planned, I've been happy with most of the results of my image-transfer signs. The following are several of my favorite examples.



**Syrup of Figs.** I used Krylon white primer for this sign, which doesn't wash away during the image transfer process, as does acrylic paint. Because I had to use a low-resolution computer screenshot as the source image for this sign, there are black marks in the letters. However, I like the added texture of the effect.



**Coca-Cola.** This sign transferred almost perfectly, except for part of the border on the right. I'll touch this up with white paint. The artwork for this sign came from a sign company that reproduces antique advertising on weathered wood, so the image already had a faded appearance. After transferring the image to my structure model, I further weathered it with a wash consisting of water, Pledge Floorcare Multi-Surface Finish, and several drops of black acrylic paint.



**Reckitt's Blue.** As on the Coca-Cola sign, a small area on the right didn't transfer, but can be touched up. I added both the weathering wash and a mist of Testor's Dullcote to reduce the glossy finish of this sign. This additional weathering also acts as a protective sealant.




**7 Up.** The artwork for this sign came from a screenshot of a vintage matchbook cover that I found online. This sign is considerably smaller than the others, but the lettering is clear and legible with the brick pattern clearly visible underneath the sign.



**Sudden Service Bindery.** I had to redo my first attempt at this sign because the acrylic gel medium didn't transfer evenly. On my second attempt, shown above, I burnished more and waited longer for the image to transfer. Another option would be to use liquid medium rather than gel.



**Fletcher's Castoria.** This sign is the reason I tried the technique. Fletcher's Castoria signs were ubiquitous on the walls of New York City buildings for decades, and I plan on having several on my layout. The brick texture is clearly visible and adds to the illusion that the sign is painted on the wall. 

## Method 2: Pigment ink

### Pros

- Easily applied and blended
- Good for light effects

### Cons

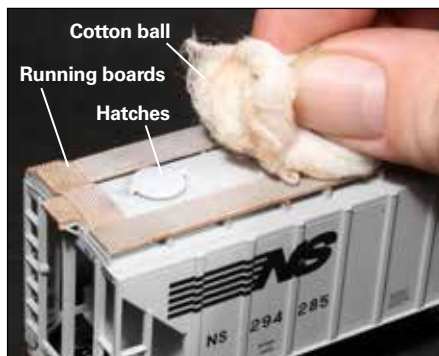
- Easily smeared
- Long drying time

**Pigment inks** are sold in stamp pad format at most craft stores. This is an excellent medium for re-creating the almost transparent “chalked” look on cement hoppers.

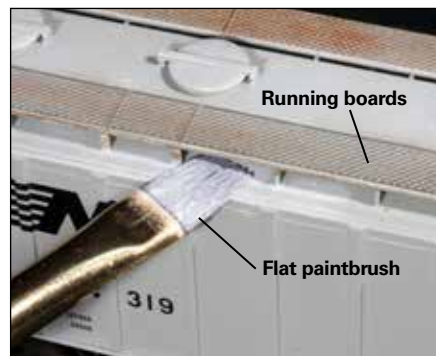
While the application of pigment ink follows the same principles as powders, the tools are slightly different, as shown in the following photos.



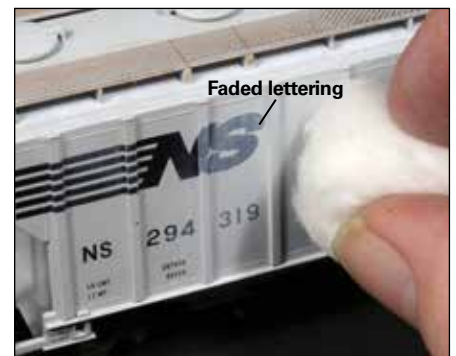
Pigment inks are available at most well-stocked craft stores. They can be applied with cotton balls and paint brushes.



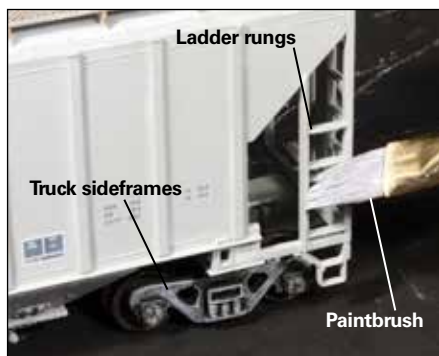
After washing the model with mild soap and letting it dry, apply a thin coat of ink across the roof. Start by dipping a cotton ball into ColorBox Frost White (no. 15080) ink. After blotting off the excess ink on a paper towel, lightly dab the cotton ball on the model.



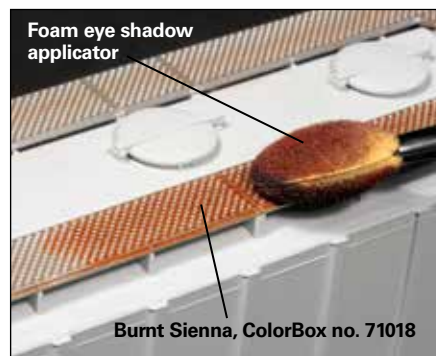
Next, use a flat paintbrush to apply a thin coat of ink from under the running boards to the roof's edge. Place the brush flat on the roof and move it back and forth from the center to the edge. This will leave an even coating with thin streaks, forming the basis for weathering down the car sides.



Then dip a cotton ball in the ink pad and spread the color down the sides of the car from top to bottom, including the hopper bays. After the initial coat of ink, you'll notice the factory-applied graphics lighten and become obscured. This is the effect you're after.



While cotton balls are a handy tool for applying ink, they're not a one-size-fits-all applicator. For hard-to-reach areas like ladder rungs, car ends, and truck sideframes, use a paintbrush to apply the ink. As shown in the photo above, the brush fits nicely between the rungs.



An optional weathering step is to add a thin coat of ColorBox no. 71018 Burnt Sienna to exposed steel pieces such as the running boards on the roof and crossover platforms above the couplers. A foam eye shadow applicator keeps the color on the raised surfaces.



While pigment ink may be excellent for achieving a chalking effect, one of the cons is its long drying time. Avoid handling the car for 12 to 24 hours. If you must move the car, do so with care. An overspray of Testor's Dullcote not only seals the inks but gives the hopper a realistic flat finish.



## Method 3: Acrylic craft paint

### Pros

- Excellent for heavy effects
- Requires no sealing

### Cons

- Fast working time
- Dries permanent

The two previous methods used materials that were fairly forgiving in the event of a mistake. Acrylic craft paints, however, have less working time and are difficult to remove when dry (especially thick applications). The paints work best for re-creating heavy weathering on older cars. All that's required is a bottle of acrylic craft paint, flat and angled paintbrushes, water, and paper towels.

There are two rules for successful weathering with craft paints. First, move the brush in the same direction on the same surface. For example, when weathering a freight car, always move the brush in a vertical motion, starting at the roof and working down the sides. Keep the brush parallel with the exterior posts or weld seams.

Second, build up the effect in light layers. A little paint goes a long way. It's much harder to get excess paint off than it is to add more. The full effect doesn't develop until the paint is drying. What looks transparent at first will turn white as the paint dries. If the effect is too heavy, just wet a brush and spread the paint out or wipe the color off with a wet paper towel.



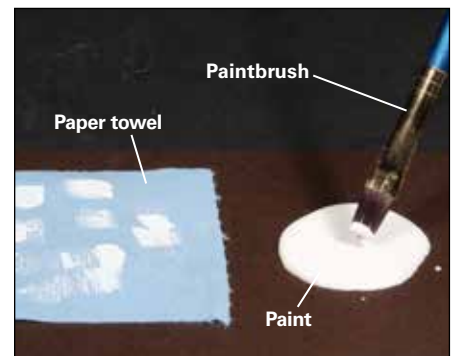
With the paintbrush ready, drybrush some white onto the model. Because craft paint dries quickly, work in small areas, as shown above. If too much surface is covered, the paint could dry before the next step. Once craft paint is dry, it's very difficult to remove without damaging the model.



Acrylic craft paint and a variety of paintbrushes were all Matt needed to make this Southern Ry. two-bay hopper look like a well-traveled car.



Multiple sizes of flat and angled brushes work well for applying paint around hatch covers, under running boards, and on other hard-to-reach areas on two-bay covered hoppers. These brushes are sold at most well-stocked craft and artist supply stores.



Weathering with acrylic craft paints requires drybrushing and a damp paintbrush. Drybrushing is a technique where a paintbrush is dipped into small amount of paint. All but a trace amount of paint is wiped off the brush on a paper towel. What's left is then applied to the model.



After the color is applied to the model, the paint can be stretched by dampening the brush in water and spreading the paint. Wetting the paint causes it to become thinner and more transparent. As the paint dries, the transparent areas will start to turn white.



Once the overall effect has been developed, the final step is to highlight portions of a car that would have heavier weathering. Drybrushing the side sills and exterior posts will leave thin, streaked paint deposits that represent cement residue found on many full-size cars. [MR](#)