

Bowser

In Stock at many dealers now!!

HO 53' Roadrailers



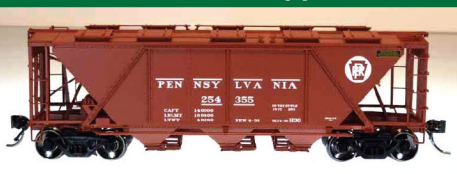
Road Names:
TC, Swift, Schneider \$25.95 each

HO F30a Flat Cars



Road Names:
Lehigh Valley, PRR,
UP, Conrail \$23.95 each

HO H30 Covered Hopper Cars



Road Names:
PC, PRR \$29.95 each

HO Freight Car Kits



Road Names:
D&H \$15.95 each

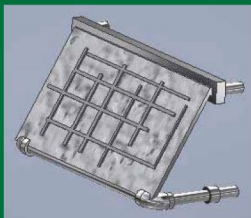
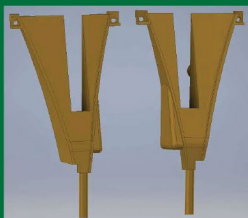
HO & N Scale N5c Caboose



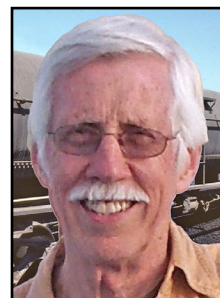
Road Names:
PRR, PC,
Conrail With & Without
Antenna

HO Cal Scale

Drip Ribs, Window Shades, Cables,
Radiators, Horns, Steps, Whistles



Click here to check out the details for these and other great
Bowser Products



GETTING REAL

column

ANTHONY THOMPSON



Click here to rate or
comment on this article

STANDARDS FOR MODEL FREIGHT CARS| IMPROVE THEIR APPEARANCE AND PERFORMANCE BY SETTING SIMPLE GROUND RULES

OPERATION OF MODEL ROLLING STOCK REQUIRES minimum standards of performance. The standard may be implicit, as a “floor” under a certain level of dependability. Optionally, one may also add a standard for appearance, though not all modelers seem to do so. I like having explicit standards for consistency on my layout.

This column presents my standards for freight cars for the fleet that operates on my layout, which is a Southern Pacific branch line. I model in HO scale, though most of my standards are readily interpreted for other scales. I do divide my fleet into mainline and branchline cars. By “mainline” cars, I mean cars that may not have sufficient quality (accuracy and detail) for scrutiny when stationary or in switching moves, but are satisfactory in passing trains. But for all cars, there are some basic standards that I apply.

► MODELING REAL RAILROADS AND WHAT THEY DO

GETTING REAL | 2

These can be divided into three topics: Performance, Detailing, and Lettering plus Weathering.

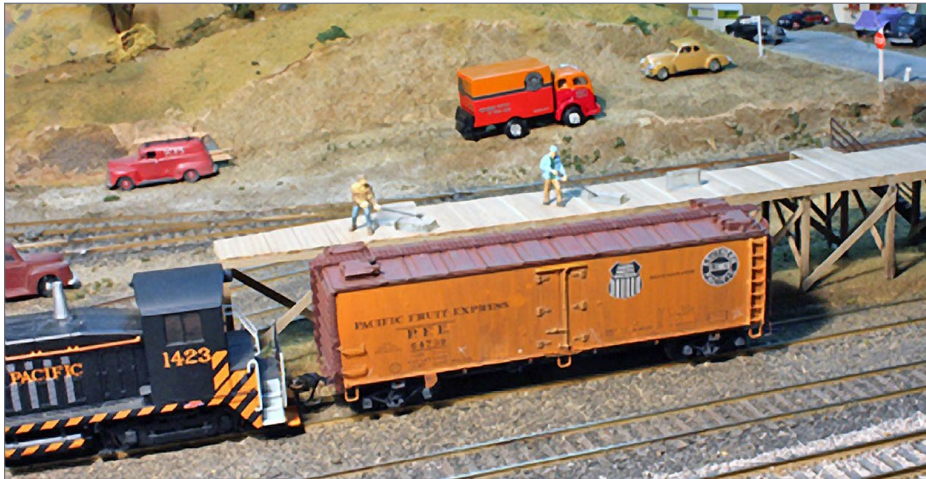
Performance

The primary aspects here are trucks and couplers [1], as well as car weight. I will begin with trucks.

Trucks

Trucks need to have two qualities: they must be free-rolling, and they must be “in tram,” that is, with axles perpendicular to the side frames and parallel to each other. Any truck which can get out of tram not only will generate higher friction, but has a greater tendency to derail.

Both these criteria may depend on wheelsets of the correct length. An axle which is too long prevents free rolling, and one which is



1. As the ice deck crew prepares to start work, SP 1423 switches a loaded reefer to the deck for its initial icing before departing eastward. Dependability in operation like this demands good-performing trucks and couplers.

GETTING REAL | 3

too short can allow out-of-tram behavior. Many of my freight cars still have Kadee wheelsets, which are fine for operation but are of a single length. My new cars and most upgrades now receive Reboxx wheelsets of appropriate length (see Sources at the end of this article). I regard their performance as outstanding.

I suspect most modelers by now recognize that plastic car wheels are troublesome with respect to track dirt. I have no idea why it's true, but these wheels really accumulate “gunk” in a way that metal wheels do not. I have not operated any plastic car wheels for many years.

A number of my older cars still have the relatively fat Code 110 wheels, that is, with wheel treads that are 0.110 inches wide. Nowadays a significantly narrower wheel is available, with 0.088-inch treads, called Code 88. I like the look of these, and they have operated perfectly well on my layout's Code 100 and Code 70 rail. It's worth remembering that a prototype car wheel has a tread width that scales to about 0.065 inches in HO scale, so even the Code 88 wheels are not truly prototype width.

Lastly, it is important that trucks swivel freely. A common cause of derailments, in my experience, is a truck which binds on a curve or through a switch. Over time, truck screws may tighten or loosen, so this is another of those maintenance issues which can require attention, even though that truck may have been fine when the car entered service.

Couplers

The standard coupler on my entire fleet at one time was the Kadee #5, and these are still in use on many older cars. But all new cars and many upgrades are receiving the “scale head” Kadee #58, or #78, or one of the whisker-sprung models. These interact acceptably with the #5 style but are best with other scale-head couplers, so I expect a gradual increase in the proportion of scale heads in my fleet.

Some ready-to-run cars come with other couplers nominally compatible with Kadee couplers but not always satisfactory. Recent freight cars assembled in China sometimes have a “copycat” coupler which only imitates the Kadee design, and though these work all right with others of the same design, I have found that they do not work as well with Kadee couplers as do other Kadees. I now routinely replace any “copycats” that show up.

I have tried the Accurail scale coupler and have not found it superior to the Kadee scale head. My instinct is to have one coupler type, so I am sticking to Kadees. Finally, I have not been happy with any of the plastic copies of the Kadee design, and routinely replace them with Kadee couplers.

With any coupler it is vital to ensure correct coupler height, and free operation of both the centering mechanism and the knuckle. I am careful about this with new cars, but do find that maintenance sometimes requires restoration of one or more of these qualities. In fact, any car which does not couple smoothly and dependably goes straight to the workbench for correction. The same is true of any trucks that do not perform as desired.

I am surprised when I hear modelers say that they know all about the Kadee height gauge but don't see the need to use it. This gauge is an excellent tool and reliance on it will make a car fleet far more consistent in performance. A sometimes overlooked feature of this gauge, on the back end, is that it indicates correct floor height [2]. Nowadays most kit cars and nearly all ready-to-run cars already have correct floor height, but if in doubt, I don't hesitate to check. This avoids lots of potential problems later.

Another thing I always check is height of the Kadee trip pin. Some modelers call it an “air hose,” but that's not the Kadee part name. The Kadee gauge gives you an easy check on this height also [3].



2. Here the back of the Kadee height gauge shows that the coupler pad on this car body is a little too low.

Weight

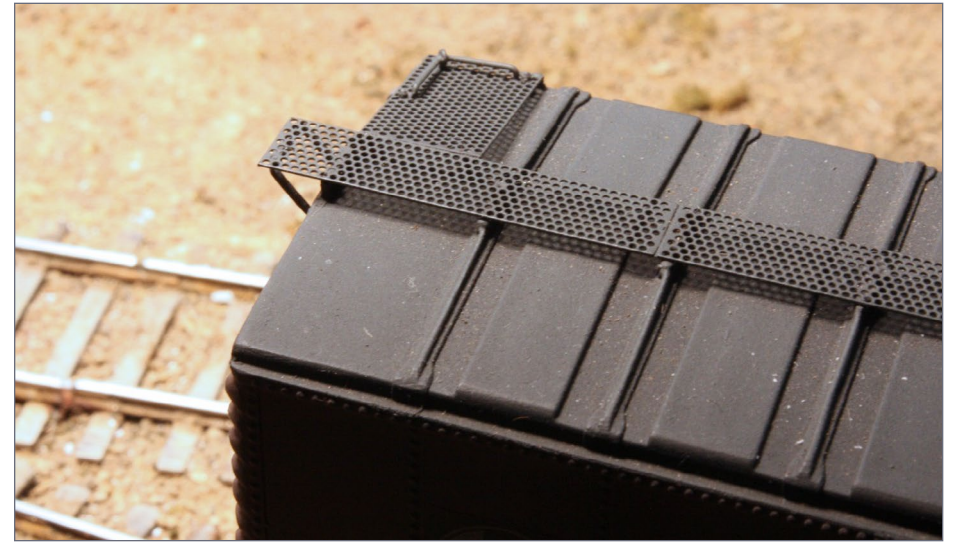
One other aspect of performance is car weight. It is a topic which has received endless debate in the hobby. My own experience matches a number of published reports that *consistent* weight from car to car is more important than the particular weight value which is chosen. I tend to use the NMRA weight formula, half an ounce plus a half-ounce per inch of car length, which comes to 3.5 ounces for a 40-foot HO car. I don't have any serious grades on my layout, but if I did, I might standardize on a slightly lower car weight.

Detailing

This is a difficult area about which to generalize, given the differences among car types and the wide variety of commercial models



3. The Kadee gauge not only checks coupler height, but has a "shelf" below which checks height of the trip pin.



4. An example of a Morton etched metal running board, and wire corner grab iron.

that are available of each. But I can describe a few of the guidelines that I use. I should emphasize that these are *minimum* standards. I am not describing how good a model can be, only the minimum of quality I want it to have.

Car roofs are very visible on most layouts, given the common table heights we use, so I start with the running boards on house cars. The bad old days of terribly thick cast plastic running boards (so 20th century!) are fortunately behind us, but it's still essential to make sure running boards look right.

I model 1953, and prototype cars built new or extensively rebuilt since 1944 would have received steel running boards, as would many cars in shops for repair or upgrading. Etched metal boards are simply the best, in my opinion, though I think the Kadee plastic effort is impressive. I use model airplane canopy cement to attach the metal boards, since that adhesive remains flexible in the face of expansion and contraction of the metal part. An example is shown as [4].

Wood running boards are readily modeled with wood or styrene strip. Corner grab irons need to be present, too. Though some of my mainline cars still have cast-on corner grab irons, they are being replaced. My “full standard” branchline cars all have free-standing corner grabs.

Nowadays most house car models have acceptable quality brake wheels, typically Ajax, but as more and more of the prototype specialties have become available including (Equipco, Superior,

Klasing, etc.), it's often possible to apply the correct brake wheel for a particular prototype car. I don't always do this, and sometimes it's not easy to find out which brake gear to use, but laying in a stock of the various prototypes permits doing it correctly when the information is available. My Sunshine model



5. The B or brake end of a Sunshine SP B-50-28 box car, with Kadee Equipco hand brake.



6. This Santa Fe box car shows bracket grab irons and a sill step, both of which are refined enough in size and shape to meet my standard. Note the reweigh paint patch.

of an SP Class B-50-28 box car illustrates this; it has a Kadee-made Equipco brake wheel [5].

For me, grab irons need to exhibit adequate refinement. Cast-on grabs are almost always replaced (except on a few of my mainline cars), and the heavy bracket grabs of early IMWX and InterMountain cars also fall short of modern standards. They can readily be replaced with the current InterMountain body parts, available for purchase as parts sprues (see Sources).

Modern kits and ready-to-run cars usually have acceptable sill steps, though often rather fragile. Cast-on ones are usually replaced with A-Line metal steps, as are damaged plastic ones. I still have some remaining stock of Tuttle steps, a slightly more refined part than the A-Line steps, and I tend to use them on models I regard as more important. To illustrate the kind of grab irons and sill steps I like, refer to [6].

GETTING REAL | 10



7. A California Dispatch Line insulated tank car, built for wine service, with National B-1 trucks. AC&F photo, *courtesy Ed Kaminski*



8. A Sunshine Models 8000-gallon tank car, lettered like the CDLX car shown in [7]. The National B-1 trucks are from Kadee.

GETTING REAL | 11

Underbody detail is not something I put a lot of work into, other than making sure that some brake rodding is visible from the side of the car. As Richard Hendrickson used to say, I intend my trackwork to be good enough that visitors will not get an inverted view of my freight cars. Hopper, covered hopper and tank cars are an exception, as their brake rigging is much more visible and needs to be correctly modeled.

Trucks are an important issue for some cars. Many transition-era freight cars used AAR-design trucks with sideframes only varying slightly from truck manufacturer to manufacturer. A fairly generic model truck may suffice for such cars. But there were some distinctive trucks in use, such as the National B-1. When such a truck was used on a car which I have modeled, I want the trucks to be correct. I show an example of such a prototype in [7], and the corresponding model in [8].

For a detailed description of HO scale trucks, the Hendrickson article cited in Sources is recommended.

Finally, I will mention route cards. Steel cars all have small (minimum 5.5 x 9 scale inches) boards to which a routing card could be tacked or stapled [9]. Older wood-sheathed cars, of course, could receive such cards anywhere on the car side. Tank cars with wood running boards often had route cards tacked to the edge of that board [10]. Customary locations were over the truck at the left end of the car, or sometimes just to the left of the center door on house cars.

Examination of prototype photos from the transition era shows that at least 80 to 90 percent of all cars in service exhibited such cards. Most were evidently manila or white in color, but color photos do show other colors, such as green, yellow, blue and red. It is easy to use ordinary paper of the desired color and cut out small rectangles, then glue them to the route boards or car siding with canopy glue. I would do the same with a tank car [11].



9. A clerk uses a hammer stapler to attach a route card to this box car. He is using the larger placard board; the "official" route card board is just visible behind his face. *Cotton Belt photo*

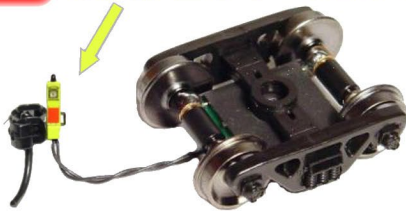


10. This SP tank car has a route card board (the pale rectangle above the running board, to the right of the ladder and above the brake cylinder), but the last clerk who attached a route card put it on the edge of the wood running board, above the left truck. The car, incidentally, is in cottonseed oil service and apparently empty; note the outlet pipe cap hanging from a chain under the car (this should have been closed). *George Sisk photo at Kansas City, 1959, Charles Winters collection*

ADVERTISEMENT

END OF TRAIN DEVICE

NEW SAFETY GREEN



Bright Red Flashing Light!

**Installs in minutes!
No freight car
modification required!**

Patented Technology - US Patent 7,549,609

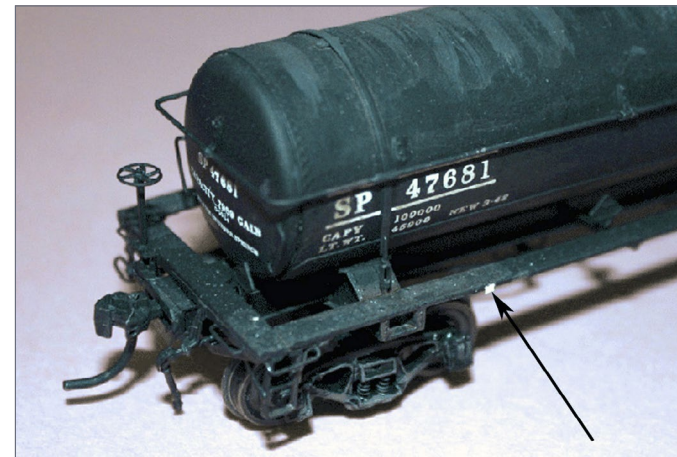
Does not affect Load!

↓ Car without Load ↓

↓ Car with Load ↓

**Click Here to
Learn More**

**RE RING™
ENGINEERING**



11. A model tank car with a route card (indicated by the arrow) on the edge of the "wood" running board, as was common prototype practice.

GETTING REAL | 14

Placards in place on placard boards on the doors of box cars, or on the side of refrigerator cars, are distinctly less common. I apply these to only a minority of my freight cars, but there certainly should be a few.

I should repeat here that I have not commented on my overall standards for accuracy of entire individual models. That is a more general topic than I address in this article, but of course has its own importance.

Lettering and weathering

The two topics of this section overlap in a sense, and could be presented in either order. Even the small lettering I will describe here



GETTING REAL | 15

might be applied prior to weathering, or after weathering. So my choice of order of presentation is a little arbitrary.

Lettering

By lettering here, I don't mean the major lettering that is on any freight car, the reporting marks and car number, railroad emblem



12. (Lower left) This superb photo shows a workman stenciling new weight data on a box car. Note that for this 50-ton car, the light weight and weight limit add up to 169,000 pounds, as was the rule. He is using a short-bristle brush, stiff white "stencil paste," and individual stencils for the numbers. It was natural that the spacing and alignment of individual digits might not be perfect. T&NO photo at Englewood Yard, near Houston. *California State Railroad Museum*

13. (Above) When a car was reweighed, a paint patch was applied, and in many cases only the last three affected digits were changed, and the place and date added.

GETTING REAL | 16

if any, and all the dimensional data. I like to get as much of that lettering correct as is practical, and sometimes have spliced a lot of digits to get close to all the right values. But that's not what I mean to address in this section.

Instead, I want to emphasize the “lesser lettering” that should be there, because it is there on prototype cars. The major component here is the reweigh date [12]. I have consistently kept my freight car fleet correct on this point. After January 1, 1948, most cars had to be reweighed every 48 months. For a 1953 modeler, this means that any 1948 date is out of bounds, and only dates late in 1949 pass muster. My cars almost all have reweigh dates for 1950 to 1953 [13].

To read more about reweigh rules, you may wish to consult the article listed in Sources.

How is this modeled? I have made considerable use of the excellent reweigh data sets once sold by Sunshine Models, and am glad I laid in a good stock of these while Sunshine was still in business. You do see these on eBay and other on-line sales sites, and they are worth getting. Currently available decal sets from Speedwitch Media also include reweigh dates.

Second, I like to include repacking data blocks. On the prototype this lettering was placed over the right-hand truck [14]. It was normally one inch high, and thus pretty hard to read in HO scale. For that reason, I use repack decals that may not really be correct for date. Most cars with solid bearings were repacked around once a year. The principle here is that there should be some lettering above the right-hand truck on each side of a car [15]. Few could read it or would wish to, so lack of a correct date isn't essential, but I believe it is important to have something there.

Third, brake equipment was required to be cleaned and tested periodically. Eventually this was reported on a standard COTS

GETTING REAL | 17

stencil (Clean, Oil, Test, Stencil), but in my model year of 1953, that was many years in the future. Instead, the air reservoir would be stenciled, or if the reservoir was out of sight inside the side sill, the stencil was placed on the sill adjacent to the reservoir.



14. This Sunshine box car has fresh paint patches both for its reweigh data, and for its repack data over the right truck. Note in this case that all weight digits have been replaced, unlike [13]. Note also the route card on the door. The flat car at right has one too.



15. This Tichy flat car has a repack data group at the right of this photo. It happens to match the El Paso location of the reweigh on this car.

GETTING REAL | 18

This is an unfamiliar lettering detail to most modelers, so I show [16] the AAR lettering drawing to show how lettering was supposed to be applied. But I should hasten to add that many prototype photos show other arrangements of lettering on reservoirs, so clearly the drawing was not rigorously followed. A prototype example of such lettering is shown in [17].

Here again, lettering was one inch high, so I simply use a small block of lettering so something is there, rather than try to reproduce actual stencil content. Looking at prototype photos, many cars accumulated enough dirt to make this lettering all but invisible, so I only apply it to a fraction of my freight car fleet [18].

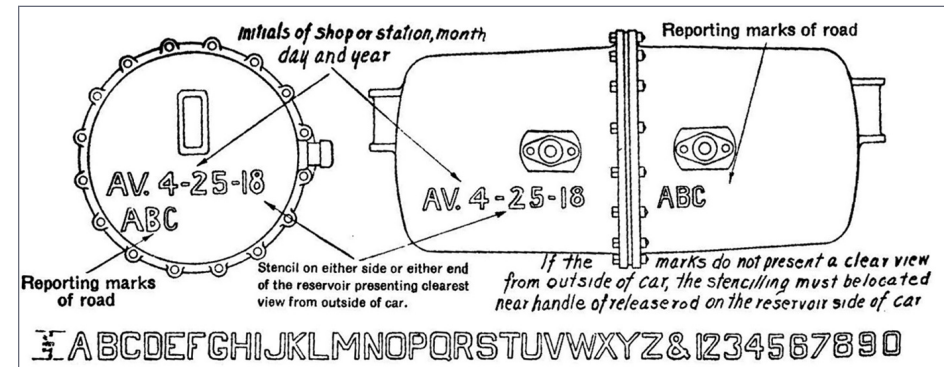
Weathering

I do weather almost every single car. Photos of prototype cars only a month old already show some dust and dirt, so the myth of the “freshly painted car” really does not go very far. As I showed in my post on weathering Pacific Fruit Express cars (see Sources at the end of this article), one should attempt to create a wide range of levels of weathering, though most people (including me) don’t seem able to get there, particularly to the truly filthy dirt jobs. But at least a few cars should be so modeled, perhaps with a “wiped clean” area around the reporting marks and car number for those of us who operate with waybills and car cards.

My own weathering process emphasizes acrylic washes, as I have described in some detail in reference pages on my blog (you can access them at the links which are shown in Sources). I begin with acrylic tube paints [19], and mix up varying color batches to apply. There is no “formula” here, and I think it an advantage that there is probably never the exact match to any previous mix.

The process is to wet the model, add acrylic color, and use the brush to “stroke” and even out the tint as the drying process proceeds [20]. If this sounds daunting, trying it on some practice car bodies will quickly show what is needed and what works.

GETTING REAL | 19

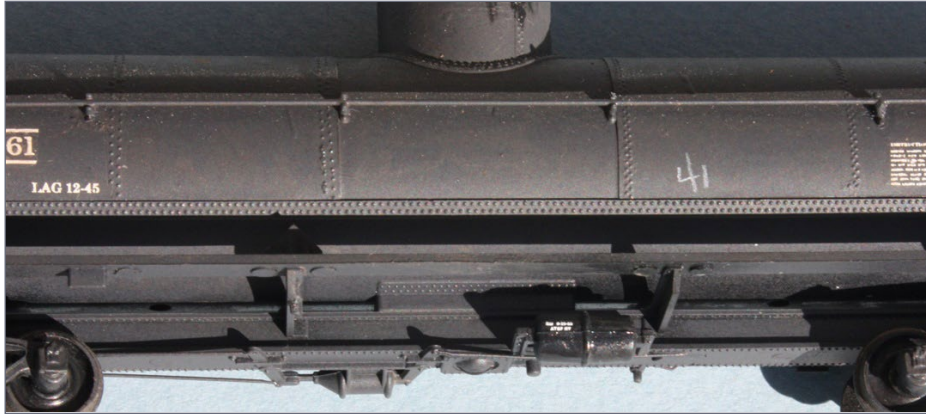


16. This is the 1952 AAR drawing showing arrangement and location of lettering on the reservoir to document date and place of brake servicing. Note that the reservoir end would be stenciled if more visible.



17. This detail from a photo of a Southern Pacific tank car with its reservoir readily visible shows the fresh stenciling for brake servicing. Tank cars often show brake stenciling very prominently because of the reservoir location. *Bruce Petty collection*

GETTING REAL | 20



18. This model of an SP tank car has stenciling on its reservoir, as described in the text.



19. I use inexpensive tube acrylic paints in such colors as Neutral Gray and Burnt Umber, along with Black. A piece of cardboard can serve as a palette. The best brushes are relatively soft ones.

GETTING REAL | 21

My normal process is to do part of a car in one session and the remainder in another session, because that way there is something dry to hold on to. Some cars, like tank cars, can be a challenge to weather convincingly, because they really have to be entirely weathered in one session. A further challenge can be open-top cars like gondolas and hoppers, because the interior is usually at least partly rusted, if not entirely unpainted.

Once the car body is largely dry, some additional streaking with an almost dry brush can be effective [21]. Prototype photos are the best guide to where streaks develop, and what they look like. I am happy with my ability to use this method, but each person has to find the weathering method that works best for them, and then go to work.



20. This box car is showing dry areas toward the top of the car side. This is the last opportunity to smooth out any color blobs or streaks. In the photo, I am adding the wash to the trucks. I am holding the model by the roof and underbody that were previously weathered, and thus are now dry.

GETTING REAL | 22



21. In this photo, a streak descending from the end of the door track is being added. The brush size is evident here.



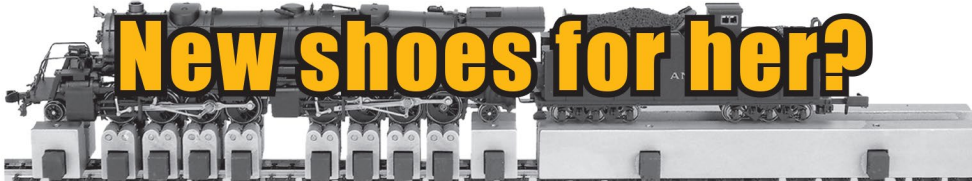
22. This box car has a wood running board. Note that it is made up of individual board lengths, not full car-length boards. Prismacolor pencils (available at any art store) were used to vary the shade of boxcar red from board to board, and to suggest a little gray showing up in the color as the underlying wood aged.

GETTING REAL | 23

There are of course other methods. I have seen superb weathering done with chalks, but even with the superior Bragdon materials, I am not always happy with the results I achieve. Others prefer oil paints or airbrushes, and fine work can certainly be done either way. I personally have found acrylic washes to be the most flexible and dependable to obtain what I want, so nearly all my cars are weathered that way. As I say, however, each person needs to discover what will work best for their particular needs and skills.

Of course, weathering does not end with car sides, roofs, and ends. One important challenge is any car part which represents wood, because wood tends to age and affect its paint covering differently from board to board. This is usually subtle, but can be represented with careful technique. I like to use artist's color

ADVERTISEMENT



New shoes for her?



One of these for you.



Analogue or digital

ROLLING ROADS

SPEEDOMETER For Speed in Real Time!

CLICK HERE

Bachrus inc
RUNNING ON QUALITY

www.bachrus.com
Hannon, ON Canada

GETTING REAL | 24

pencils for such challenges as wood car sheathing, wood roofs, or running boards, and have consistently found the Prismacolor pencils to perform best for me. An example of this technique on a running board is [22].

Another area of weathering challenge is the wood used for flat car decking, or wood floors in gondolas which were so equipped. With age, these wood areas tended to darken and tend toward a gray color. They are also severely gouged, scraped, dented and otherwise abused in service. Oil and other materials might be spilled



23. These flat car decks have all been modified from either “real wood” or painted plastic decks. All are Red Caboose SP Class F-70-7 models. Their appearance is now far more realistic than the out-of-the-box look. These cars were only a few years old at the time I model. Older cars would be darker and grayer.

GETTING REAL | 25

on the wood. Some railroads did apply creosoted wood in these area, but most used other kinds of preservation treatments, so that the wood was not a blackish brown when brand new. Both acrylic washes and color pencils can be used in making a realistic wood appearance in these cases [23].

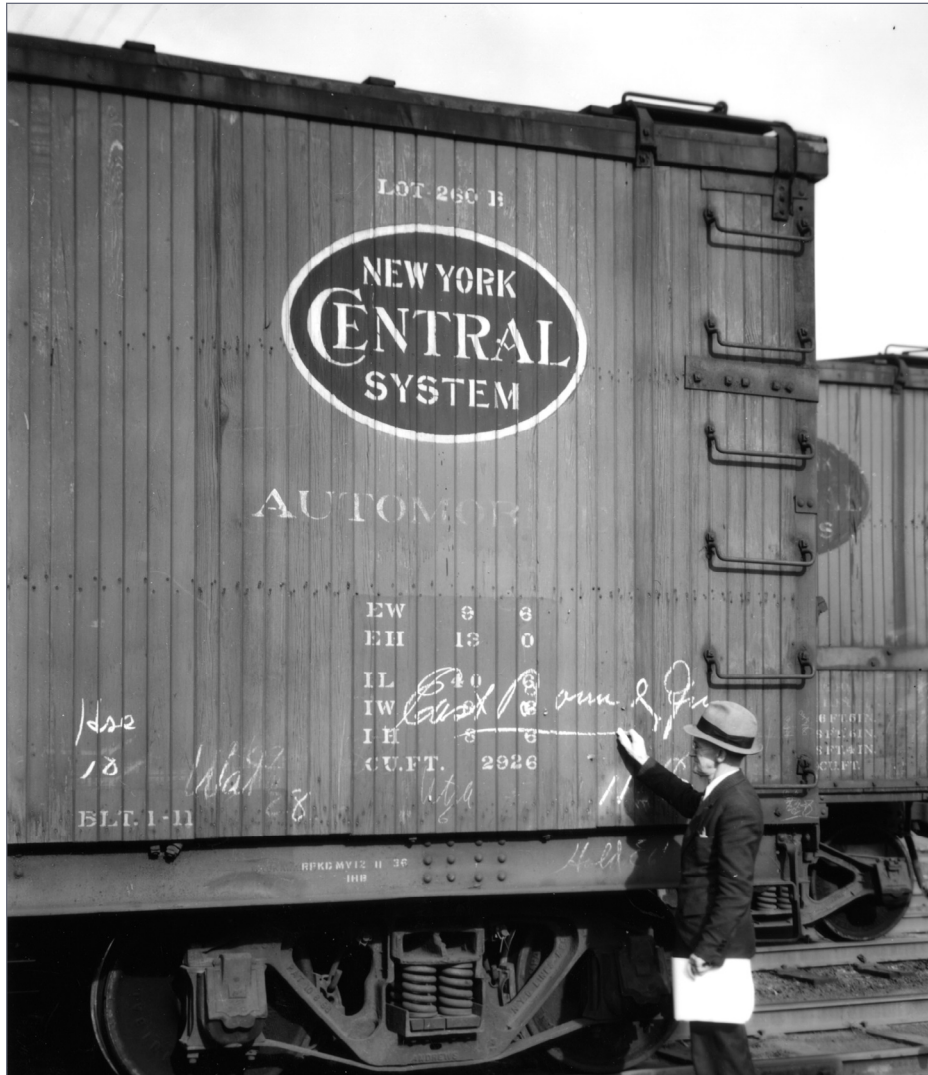
With the wood in gondola floors or flat car decks, it can be most instructive to take a look at prototype cars you may encounter. Contemporary cars are quite different from the transition-era equipment I model, but wood is wood, and you can certainly get some ideas from cars in service.

Lastly, I want to mention chalk marks. Certainly in the transition era, these were ubiquitous, and model freight cars without them definitely do not look like the cars in prototype photos. And remember, these marks by and large were *not* graffiti, but were deliberate marks made to convey information [24]. Many were merely letters and numbers. These might mean the track to which the car was destined, or the industry to which it was going, or the outgoing train it would join, or the day and time of loading, and so forth and so on. Every yard had its own codes and abbreviations, and most of the knowledge of those codes is now lost, but whatever they might mean, these marks are very visible.

For an even more vivid example than [24], a 1951 photo by Don Sims [25] shows a clerk writing on the cars during icing. To repeat, these marks are for information, and should not be called graffiti.

Here again, I use Prismacolor pencils, both white and light gray, to make chalk marks [26]. One can simply use the kind of letters and symbols seen in prototype photos to create these marks. The Monon box car of [26] is shown completed in [27]. The chalk marks have not been allowed to overwhelm the appearance of the overall model.

I want to conclude with a general comment about weathering. Heavy weathering is dramatic, and certainly in the transition era, with plentiful smoke from both locomotives and industrial plants,



24. This clerk in the 1920s is chalking some marks onto an automobile car using the standard one-inch diameter "rail-road chalk." Note the paperwork in his left hand. What he is writing on the car conveys information to yard switch crews, or the crew of a local freight, or even to the switchmen at the car's next destination. *Rob Evans collection*



25. (Top) This photo, taken at El Centro, CA in 1951, shows icing crews at work on these freshly loaded PFE refrigerator cars. Note the clerk at right holding a clipboard and writing with railroad chalk what appears to be date and time of icing. *Don Sims photo*

26. (Bottom) A very fine point on a light gray or white Prismacolor pencil allows application of chalk marks to a finished model.

many cars got seriously dirty. But a range is important too, to represent newer or repainted cars. And I always keep in mind that even a relatively recently built car shows at least a little dirt. Using my method of acrylic washes, I can readily create a light weathering look, and even that will contrast strongly with an unweathered car [28].

These are my most general standards. Beyond these, description becomes more intricate than is probably necessary here. But choices of good basic standards will help your car fleet look better and perform better. ☑



27. (Above) This Monon box car, the same one shown in [26], is well weathered, and shows only a modest number of chalk marks. This was commonplace. Note also the route card on the door and the paint patches for reweigh and repack data.

28. (Below) Initially, these two Red Caboose box cars were identical. But the one on the right has received light weathering and a reweigh patch. The contrast is striking. By itself, the one on the right would probably look fairly clean, but comparison to the out-of-the-box car shows the difference.

SOURCES

A-Line steps: ppw-aline.com/collections/freight-car-stirrup-sets

Article on PFE reefer weathering: modelingthesp.blogspot.com/2011/03/modeling-pfe-reefers-in-1953-2.html

Article on freight car reweigh: modelingthesp.blogspot.com/2011/03/reweigh-article-from-rmc.html

Chalk marks and route cards: modelingthesp.blogspot.com/2011/11/chalk-marks-and-route-cards.html and also following posts; search on "route cards"

InterMountain body parts: intermountain-railway.com/ho/hodetail.htm

Kadee products: kadee.com

Reboxx wheelsets: reboxx.com/wheelsets.htm

Richard Hendrickson on trucks: modelingthesp.blogspot.com/2013/07/another-update-to-richard-hendricksons.html

Speedwitch Media decals: speedwitchmedia.com/decals

Weathering reference pages. There are two parts: modelingthesp.blogspot.com/p/a-few-years-ago-richard-hendrickson-and.html

and:

modelingthesp.blogspot.com/p/weathering-with-acrylic-washes-specific.html ■



Click here to rate or comment on this article