

Weathering Track

Techniques for enhancing the appearance of model track

Mike Cougill



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By Mike Cougill © 2014

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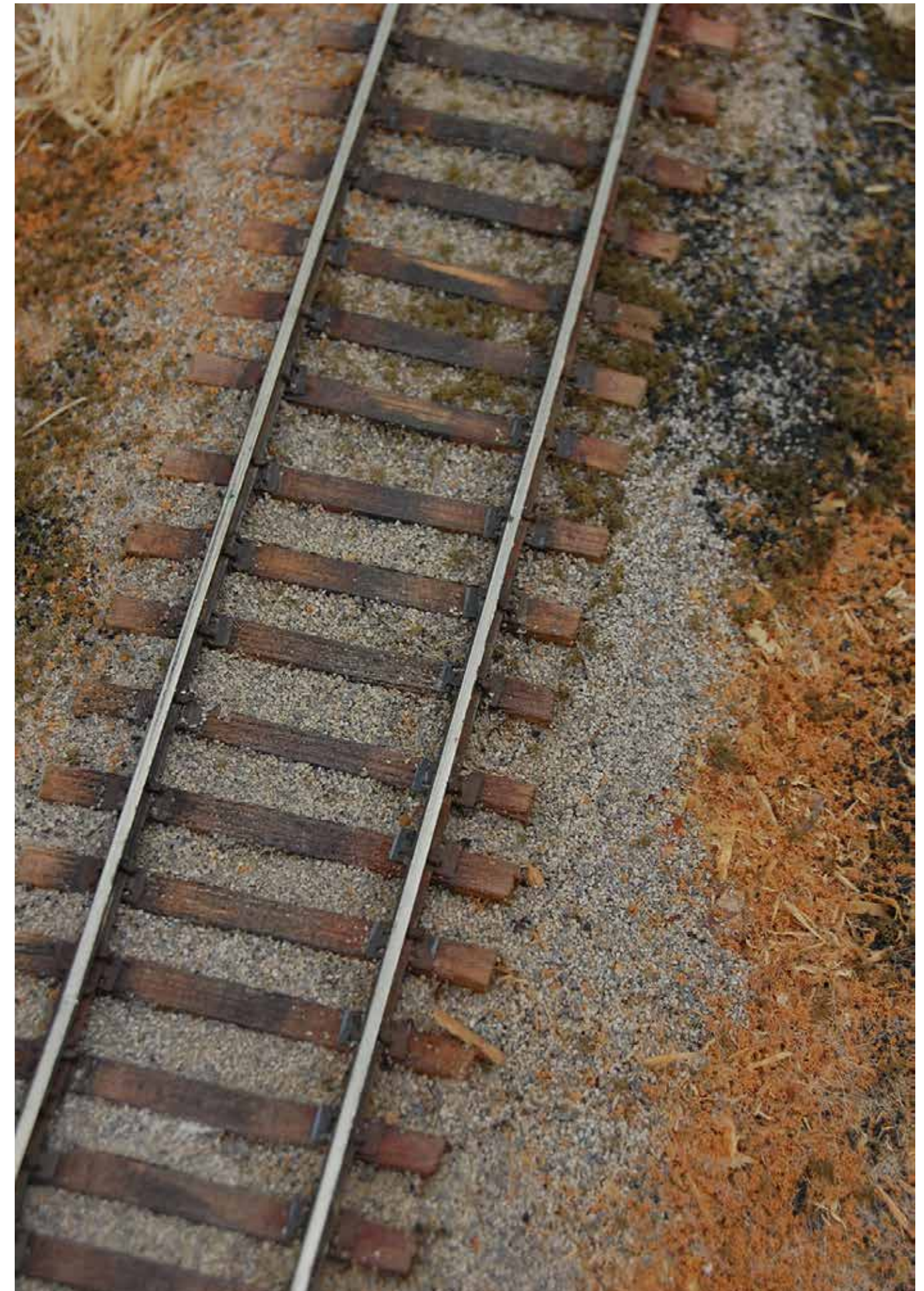
The text has been revised in this edition to improve the flow and continuity as a stand-alone work. There is also new material not included in the printed book. You will notice frequent references to the Floquil line of paints. These have now been discontinued and you will have to make substitutes for the colors mentioned. All photos are by the author unless otherwise noted. And, you may share or forward this e-book without restriction.

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(Right) Quarter-inch scale P48 track

Materials include Code 125 rail (100 lb rail in quarter-inch scale), individual tieplates from Right O Way Products on 3/16" square basswood ties that were sanded down, hand distressed and weathered with a combination of Minwax stain and washes of craft and hobby paints. Some drybrushing was also employed down the middle. Ballast is a custom blend of three Woodland Scenic colors using the fine grade size granules.



In June and December of 1968, *Railroad Model Craftsman* had two articles by the late Paul Larson that greatly influenced my view of what model track could be.

His track was to coarse gauge O scale standards, yet it was detailed far beyond what anyone else in the hobby was doing at the time. A few years later, *RMC* also ran an article by the late Bob Hegge on his techniques for handlaying and weathering the track for his renowned Crooked Mountain Lines, a quarter-inch finescale layout that I also drooled over regularly. I still have both original articles in my files.

Working in HO for many years, I was never able to build satisfactory track until I switched to P48. Now, I was finally able to construct track as detailed as the two examples I had admired for over forty years.

As detailed as Paul's track was, his attention to weathering reflected the sensibilities of his time. As noted in the article, the main rail coloring was a mix of Rail Brown, Grimy Black and some Mud, all colors of the now defunct Floquil line of paints. Bob's article paid a bit more attention to coloring and weathering but, again, reflected the general sentiment of his day.

Today, we're paying closer attention to modeling track and that includes proper weathering and coloring. Regardless of how you lay your track, I invite you to follow along with the techniques presented here. They will work and they aren't that hard to master. All it takes is some patience, practice and a determination to learn.

Weathering takes model track to another level of realism. If you do nothing else to the track, at least give the rails and the ties a coat of paint to kill the shiny metal and plastic look.

Track is dirty, oily, dusty, and coated with rust and grime to varying degrees. Ties can have a wide range of color and weathering patterns along a single stretch of track. Unless it has just been refreshed, the ballast will also show contamination from dirt, cargo spillage and other factors (Photo 1).

The ballast gets filthy over time.

The amount of traffic on the line and especially the era modeled can greatly influence the color and appearance of track ballast. A lightly traveled branch will show more influence from rust and weathering than a heavily traveled main line. The heavier traffic will lay down an oily film from the locomotives, darkening the color somewhat as seen in Photo 1 on the right. Consider, too, the influence of climate. Typically arid regions like the Rockies and southwestern desert will be dustier and drier in texture than in the Midwest or the East. Track on mountain grades will also have distinct coloring from sand on uphill tracks and brake dust on the downgrade lines.

The types of bulk cargo hauled also influences the appearance of track. Things such as brine drippings from ice cooled refrigerator cars are a factor not often thought of, along with the cinders and soot laid down by locomotives in the steam era. We also think of coal dust flying off of open hoppers and the iron ore pellets dropped from trains in ore country.

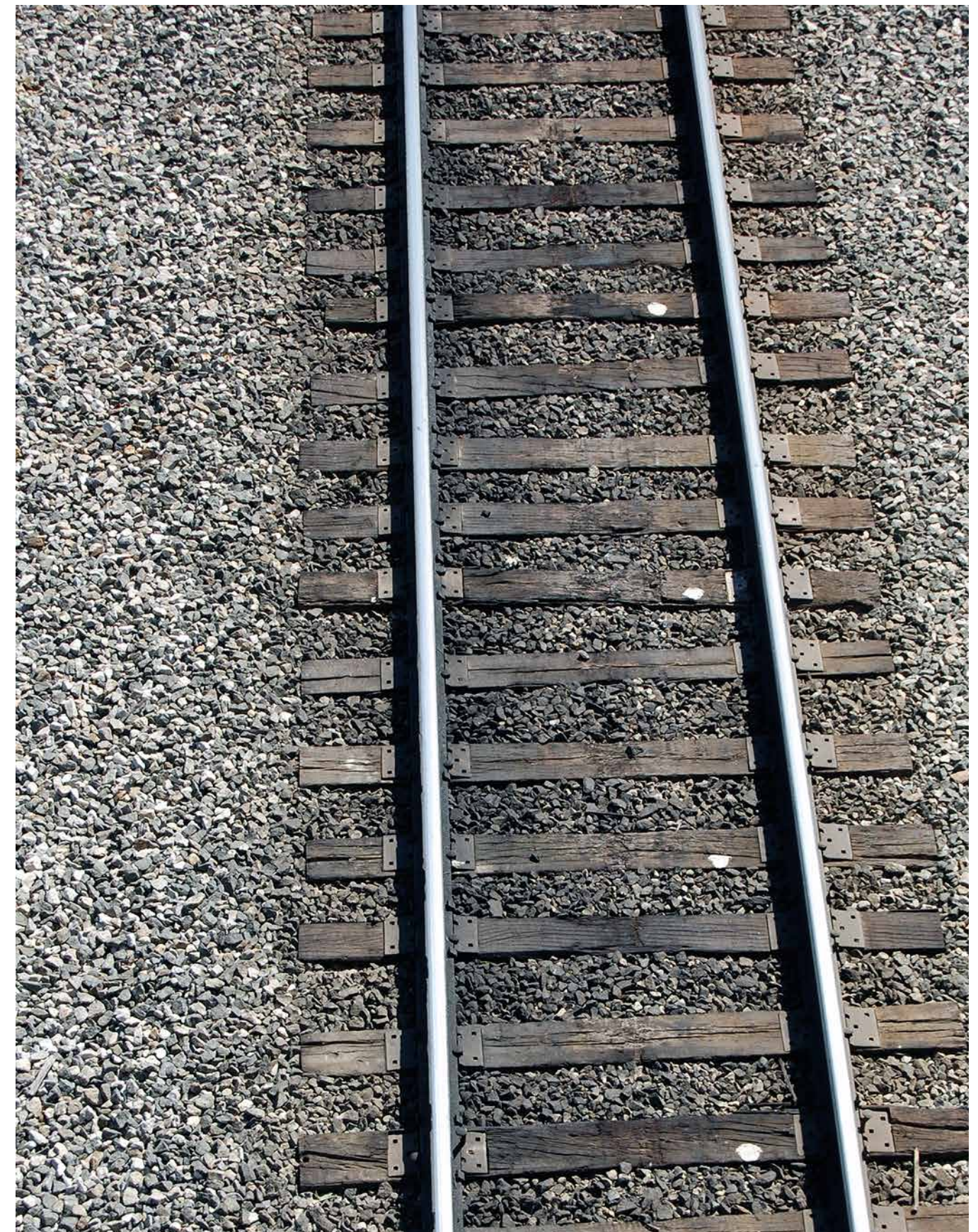


Photo 1 Notice the darker coloring of the track and ballast compared to the shoulder areas. Note, too, the variation in the tie coloring.

Ballast

Photo 2

In April of 2011, Valley Junction received fresh ballast on the old line to Lawrenceburg IN as seen in the distance. From the debris littering the shoulder, it looks like some new ties were also installed. This is fresh limestone, yet look closely at the color variations.

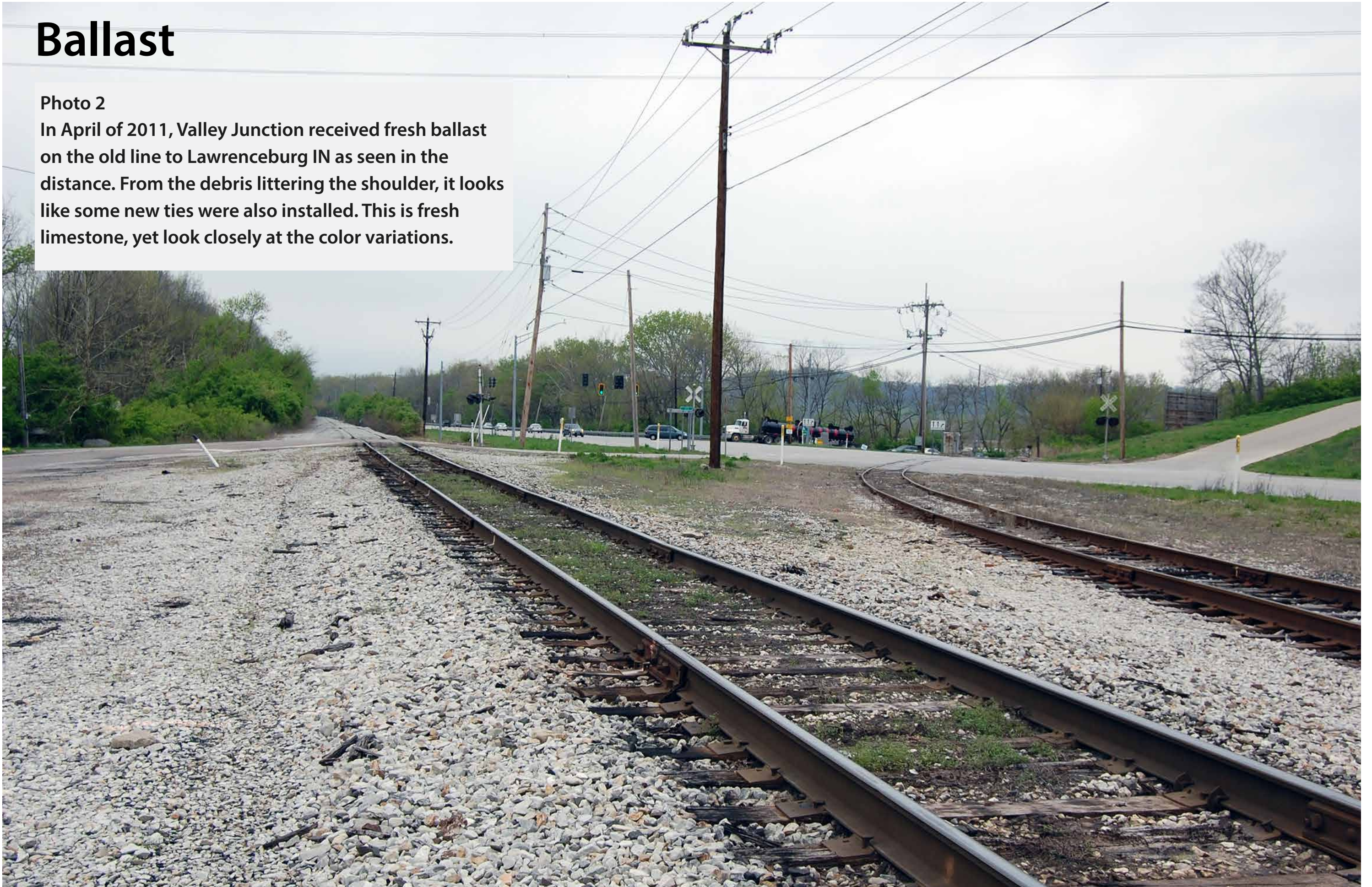


Photo 3

While the old main may have gotten a facelift, the condition of the ballast on the branch changes quickly past the junction turnout. Notice how soon the ties disappear under the dirt and mud. Notice too the encroaching but dead weeds.

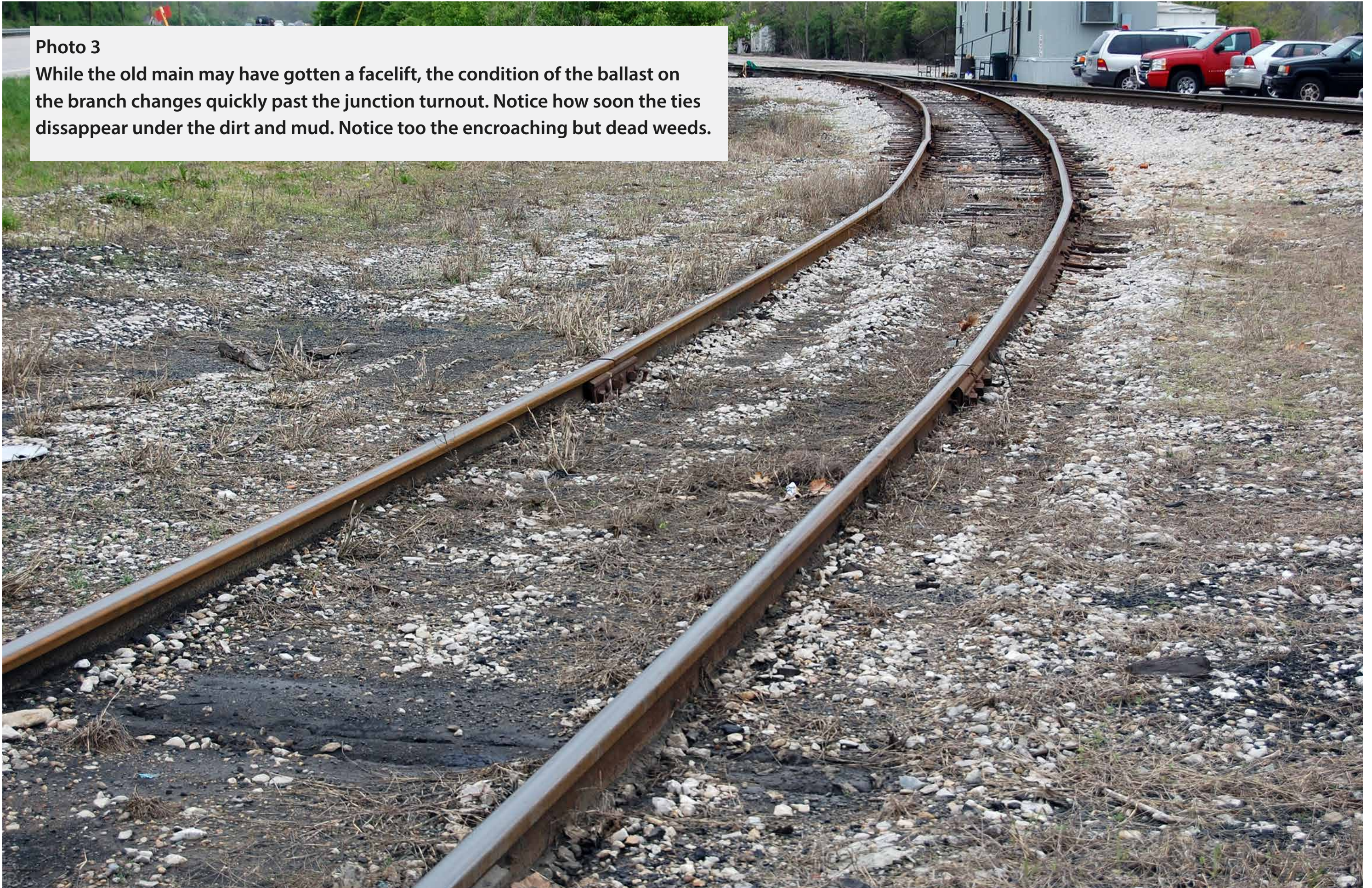
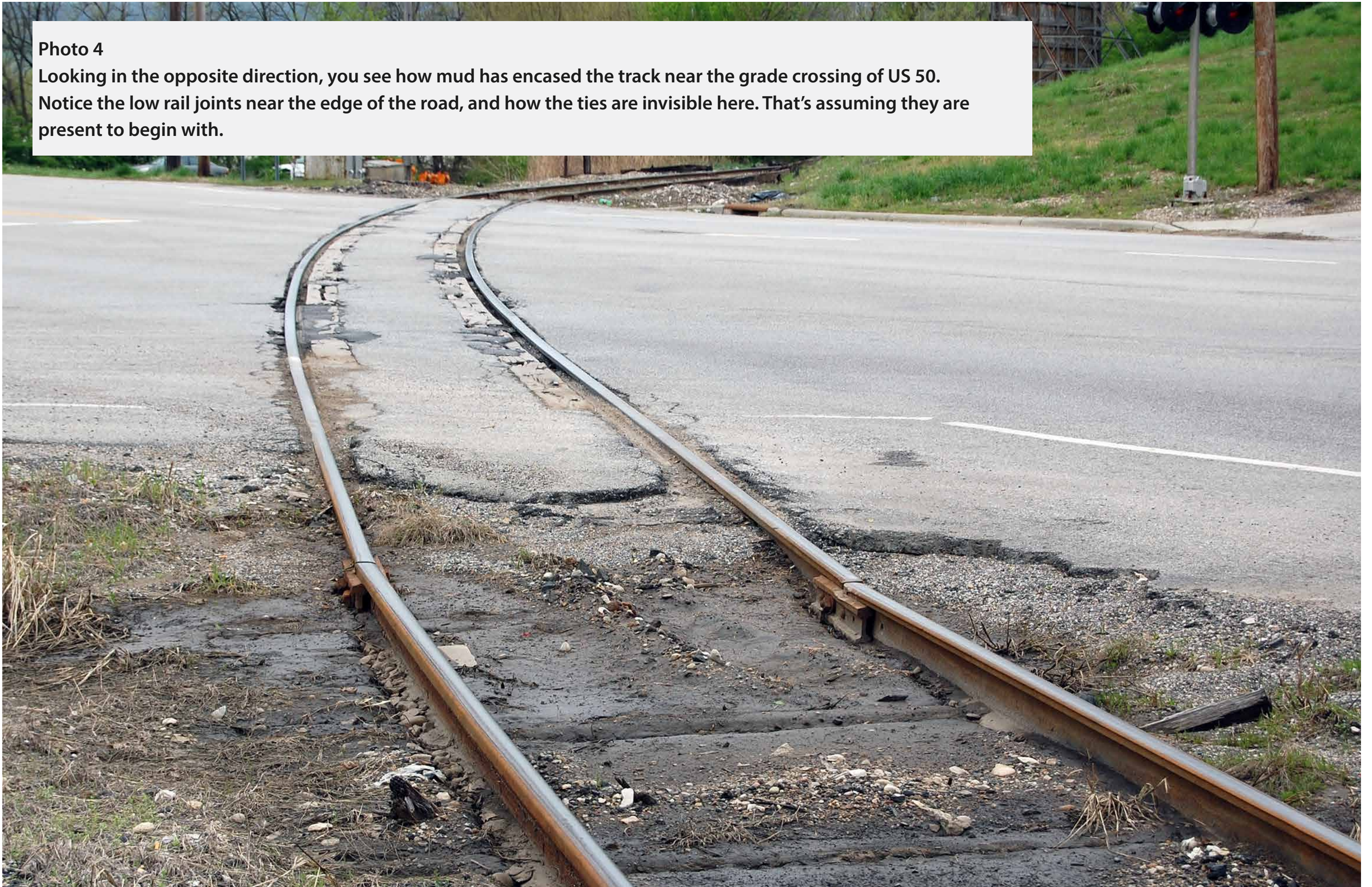


Photo 4

Looking in the opposite direction, you see how mud has encased the track near the grade crossing of US 50. Notice the low rail joints near the edge of the road, and how the ties are invisible here. That's assuming they are present to begin with.



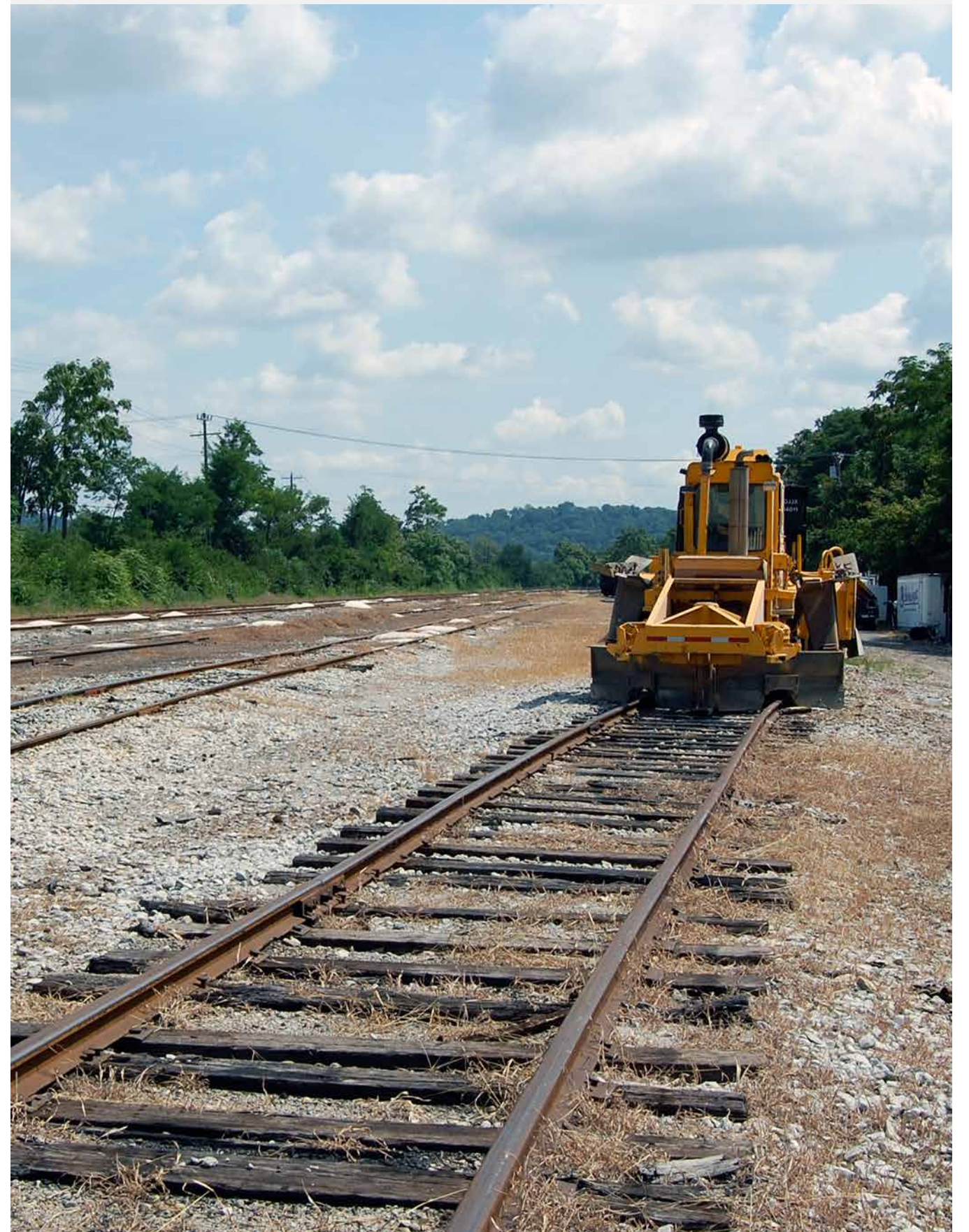
The characteristic that really attracted me to my chosen line was the condition of the track. The ties are weather-beaten, rough and, in spots, decayed considerably (Photo 5). I really wanted to capture these qualities on the layout, so I handlaid my track and spent a great deal of time and attention on the ties.

Getting Started

As a first step, I imparted some rough wood grain texture with a fine-tooth razor saw. Using both hands, I placed it on the basswood tie stock and drew it along the length of the ties several times (Photo 6, next page). You need to watch how much texture you create as a little goes a long way, even in quarter-inch scale. It is easy to overdo this step and turn your ties into a caricature instead of simply weathered. If you're representing a well-maintained line, go very lightly with the saw or skip this step altogether, especially in the smaller scales, since the ties will be in much better condition as a rule.

This texturing process is a subjective thing in that what looks good to one modeler will look over or under done to another. Learn to trust your own judgment. When it looks like it needs just a little more work, it might be wise to stop. This is something that comes with practice and experience, and

Photo 5 The track at Valley Jct. has seen better days. I wanted to capture this quality on the layout more than anything else.



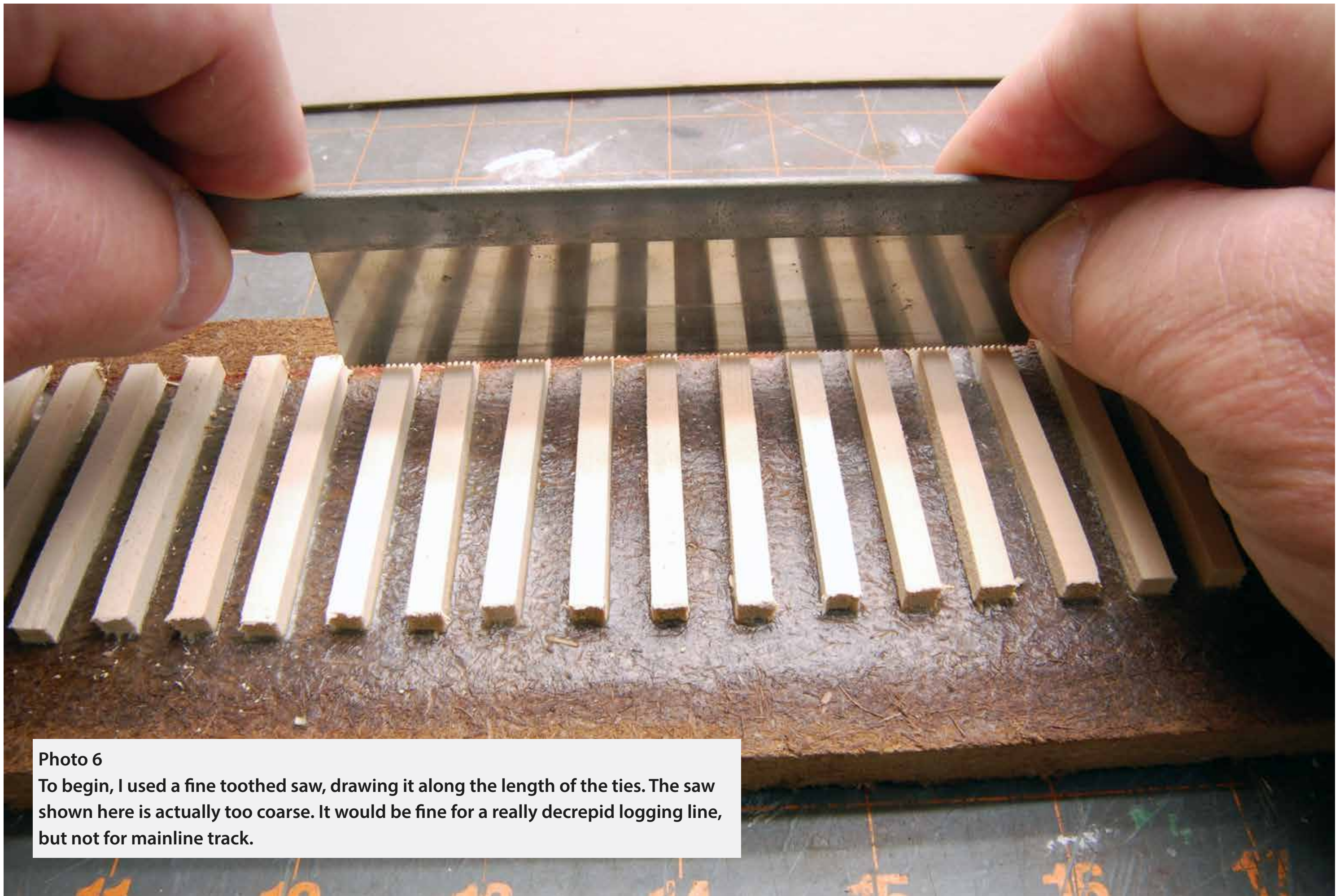


Photo 6

To begin, I used a fine toothed saw, drawing it along the length of the ties. The saw shown here is actually too coarse. It would be fine for a really decrepid logging line, but not for mainline track.



Photos 7-8 As wood fibers age, checks will develop as the fibers separate. These checks typically don't impact the integrity of the wood until they reach a certain size and depth. To control checking, tie manufacturers install barbed plates as seen on the end of second tie from the left.

there's no real way to teach it. If you overdo a section, scrap the ties off and replace them, and then try again. Ties are relatively cheap and frustration with sub-standard work can last a long time.

The next step utilizes a dental pick or an X-acto knife and some patience. In studying prototype track photos, you'll notice that many ties, even new ones, have a pronounced check or split in them that often runs the



To model such checking in the ties on my layout, I used a dental probe that I ground to a sharp point for scribing. Like other techniques this can be easily overdone. You need to keep the degree of weathering you desire in mind when doing this.

whole length of the tie. These large checks are the result of the drying process where the wood wants to shrink in size from the loss of moisture. To represent this effect, I ground a sharp point on a used dental pick, and scratched a line along individual ties (Photo 8, above right). I tried to vary the length and direction so I didn't fall into a repeating pattern. As with the wood grain, go easy.

Photo 9

This view of the Brookville yard shows the character that drew me to the line. The piles of colored material between the rails is the grit that covers the roofing shingles made by the plant just out of view.



All of this can seem like overkill or obsessive if you're used to working in a smaller scale like HO or N, where such details aren't as noticeable to the eyes. I want to emphasize that this degree of detailing was a personal choice. I went to these lengths because I wanted to push my modeling skills to another level. It was as enjoyable to model the texture of the ties to this degree as anything else I did on the layout. As the disclaimer says: "Your mileage may vary."

Coloring

Creosote has been the standard wood tie preservative in the US since the late 1800s. It has a distinctive color when fresh that ranges from near black to a brownish or bluish black that weathers to a brownish gray to all gray. Duplicating this color is a largely a matter of personal taste.

Once the ties are textured to your satisfaction, it's time to consider the

Photo 10 I used an initial wash of Minwax Golden Oak wood stain as the foundation for other weathering effects . You can brush it on or use wadded up paper towels.



coloring process. Everyone sees color differently; so I recommend that you make a test section of ties to experiment on before working on permanent track areas. The extra time will be well spent in giving you the freedom to experiment and a feel for the process; plus, mistakes won't be a disaster.

On the layout, I applied coat of Minwax Golden Oak wood stain straight from the can as a first step in the coloring process (Photo 10). This solvent-based stain will smell up the area nicely, so use ventilation and/or a mask with a filter designed for organic vapors. I simply applied the stain with a small paintbrush or wadded up pieces of paper towels. If using the towels, wear disposable gloves, as you don't want this stuff soaking into your skin. Also, dispose of any used toweling properly to avoid problems with spontaneous combustion.

To start the weathering in earnest, I colored individual ties with a combination of water-based craft paints and Floquil colors. This is where the subjective aspects of coloring come into play.

What I wanted was the faded, bleached appearance of aged creosote. The final effect is a moving target to say the least. Over the years, I've had a change of heart about the oak stain. Closer studies of prototype ties leads me to think this stain is far too yellow in color. Prototype ties are much grayer or brownish than yellow; therefore, I'm still experimenting with the coloring process. The other thing you want is an overall consistent tone to the ties with some variations among individual ties. You'll have to judge for yourself what looks good under your layout's lighting conditions and to your own eyes.

To continue weathering, I used highly diluted washes of Floquil Grimy Black paint. I would just lightly shake the bottle once or twice to distribute the pigment, and then dip a brush into the liquid and apply it to random ties. I did the same thing with Floquil Rail Brown paint. If a tie got too dark in color, I used some thinner to wipe it off before the wash set in. I would often



Photo 11

There really is no right or wrong way to color wood ties. After the Minwax stain, I used a number of colors of brown and gray craft paints and /or Floquil to achieve the color I wanted. Here I'm brushing on thin washes of craft paint that act more like stain than paint. Experiment, experiment, experiment until you get the effect you want.

apply these washes while the Minwax stain was still wet, letting everything blend together randomly.

In addition to the solvent-based Floquil, I mixed in water-based craft paint using a host of gray and brown shades (Photo 11). Once again, these were highly diluted washes and were mixed wet with the previous ones. It all sounds like the recipe for a mess, and it can be. However, nothing is permanent here and things can be sanded down again and redone if needed. A willingness to experiment will serve you well at this stage.

Now is a good time to let everything dry and see what you have in terms of color. If you aren't happy, or if something doesn't look right, don't be afraid to redo it. The biggest problem will likely be color that has gotten darker than you intended. A light sanding or dusting the ties with weathering powders, or pastel dust can fix this. If the tie color is too light, simply apply more wash coats of color until things look the way you want. An important point to remember is the color will look darker when wet than it will after drying, so go easy and build up the layers gradually. Let me point out again that nothing is beyond recovery. I have altered the color of ties in finished areas of track more than once.

One last note: I realize that for many this amount of work and preparation will seem intimidating, especially if a basement's worth of track is in your future. Understand that I had specific goals I was working towards with the appearance of my track, and that my layout is small in overall size. For large layouts a number of compromises have to be considered, and I'm not suggesting that every inch of track has to be built to this standard. Hidden trackage certainly doesn't, nor should staging tracks. Make your own choices about how your track would benefit from the extra attention outlined here based on your overall modeling goals.

With that said, once the ties are textured and colored to your satisfaction, it's finally time to lay some rail, which isn't covered here but is in *Detailing*

Track. Once the rails are down and detailed with joint bars or whatever level of detailing you desire, you can finally consider their color.

Even though I use weathered rail, I start the coloring process with a base coat of Floquil Rail Brown or Railroad Tie Brown straight from the jar using a small pointed brush (Photo 13). Today the Floquil line has been discontinued, so you will have to find a substitute for these colors. I suggest



Photo 12

Not perfect, but suitable. This is what I wound up with after building up many layers of stain and paint colors. The methods described will work well on wood ties but plastic ties are another matter. For those, you will have to use full strength coats of craft or model paints as plastic isn't porous like wood.

You can also use drybrush techniques to good effect on plastic ties, again with full strength layers, although you may be able to use a wash layer on top of a full strength coat.



Photo 13 A small pointed brush will cover the rail and tieplates in one stroke with practice.

looking at the paints the armor, military and aviation modelers use like the ModelMaster, Vallejo or Tamiya lines of paint. They each have similar colors to the old Floquil.

I painted the rail sides and applied details by running the brush along both sides of the rails, coating them and the tieplates at the same time. I don't worry about getting paint on the railheads but I do take care to keep paint off the ties as much as possible. Once the rails are painted, it's time to make them look like the heavy steel of full-size track by getting rid of any sheen from the paint. This simple step adds tremendous realism. I used weathering powders from a company called MIG Productions for military modelers that come in a useful assortment of colors.



Photo 14
Compare the appearance of the weathered foreground rail to the painted, but unweathered one in back. Killing the paint sheen with powders adds a lot of mass to the look of an object.

These products are largely unknown by model railroaders, which is too bad because they produce excellent results and are easy to use. They can be applied dry or wet by using a pigment fixer (Photos 15-16). The fixer is

Photo 15



a clear liquid enamel designed to act as a binder. The fixer can be applied over the dry powder to bind it or the powder can be worked into the wet fixer. Additional applications of dry pigment can be applied after the fixer is dry. Once dry, a dead flat finish is left and the pigments return to their dry color tone. Compare the finish of the front rail with weathering powder to the painted rail in the rear in Photo 14 (previous page). The dry, dead flat texture of the weathered rail imparts a solid look to my eyes. The painted but unweathered rail still lacks realism in my view. At this point, it's time to clean the railheads and ensure that you have good electrical contact. Then it's on to ballasting.

Ballast

Now, finally, time for something easy. Sprinkle the ballast on the track,

spread it around a bit with your finger or a soft bristle brush, mix up some white glue diluted about 50-60% with water, add a drop or two of dish soap, apply and call it done. We've all read this a hundred times in *Model*



Photo 16

Railroader and *Railroad Model Craftsman*. Nothing more needs to be said, right? Wrong. There's more to ballast than a bunch of rocks.

Texture

I'm of the opinion that many of the textures commonly used in O scale are visually too coarse. In my view, overly large ballast granules create a very busy texture that draws undue attention. Let me repeat that this is a subjective call and everyone will have an opinion, which is fine. Some high traffic mainlines used a heavy layer of large stone ballast to support the track structure, so a coarse texture would be appropriate in such situations.

For my purposes, rather than use the materials typically sold as O scale ballast, I used Woodland Scenics fine grade. Even their medium grade

ballast looked a bit oversized to me (Photo 17). Using a smaller size lets the track stand out from the ballast visually.

As with other aspects of scenery, the condition of the ballast can give hints about the traffic density and the financial state of a line. As mentioned, ballast can look dirty from oil leakage and if not maintained frequently, the surrounding dirt and vegetation can contaminate it. You might note a ragged or non-existent edge due to the encroaching vegetation, along



Photo 17

Large on the upper left, medium size in the middle and fine grade on the right. The large size granules looked too coarse for my taste. A heavy duty mainline in quarter-inch scale could get away with the medium sized grains. I preferred the fine grade as it didn't draw attention to itself in the finished scene.

It's a judgement call and matter of personal taste.

with a poorly defined profile and rounded shoulders. All of these details tell a story. As an example of how this can be applied to a layout, near one end of my runaround track I created a scene where the track has been reconfigured by relocating a turnout. This area has cleaner looking ballast that reflects the recent changes done by the railroad. All it took was some observation and thinking outside the box.

In keeping the character of prototype track I'm modeling in mind, I took some extra steps in ballasting the trackwork on the layout. None of them are as hard or time consuming as laying the track was, and in fact, these details were simple to do and really helped the overall realism.

Applying the ballast

To begin, I made a custom blend of ballast using three different shades of material: A light gray, a medium gray and a buff color. I mixed them in a ratio of one third of each (approximately) in a plastic container with a screw on lid. I simply poured the desired amount of each color in and shook the container until they were well blended. I also put a label on the jar with the colors used and the mixing ratio for future reference.

You can vary the overall tone of your mix by changing the color ratio of the different shades. You should, however, avoid extreme color combinations like a white or light gray mixed with a dark color like cinder, as it will create an unrealistic salt and pepper look to things. Also, three colors are better than two. The reason being that two of the colors will be close in tone, giving the desired variation without making too much of a contrast.

There's nothing out of the ordinary in the way I applied the ballast. I used the time-honored techniques that have been described countless times. I did take care to remove any ballast granules off the tops of the ties and bases of the rails, using a soft brush, my fingers or whatever worked. Many modelers will go to great lengths to get the ballast just so, especially if they are representing a first class, traffic dense high-speed right-of-way.

I didn't worry too much about keeping a neat edge or crisp profile. I'm modeling a low-density branchline junction and such details wouldn't look right. Different railroads had their own standards for maintenance and ballast profiles and how high it came to the tops of the crossties. If you are following a specific prototype, then your guidelines are set for you.

Getting dirty

Once the ballast is dry, it's time to add some additional weathering effects. I begin with the oil stain down the middle of all the running tracks, using a drybrush technique and a very dilute wash of a grimy black paint. The wash soaks into the ballast giving a nice staining effect (Photo 18 and 19, next page). I concentrate it in areas where the locomotive stands for extended



Photo 18

The ballast is applied via the usual methods. Nothing unique here. Further weathering included the oil staining down the middle of the tracks from dripping traction motors. Much more could be done to weather the ballast around this turnout.

periods of time, such as near the ends of the runaround tracks and where crews park the engine for the night.

I work in some dirt effects by rubbing actual dirt collected from the yard. This is dried, then screened for size and texture by rubbing it through an old kitchen sieve. I simply hold a pinch of the sieved dirt between my fingers, and rub it into a powder as I apply it along the outsides of the track where I want a change of color or texture. This is very effective around grade crossings. I also go back and add more pastel dust to the rail sides and ties if needed.

Weathering existing track

I wasn't happy with how the Pole Track at the front of the layout turned out. The ties were far too clean to represent the run down shoddy spur that I envisioned. To remedy this I simply got the tools out and went at it without concern that it was already in place, painted and weathered.

Different railroads had their own standards for maintenance and ballast profiles and how high it came to the tops of the crossties. If you are following a specific prototype, then your guidelines are set for you.



Photo 19

There is a lot of oil staining at this end of the run-around. I used washes of Grimy Black and MIG weathering powders (Soot) to darken the cinder ballast and ties.

I wanted some ties to be little more than big splinters, so I tackled individual ones with the dental pick and X-acto knives, and just chewed the heck out of them (Photo 20-21, below).

Once the ties were distressed to my liking, I added color washes, rubbed pastel chalk and *Industrial City Grime* MIG weathering powder onto the surface to cover up the raw wood scars and to blend them in with the surrounding scenery. Now this track looks like what I envisioned it to be (Photo 22, next page). Of course, I can always come back and add more weeds, trash and other debris.



Photo 20



Photo 21

Don't let existing track stop you from going back and redoing the color and or details.



Photo 22
I rubbed in real dirt and MIG weathering powder to dull things and give an old and dusty appearance.

Weathering Commercial Track

There really isn't any secret to weathering commercial flex track. A basic set of steps has been outlined a number of times with slight variations.

The hardest thing is making plastic ties into a convincing replica of wood. Plastic doesn't lend itself to staining or color washes, so full strength applications of model or craft paint is the order of the day (Photo 23), and I've used both solvent and acrylic based paints with success. The solvent based paints work better for the rails, while either type will work on the ties. I tend to prefer acrylic paints when possible for health and safety reasons.

Your imagination is the limit where detailing is concerned. As shown on the following pages, you can take things quite far, or simply enhance the coloring. It's really up to you and the end results you want for your layout.

At this point, your track should be looking very realistic compared to the typical modeled scene. My take away advice is to go out and study the prototype whenever possible. There is so much more to modeling realistic track than most of us realize. Learn to see what is actually there instead of relying on preconceived ideas and conventional wisdom. In the end, I think you'll find the effort worthwhile. I'm aware that these techniques and methods aren't everyone's cup of tea. While I find hand laying my track enjoyable, others experience nothing but frustration with it.

Rather than tell people what they should do, I'm simply presenting what has worked for me. I always encourage folks to try new things, to experiment and be willing to live with failure until the new skills take hold. With all my work, I hope you will take away what you can use and leave what you don't want or need.

Mike Cougill -2014



Photo 23 shows how effective the results are compared to an unmodified section on top. It only takes a few minutes per three foot length to do this and for representing branchline track, it adds so much character.

I always encourage folks to try new things, to experiment and be willing to live with failure until the new skills take hold.

Weathering Flex Track

Photo 24

Here, I've taken an old piece of Micro Engineering Code 70 flex, where I had removed every fourth or fifth tie by cutting the connecting web with a X-acto knife so I also could adjust the spacing. I clipped the ends off with side cutting pliers in a random pattern to give even more variation. The ties were painted with different shades and mixtures of gray and brown full strength craft paint straight from the bottle. As you can see, the the paint tends to tone down the overdone wood grain effects on the ties - a

good thing to my eyes. Once painted, you could go over the ties again with color washes of drybrush applications for more subtle effects. I wouldn't hesitate to do so if this were foreground track that is easily seen.

What I would hesitate with is the severe deterioration effects shown on the previous pages. Again, the material properties of plastic is working against you, so why make more headaches for yourself? It's your call though.



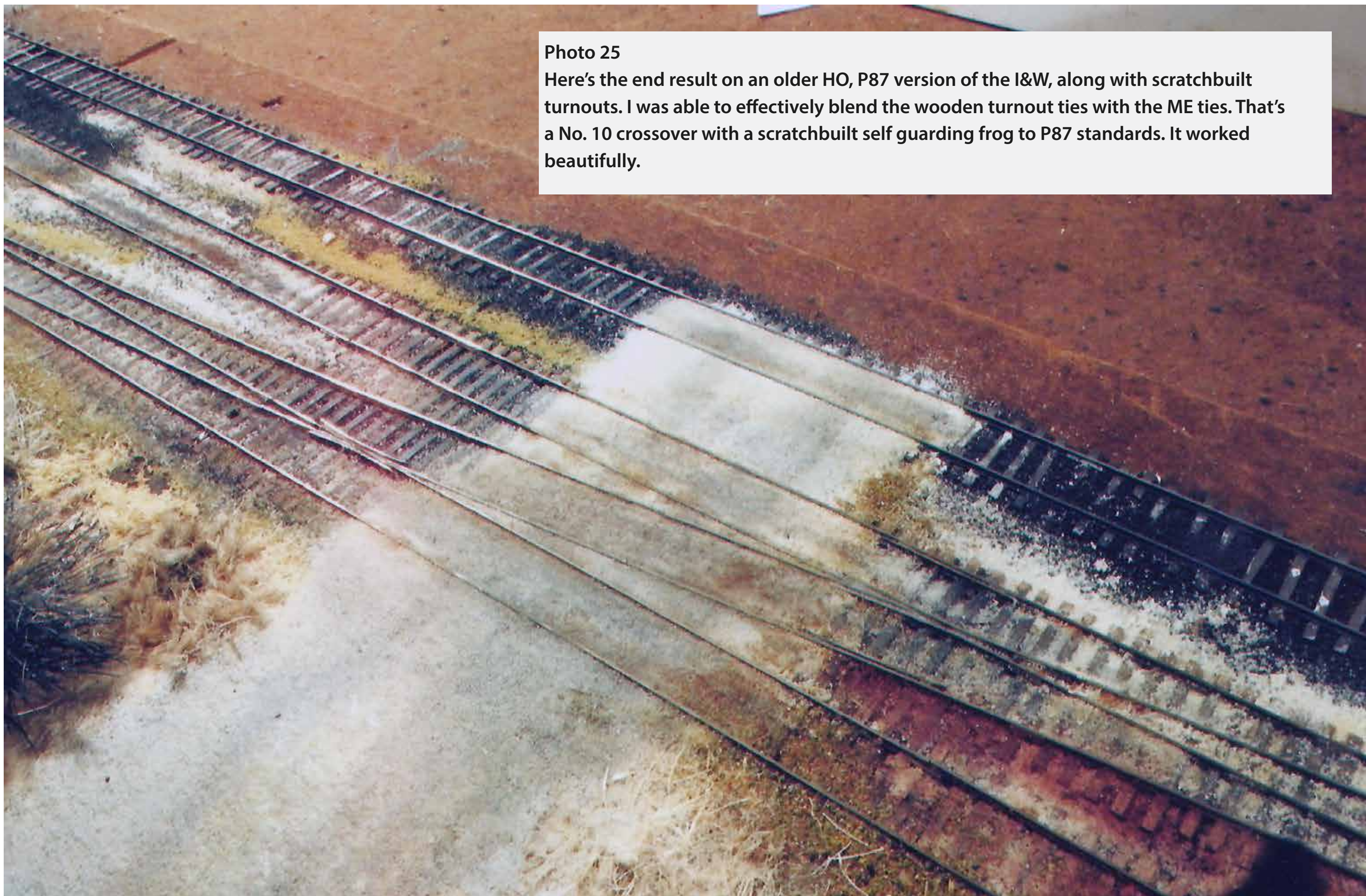


Photo 25

Here's the end result on an older HO, P87 version of the I&W, along with scratchbuilt turnouts. I was able to effectively blend the wooden turnout ties with the ME ties. That's a No. 10 crossover with a scratchbuilt self guarding frog to P87 standards. It worked beautifully.



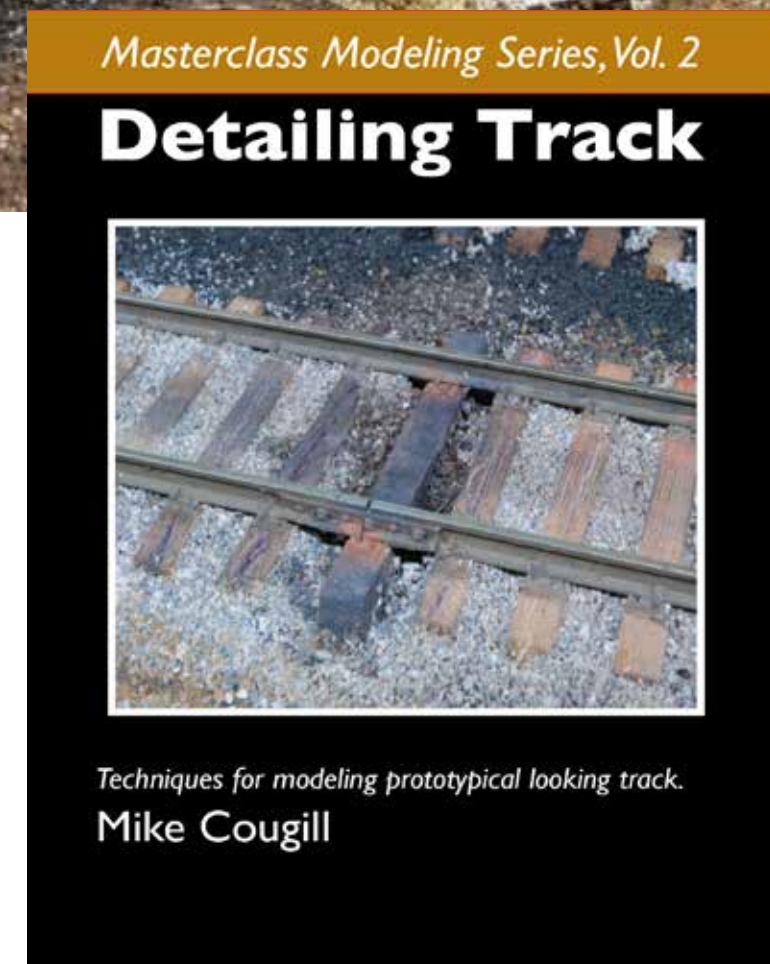
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Intrigued by what you see in this ebook? Then get the complete story of how to approach handlaid track with anticipation for the joy it can bring. I realize hand laying track isn't for everyone although I always encourage people to at least try it once. Whether you hand lay or use flex track or some other option, we all want our track to look as realistic as possible.

Detailing Track is an in-depth guide to modeling track from the prototype with applicable information and techniques for handlaid and commercial track in all scales. It makes a great companion to Volume 07 of *The Missing Conversation*.

Soft cover, 125 pages in full color. \$24.95 + S&H



Think all prototype track looks alike? Ever wonder if there are differences between the classic Transition Era and the present?

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