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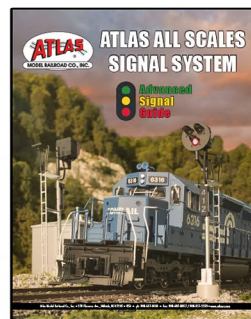
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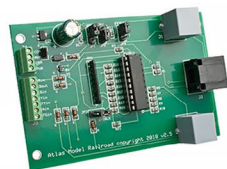
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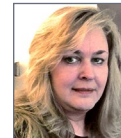
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Model Railroad Hobbyist June 2020 | #124

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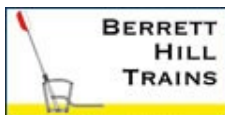
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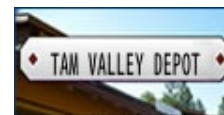
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What's Neat: Locomotive upgrades ...

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BOB MORNINGSTAR



The K10 Hobbyshop layout

The MRH STAFF



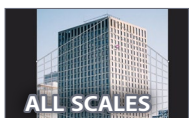
Double-deck benchwork construction

NEIL DENBY



First Look - ScaleTrains Dash 9-40C

JEFF SHULTZ



Savvy Modeler online: Awesome photo editor

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June 2020 news and events

RICHARD BALE and JEFF SHULTZ

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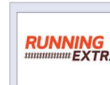


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JOE FUGATE



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JASON MILLER



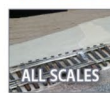
The case for N scale

DARYL KRUSE



Detailed harvester load for a flat

GEORGE TOMAN



Ah-Hah Moment: No more glued points

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PUBLISHER'S MUSINGS



Model Railroad Hobbyist | June 2020

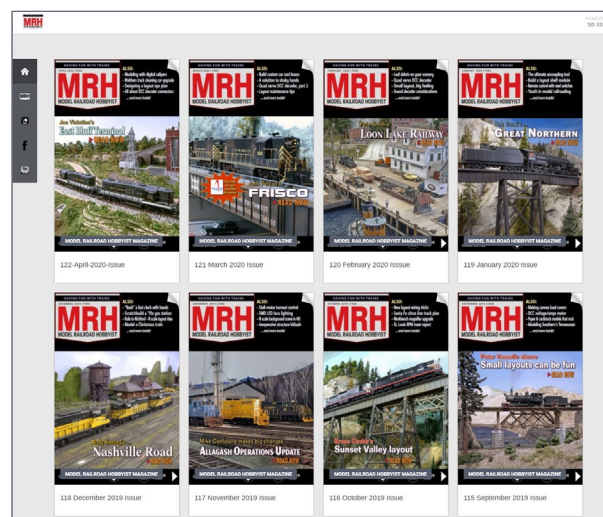
**JOE FUGATE: BELT TIGHTENING
AND MODELERS YOU'VE HELPED ...**

★★★★★
RATE THIS ARTICLE

I'VE GOT A NUMBER OF THINGS TO COVER
this month, so let's get right to it!

We're retiring the MRH App

We have had a free MRH app that you could download and install on Apple iOS iPads, iPhones, Android tablets, and Android phones. You could also visit something we called the MRH Hub in a web browser to get a similar bookshelf view of the magazines [1].



1. Notice how the MRH app and the MRH magazine hub used this convenient "bookshelf" format for presenting the MRH magazine issues. Even though we're retiring the MRH mobile app and MRH web browser Hub, back issues will move to this format.

The MRH app has a number of problems that need addressed in order to keep up with how fast the device vendors are updating their operating systems. Thanks to the pandemic, we've had to undergo some significant belt tightening and layoffs.

So sadly, as of May we stopped updating the MRH App (April was the last issue) and as of June 15, the MRH app / MRH Hub will cease functioning entirely. The MRH App has been removed from the Apple and Google app stores.

We love the “bookshelf” format for presenting back issues, so we are planning to move our back issues section to the bookshelf format. It’s a very natural and convenient way to access the magazine.

That change to the back issues won't be happening right away because we're still hunkered down with limited staff right now, just

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Tri-clops Railfan ▶ Athearn

Thanks Athearn for yet ANOTHER run of the 2-window SD60Ms. What would be REALLY cool would be the 3-window Tri-clops versions. They're good for more than 3 railroads now. If we could get these in Genesis that would be greeaaat 🙌🙌🙌🙌🙌🙌🙌🙌🙌🙌😞😭



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53 comments



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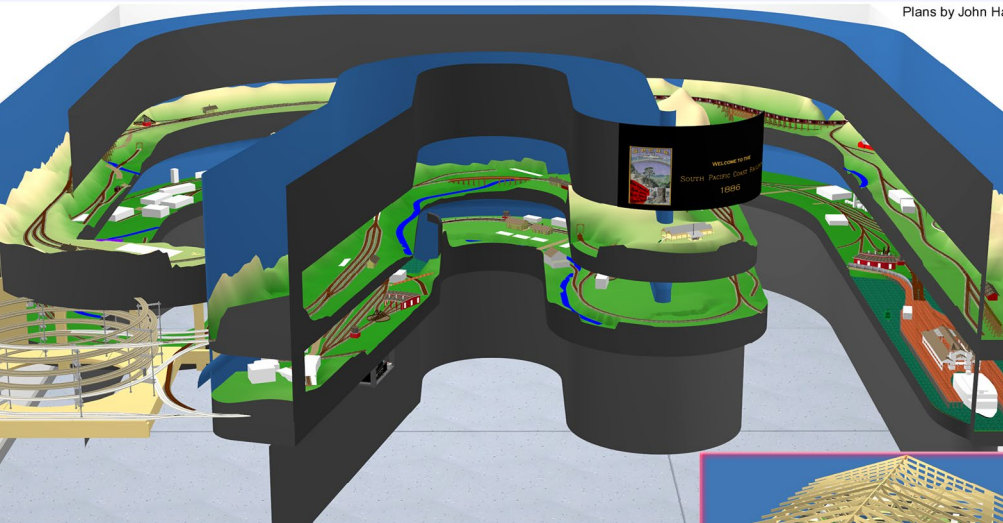
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PUBLISHER'S MUSINGS | 3

focusing on the core businesses of MRH mag, Running Extra, the MRH Store, and TrainMasters TV.

MRH and Running Extra changes coming

As part of our cost-cutting measures, we're also making some changes to the two magazines, MRH and Running Extra.

First, a seemingly small change: we're dropping the left and right arrows from the page navigation. On a PC or a Mac – just use the left and right arrow keys on the keyboard. On mobile devices or with the online edition, those arrows aren't used anyway.

Next, this is the last issue where we're producing both a landscape and a portrait edition. Starting with the July issue, we will only be doing the Portrait edition.

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This actually simplifies our life quite a bit because right now we produce three different versions of every magazine:

1. Landscape edition
2. Portrait edition
3. Online edition (no page navigation arrows on the pages)

After magazine release, if we find an error that needs corrected, we have to keep three different versions of the magazine in sync.

But with this change, there will be only one version of the magazine each month. Running Extra will be similar – the landscape version will be going away.

This actually isn't as bad as it sounds. With a little bit of guidance, you can easily make the new standard portrait edition do facing pages and look almost identical to the landscape edition [2].



2. If you display the portrait edition with facing pages, here's what you get in Acrobat. It's virtually identical to the landscape edition.

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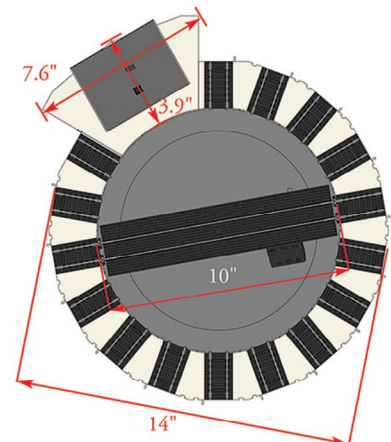
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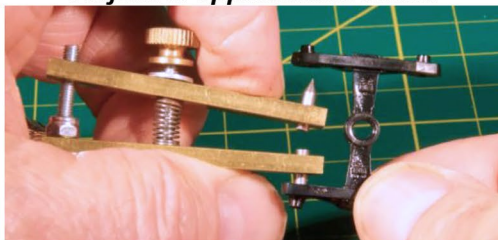
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PUBLISHER'S MUSINGS | 5

By doing only one version of the magazine (s), we save ourselves some work and that's especially helpful as we finish up the magazine for release.

Internal changes

As a part of all these changes, we're also moving away from using Adobe products for the magazine: InDesign, PhotoShop, and Illustrator.

In their place, we're adopting Affinity Publisher, Affinity Photo, and Affinity Designer.

Adobe in recent years moved to a software rental model they call the "Creative Cloud."

We've also had a number of nagging bugs with the Adobe products, from annoying to serious. None of these bugs have ever been addressed by Adobe.

Affinity recently came out with their applications for a one-time price of \$25 each. No rental, you own the software!

That means for a one-time purchase of just \$75, we can get these three powerful Affinity apps for about the same cost as a single

New series coming to TrainMasters TV in May ...

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By Joe Fugate



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month's rental for the Adobe programs. But are the Affinity apps as powerful as the Adobe apps?

Actually, the Affinity apps are no slouch. They replace 90% of the Adobe functionality, easy. Some of the Affinity features actually work better or do more than the Adobe apps.

So we're saving a fair amount of money moving to Affinity.

Modelers you've helped

A couple months back, we announced we were taking any profits and helping fellow modelers in hardship during this pandemic. Some of you also provided direct donations for this, which we honored. The idea has been to brighten up things for these folks a little by giving them some free media to enjoy about this hobby we all love.

Hardship modelers submitted their names to us [using this link](#). Here are ones you've helped by funding almost 100 free TrainMasters TV membership months so far. Not all wanted their names shared, but here are the ones who did allow us to give out their names:

Joseph Ozoniak, John Cruckshank, Glenn Rucker, Michael White, James Ogden, Steve Walker, and Anthony Mikolaj. You've helped remind these folks there are still people who care in these tough times. ✓

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LAST ISSUE'S RATINGS

The three top-rated articles in the [May 2020 issue](#) of *Model Railroad Hobbyist* are:

4.8 May 2020 news

4.3 John Russell's Rock Island Railroad

4.0 Lightweight operations

Issue overall: **4.0**

Please rate the articles! Click the reader comments button on each article and select the star rating you think each article deserves. We depend on these ratings to help us determine which articles to publish, so your rating matters! ■

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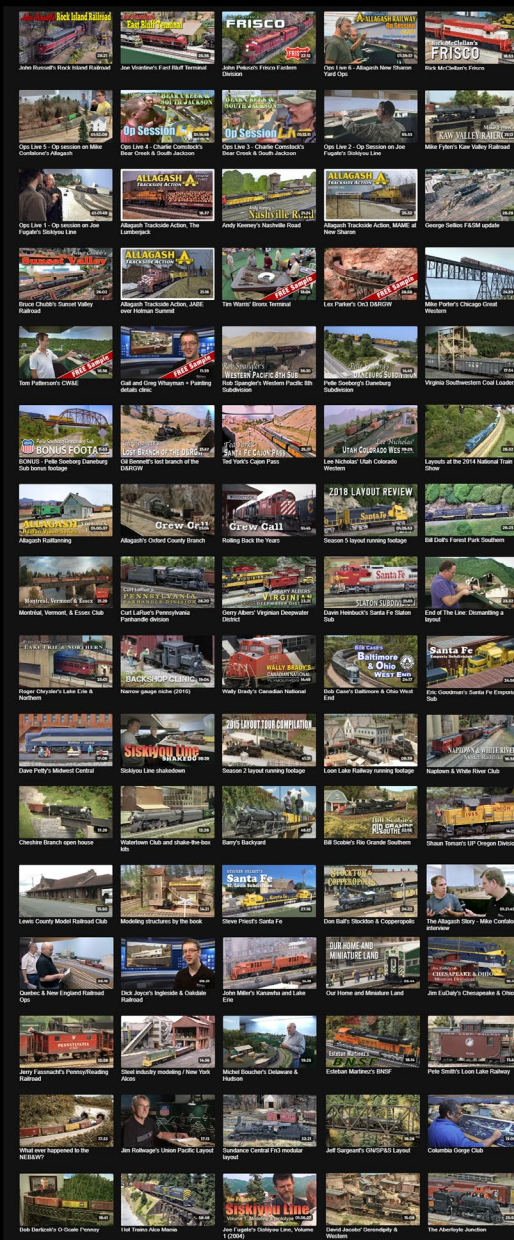
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THIS MONTH

Model Railroad Hobbyist | June 2020



RATE THIS ARTICLE

compiled by JOE FUGATE

How strong is your layout?

MRH forum member **PeterAtt** (*Peter Attanasio*) had a very unfortunate calamity hit last October. A tree fell right onto his layout room ... yikes!



View the full thread on the MRH website

► MRH'S MONTHLY GREAT MODELER POSTS



1. John Tanzillo put together this 6 minute video showing how he altered a Rowa N scale passenger car with new brass sides.

Installing N scale brass car sides

MRH forum member [jmt99atsf](#) (*John Tanzillo*) got a set of M&R N-Scale brass car sides to modify a passenger car made by Rowa. You can't buy this particular sleeper car, so it had to be created either using brass car sides or plastic sides. John chose the brass car sides approach.

The ATSF used this sleeper car for a few years on the Chicago to Tulsa Texas Chief, on the Oil Flyer, and on the KC Chief. The interchange between these trains took place at Kansas City's Union Station. John models this station and all these trains, so adding this car to his passenger fleet was a must.

The video John posted shows the techniques and tools he used to create this ATSF 8-2-2 Sleeper which he named the Segatoa.

Follow John's progress on the MRH website thread link below.

[Read the full thread on the MRH website](#)



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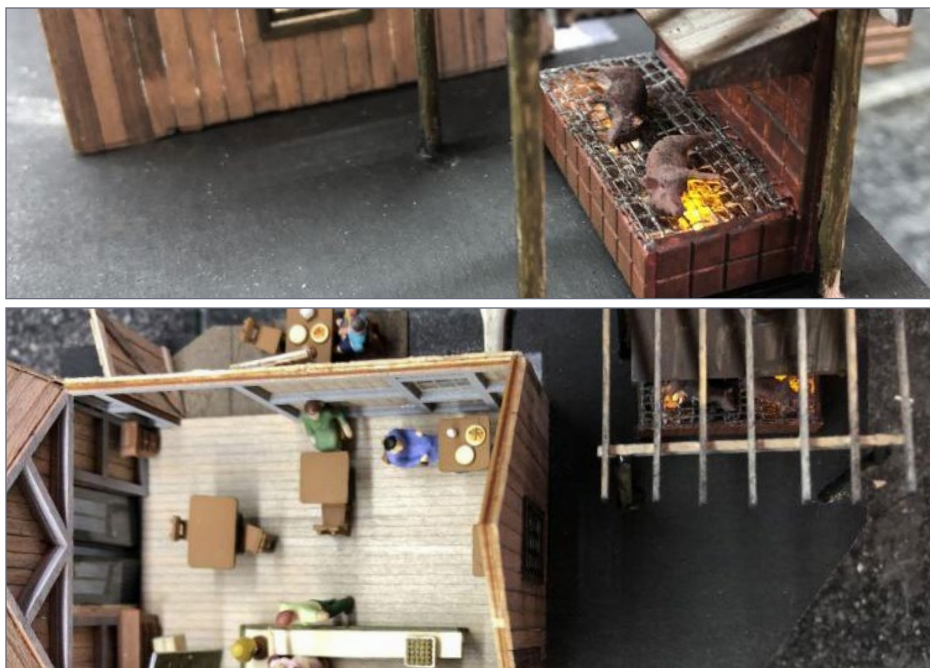
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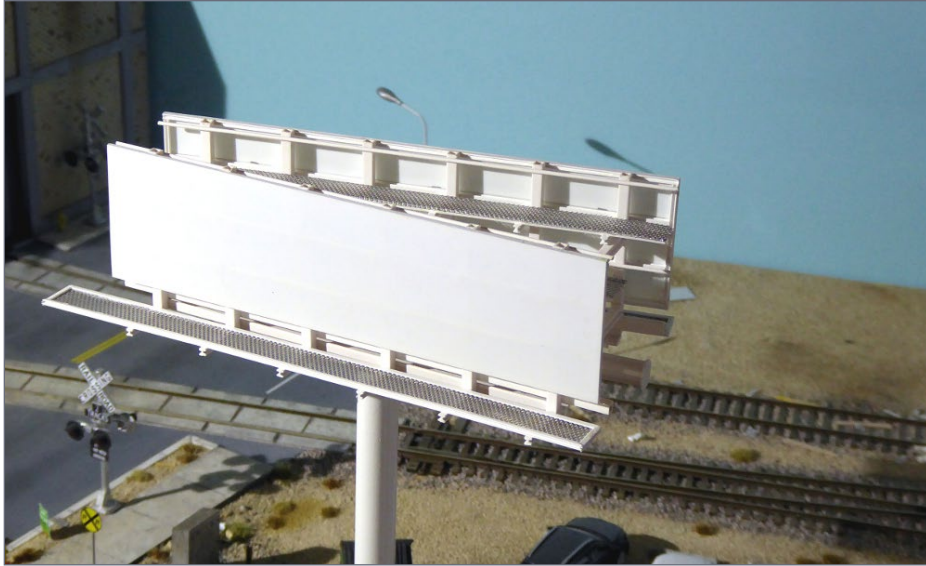


To see all the photos Chris posted, use the button below.

Read the full thread on the MRH website



Scratchbuilding a modern billboard



4. Andreas Rittershofer shows step-by-step how he's building this modern double-billboard model for the layout on his MRH blog. Make sure to check out this thread for all the details.

MRH forum member **engineer** (*Andreas Rittershofer*) is in the process of modeling a modern billboard for his layout.

Andreas posted a nice series of step-by-step photos on how he built this billboard, along with some comments on the build process he used.

Andreas also plans to light this billboard using SMD LEDs. That's something we certainly look forward to seeing.

Visit the MRH website post any questions you have as Andreas continues to build out this nice billboard model on his MRH blog!

[Read the full thread on the MRH website](#)

Latest MRH "Weekly photo fun" thread

As of this writing, here's a couple interesting photos from the latest MRH Weekly photo fun thread. Check it out!

[Read the full thread on the MRH website](#)



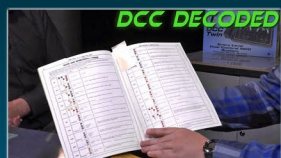
4. MRH forum members **rjthomas909** and **kevinn** posted these photos on the latest new MRH weekly photo fun thread. Visit this link to view all the great photos on this thread.



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WHAT'S NEAT

column



Model Railroad Hobbyist | June 2020



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KEN PATTERSON'S COLUMN SHOWS HOW AN ATHEARN TUNNEL MOTOR GAINS WEIGHT FOR BETTER PULLING POWER. HE SHOWS THE STEPS TO THE GP60M UPGRADE WITH MORE WEIGHT, LED LIGHTING, A WOW SOUND DECODER, AND A SMOOTH NEW MOTOR ...



WHAT'S NEAT!
MODEL RAILROADING
Locomotive
upgrades



June 2020 show

► PHOTOS AND VIDEO OF SUPERB MODELING

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THIS MONTH, GEORGE BOGATIUK SHARES WITH us an easy way to add weight to an Athearn locomotive to make it pull that much better. James Regier re-motors, lights and details an out of the box Ready-to-Roll GP60M locomotive with great coverage every step of the way. All of this can be seen in real time in this month's What's Neat show.

George Bogatiuk adds weight to a locomotive

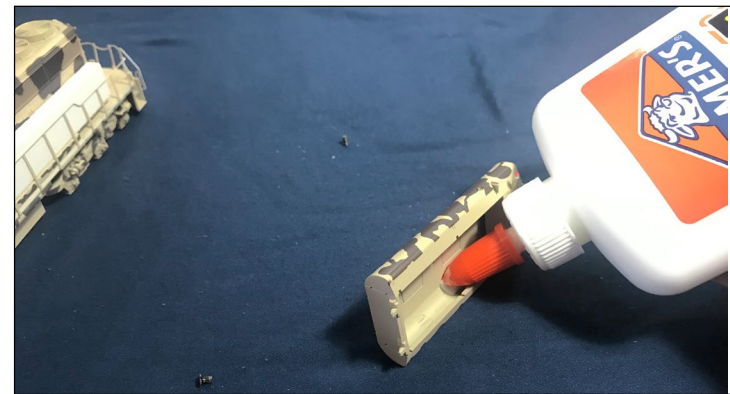
George shows us how he adds weight to the open space in an Athearn tunnel motor's fuel tank, to improve contact and increase the engine's pulling power.



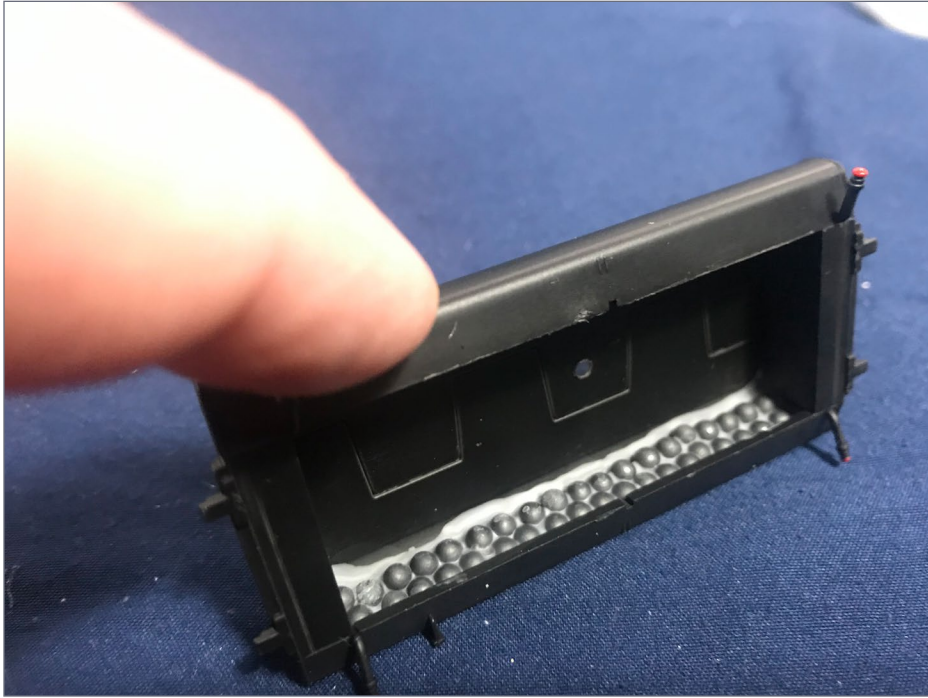
1. Remove the fuel tank by loosening the single screw in the center of the plastic molding.



2. He uses white glue and shotgun lead pellets available from any sporting goods store.



3. George fills one side of the plastic fuel tank with a bed of white glue. He then adds a few rows of the shotgun lead in the area where the tank curves on the inside in the bed of glue. Be careful to not go beyond a point where the pellets interfere with the clearance with the factory weight as the tank is reattached.



4. Once one side of the tank is filled, and after the glue cures, he repeats the process on the other side of the tank. Once this is dry, he reassembles the model with weight added to a previously hollow area.

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James Regier's locomotive detailing and upgrading process

I'm James Regier. For this segment of What's Neat, we're going to talk about a recent project in which I rebuilt, detailed, and upgraded an Athearn Ready-to-Roll GP60M with a new motor, TCS WOWSound, and 21 LEDs.

I was about 10 when the first GP60Ms arrived on the Santa Fe in 1990. A family friend who worked for the Santa Fe out of Hutchinson, KS passed along company newsletters and posters to us.

One such poster had a row of four GP60Ms resplendent in Superfleet Warbonnet paint, parked side by side on tracks with light gray ballast, underneath the sort of deep blue sky that is only found in the Southwest. I was smitten.



5. One look at Topeka Railroad Days in 1995 convinced James Regier that a Santa Fe GP60M was in his future.

I convinced my dad to take me on the hour drive to Augusta to observe these beasts in their natural habitat on the transcon.

When visiting my grandparents in Newton, KS I would frequently walk down to the tracks, camera in hand, especially when I thought I heard their (at the time) distinctive K3LA horn. They looked their best pulling passenger equipment, as I caught them at Topeka Railroad Days in 1995 returning with the fan excursion.

I decided that I had to have a few GP60Ms in my collection, though the brass models at the time were quite out of my means. It took a while, but when I saw an Athearn Ready-to-Roll version on eBay a few years ago, I had to buy it.



6. Out of the box, Athearn's GP60M captures the flagship appeal of the prototype very well. The colors are a good match to prototype and the lines are crisp. All of the many warning labels, safety advisory signs, and ownership statements are sharp enough to read under magnification.

The model has see-through Q-fans, which match the prototype much better than some other offerings out there. It has brass horns, wire grab irons, and durable acetal plastic handrails. The locomotive is DCC ready with the option of either a six-pin plug or a seven-pin harness to accommodate the decoder. Both options require removing the dummy plug from the seven-pin harness.

However, this was not a premium model, so there are quite a few details that were left to the modeler. I thought a cab interior, windshield wipers, and mirrors would add life to it. Many models seem to come with lift rings these days.

Looking at the fuel tank, I thought it could do with filler caps, sight glasses, and plumbing. Especially because of the high visibility of its silver paint, I thought the underbody could use air filters and a bell. I wanted to improve on the nearly two-dimensional molded air tanks with three-dimensional detail parts.

The pilots demanded cut levers, hoses, and a couple of grab irons, and the prominent plow on the front of the unit. The micro bulbs of the forward and reverse headlights begged to be replaced with LEDs, while the ditch lights needed to be made functional. The number boards needed lighting, as did the walkway, step, and ground lights.

One of the most glaring needs I saw with the model was improving on its 12 oz. weight out of the box. With a few exceptions, I consider 15-16 oz. to be a minimum weight for a road locomotive, so adding weight was a must.

Most of the parts can be found from various sellers on eBay and elsewhere on the internet, though I would certainly recommend using your local hobby store as much as possible.

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The first step is dismantling the locomotive. The shell is held to the chassis by the couplers. I removed the coupler screws and pulled the coupler boxes out through the openings in the pilots. The shell lifts right off to reveal the insides of the locomotive. It was built with a motherboard, with options to add DCC either via six-pin plug or via a nine-pin JST harness.

For a decoder such as the TCS WOW 101 we are using on this project, installation could be as simple as removing the dummy plug from the JST harness and replacing it with the decoder.

We are doing much more with the locomotive, however, so we'll take the wire clips off of the motherboard with a screwdriver.

As a throwback from the Blue Box days, power from the conductor-side rail is transmitted through the locomotive frame. It is carried to the motherboard via a wire that is screwed to the motherboard toward the front, conductor-side of the motor.

I remove this screw. Once all wires are removed, I pry off the gear tower covers and remove the truck and gear tower assemblies from the locomotive.

Flipping the frame over, I find the four motor cradle pins on the underside of the frame. Using a screwdriver, I push in the pins until the motor cradle is unmounted.

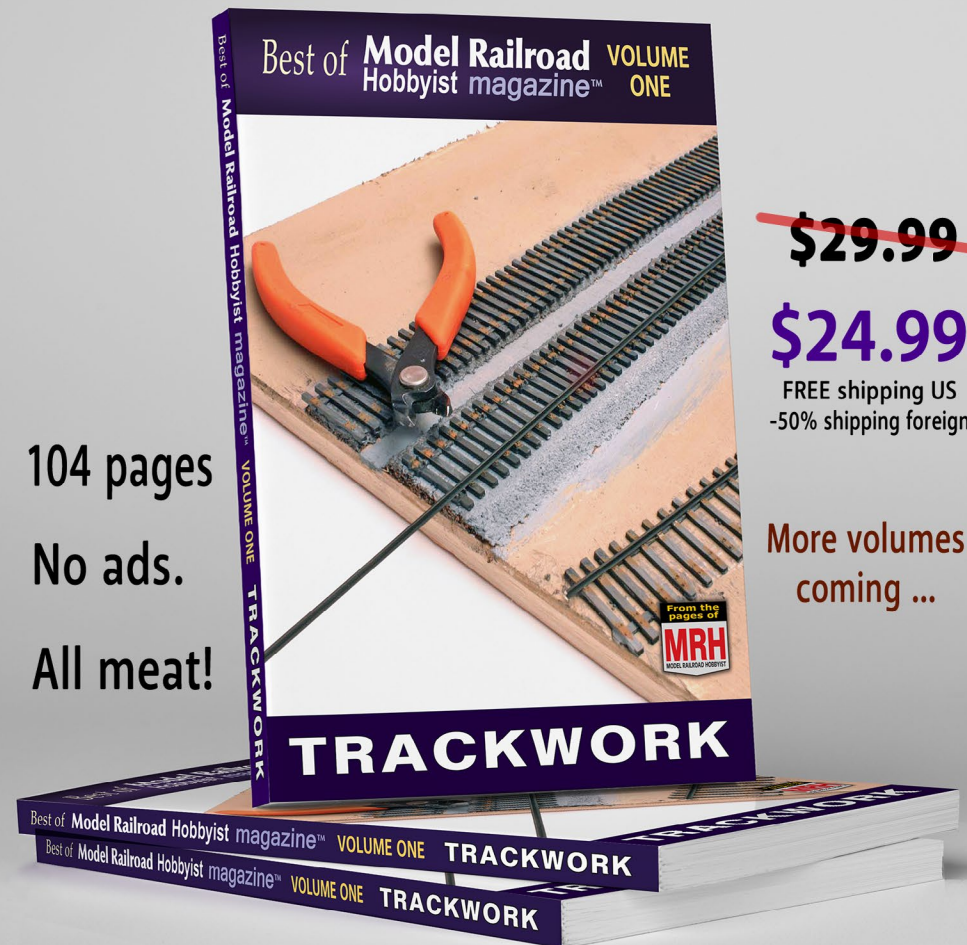
Working on the locomotive shell, I use a pair of tweezer nose pliers to pull out the headlights by their wires. I set aside the wires for later use. Because the micro bulbs were glued in place, this may break them, leaving remnants inside the headlight housing.

Simply push those out with a screwdriver or other similarly sized object. In this case, I used an eversharp pencil. The main idea is to clear whatever debris remains of the original headlights without damaging the housing.

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7. Removing the handrails saves them from damage and improves access to the body shell.

The next step is to remove all the handrails from the locomotive. For this step, I use tweezers, pliers, and, very gently, an X-acto knife as a pry tool. The side handrails come free without much difficulty, though the end handrails are trickier.

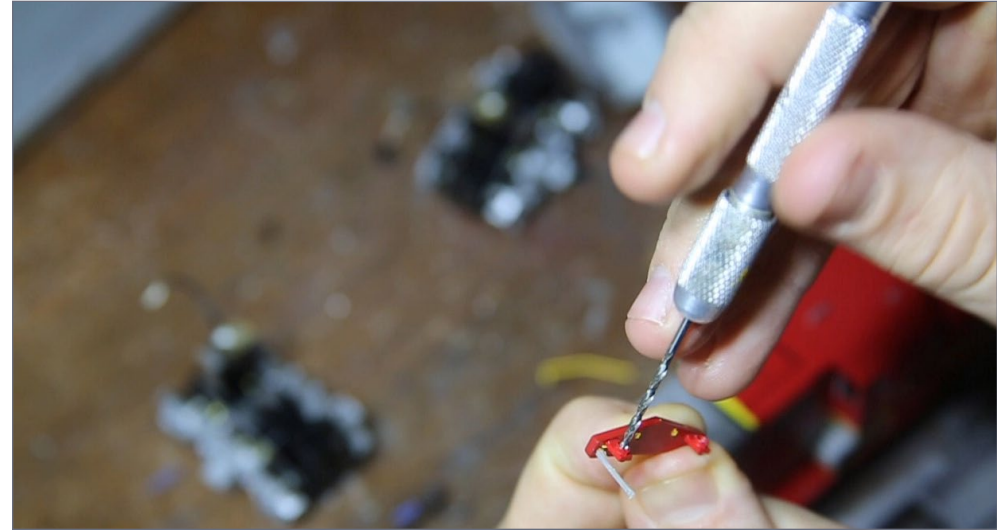
In addition to the pliers and X-acto knife, I found it helpful to push up on the mounting pins from underneath [7]. Even exercising great caution, I found these end handrails prone to snapping. Fortunately, they were also readily repairable with Gorilla Super Glue Gel.

The anti-climbers are separately molded parts secured to the frame with glue. In the case of my locomotive, the front



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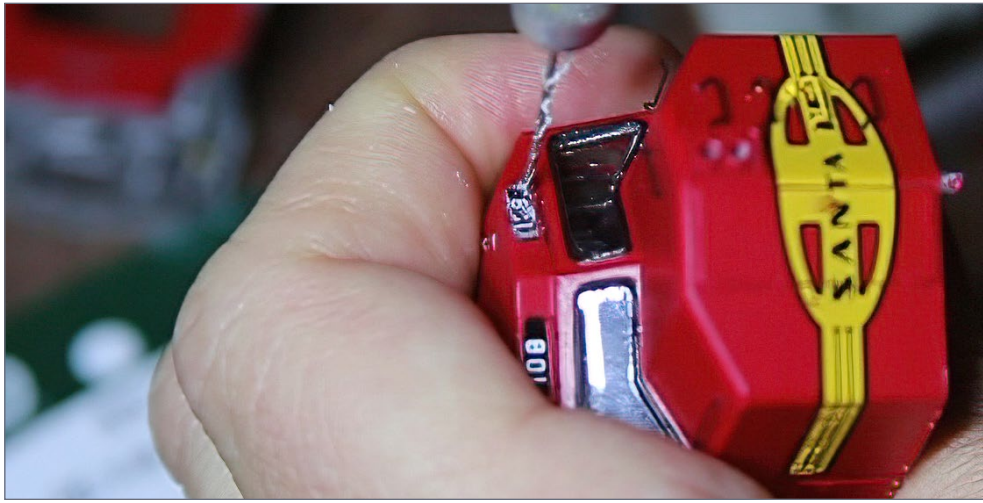
8. After easing out the ditch light lenses with fresh knife tip, use a drill to clear debris from the hole in the housing.

anti-climber had separated from the rest of the body, which made accessing the ditch light housings easier [8].

Using a very sharp X-acto blade with the tip still intact, I gently worked out the lenses. Once the lenses were removed, I used a 1/16" bit to drill out the hole, making sure there was no remaining debris.

I extended the cavity as far backwards as I could without breaching the rear wall of the ditch light housing. Then, locating the mounting pins for the ditch light housing on the anti-climber, I used a #78 bit to drill up along the center of the pin and into the ditch light housing cavity.

I set aside the anti-climber and ditch light assembly to remove the cab from the rest of the shell. The cab is a separately molded part, mounted to the rest of the shell with a pin on the front and



9. Improving the number boards with lighting became a bit of a chore.

a clasp on the back. Using an X-acto chisel blade, I worked my way around the separation lines, careful to break the glue bonds without nicking anything visible or structurally important.

After removing the cab, I set to work on the number boards [9]. Having worked on a few Genesis locomotives, I thought the GP60M would be similarly configured with an actual number plate on top of a number board housing.

After several attempts to pry the number plate loose, it became clear that the number boards were simply a molded part of the locomotive cab, with the numbers stamped on.

Using a #68 drill, I drilled each corner of each number board through to the cab, adding another hole or two along the tops and bottoms of the boards.

I then used a sharp #4 X-acto blade to score between each hole, finally placing the blade in each hole and providing gentle pressure

to cut through and connect them. Using this method, I was able to create smooth, matching, rectangular openings for the number boards. I cleaned up the number boards, cleaned up the headlight bores in the nose with a 1/16" bit, and set the cab aside.

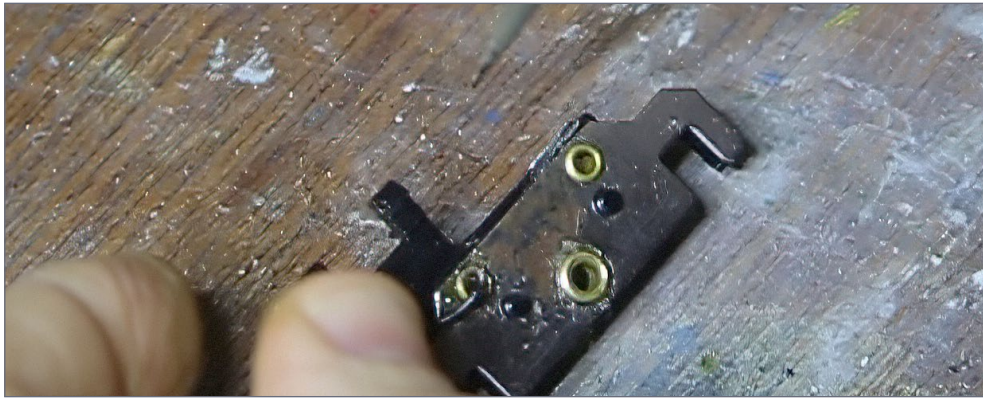
Returning to the trucks and gear towers, I set about dismantling them for an upgrade. The trucks on this locomotive are a throw-back from the Blue Box design which feeds current from the rail on the conductor-side directly into the frame. It fed the power from the rail on the engineer's side into a metal hook that was connected via clip and wire to the motherboard.

Using my tweezers like a hammer's claw, I pried the side frames off the trucks. I unclipped the plate on the bottom of the trucks, releasing the wheelsets. Removing an additional clasp on the top of the trucks, I was able to open them up and remove the gears.

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10. Old-design trucks require modification to improve the power's path.

Once the gears were removed, I used my rotary tool with a cutting disc to cut off the hook. I cleaned up the cut with a file after the cut was complete.

The next step on the trucks was to attach wires to either side of the gear tower. Using Kester 186 No Clean Flux, I prepared to solder wires to the forward most grommet.

I found a larger wedge solder head, combined with a higher temperature on my Weller WESD51, was the best combination for this job. Taking one of the wires saved from the headlights, I soldered it into the inside of the rivet, securing it [10].

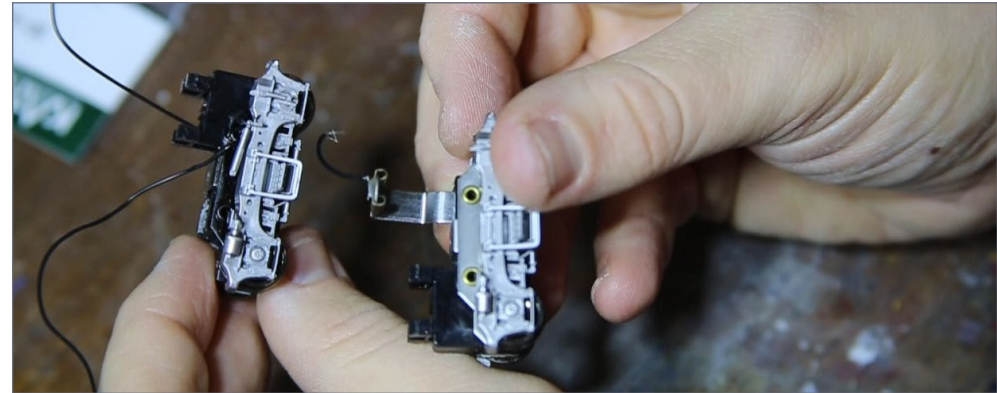
As an added precaution, I used Gorilla Superglue Gel to secure the insulation of the wire to the leading edge of the metal plate.

After giving the assembly time to cure, I swabbed it clean and applied Tamiya XF1 Flat Black paint to obscure the gray metal truck tower sides and the brass rivets.

After the paint dried, I carefully cleaned the inner surfaces with a paper towel to make sure no metal shards remained before

replacing the gears and reassembling the truck. I coated the metal plate on top of the truck towers with silicone paint, which insulate them from the frame after reassembly. I repeated these same steps for the other truck and gear tower.

With the truck assembled in its new configuration, let's compare it with the old one, side-by-side.



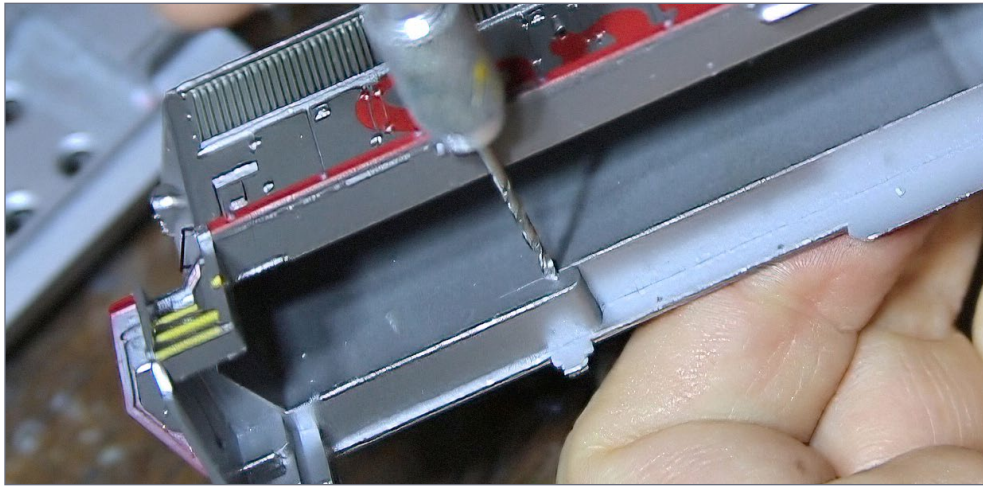
11. The rewired and modified "low-profile" truck should give more reliable contact for better sound and DCC performance.

Using wired pickup for both rails should be more reliable than the original contact pickup while the step of isolating the frame from the trucks with silicone paint has all but eliminated any risk of shorts between coupled locomotives.

The truck is somewhat lower profile without the hook [11], and it now requires only one bay on the frame for the gear tower. The other bay can be given over to added weight, an important factor as we attempt to bring the locomotive up to 16 ounces or more from its original twelve.

Moving to the long hood, let's set about drilling holes for the courtesy lights. We'll start by using a #63 drill to bore a hole for

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12. Countersunk mounting points locate the 0402 warm white LEDs for courtesy lights.

a courtesy light along the walkway on the conductor's side, just behind the step. Once the hole is through, I countersink it on the inside with about 20 turns of a #52 bit.

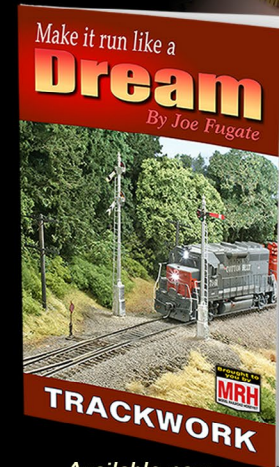
This should provide a countersink deep enough to nest an 0402 warm white LED [12]. When countersinking, one must always take care not to go all the way through.

At the rear end of the shell, the courtesy lights are toward the bottom. I used a #76 drill bit, carefully found the ends of the courtesy light slots and drilled into each end of each.

Then, I used a fresh #4 X-acto blade as a wedge to connect the holes to make slots. I carefully widened and carved the slots to the right width [13], then used my # 52 drill bit to countersink the two courtesy light openings on the inside.

The last step of this process was to paint the countersinks and surrounding areas of the shell black. A toothpick or a fine-tip mini-brush will do an adequate job of masking any glow or light

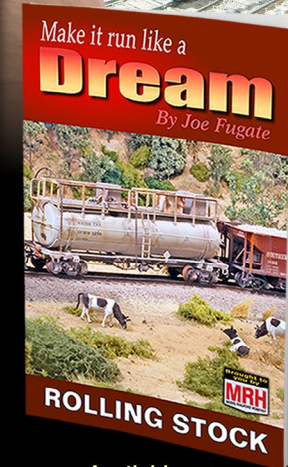
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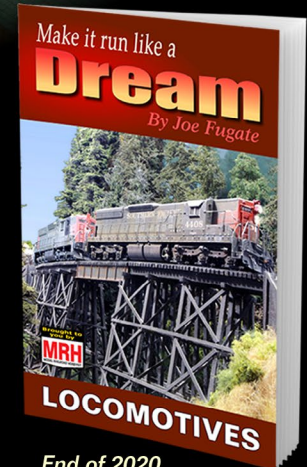
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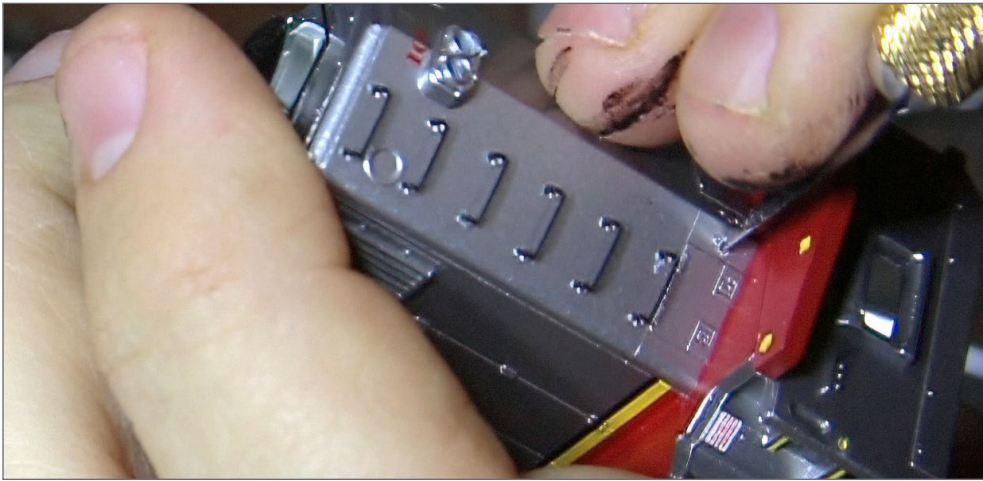
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13. Courtesy lights for the rear platform are low on the long hood's peak.

spill. For the step lights, I used a #78 bit to drill a hole as snugly as possible underneath the overhang of the main walkway.

Once the LED housings were taken care of, it was time to work the rest of the detailing. Eric Goodman posted an in-depth photo album of ATSF 135 to qstation.org which provided all the answers for detail placement.

I started by locating and drilling lift ring holes on the top of the locomotive with a #78 bit. I laid a reference line of masking tape across the dust bin cover and drilled a hole on each side toward the front.

I carefully removed the fans from the shell, pushing up from the bottom on the mounting pins. I then laid out masking tape in a grid to help determine where the lift rings would need to go.



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14. Replacing the molded air tanks greatly improves the look of the underframe.

Moving down on the shell, I laid masking tape across the free flowing air duct, and put in two holes for a grab iron that would run across the duct near the top.

Using my X-acto blade, I carefully scored and cut off the molded-on air tanks from the bottom of the shell. I replaced them with air tanks from Cannon and Co., which were more three-dimensional [14].

Finally, I drilled two #78 holes immediately under the anti-climber to accommodate the wires for the ditch lights.

Moving to the cab, I carefully drilled two holes above each windshield and one above each rear cab window to accommodate windshield wipers [15].

I removed the windshields by carefully prying with my X-acto knife chisel blade. With scrap styrene I set about making backings for the number board pockets. I used a pair of wire snips to cut blanks that were slightly larger than the opening, and then honing them and trimming to accommodate the contours of the cab.



15. Next task was positioning and drilling mounting holes in the cab for windshield wipers.

I found a stainless steel carpenter's protractor helpful for this task. I set the number board housings in place with Plastruct Bondene.

After the Bondene had set, I filled any areas of daylight with Tamiya Putty. When the putty had set, I painted the inside of the number board box black.

Back on the hood, I began installing lift rings into the holes I had drilled. The rings are photo etched stainless steel from KV Models, and I find that cutting them off the sprue (or fret) over a magnet helps reduce parts loss significantly.

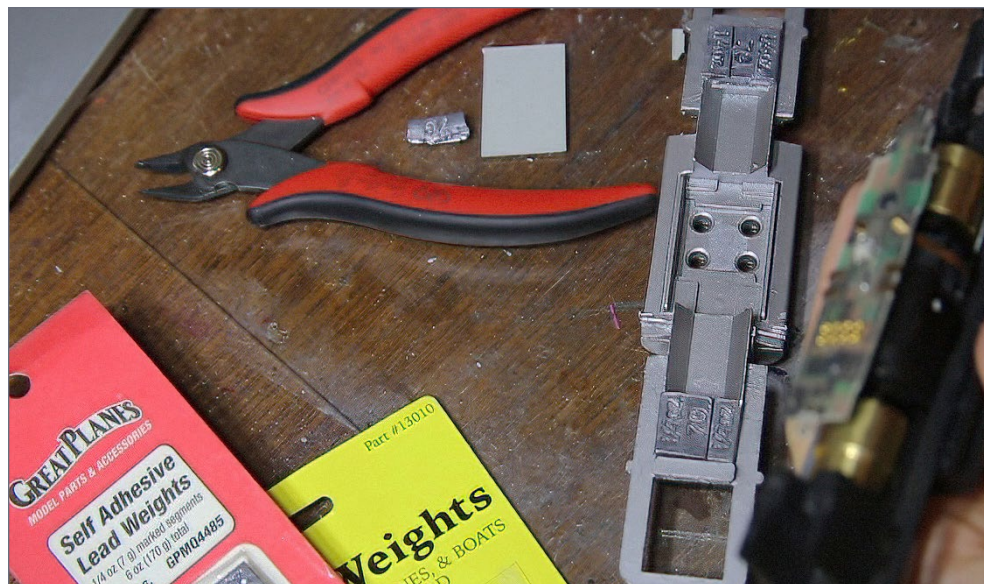
I use a non-magnetic curved jeweler's tweezers to apply the rings, first dipping their ends in Gorilla Super Glue, then inserting them into the #78 holes.

From there, I returned to work on detailing the frame of the locomotive, adding fuel filler tubes, sight glasses, and some plumbing.

For the most part, I used a kit from Cannon and Co., but I chose to bend some brass rods to substitute for plastic plumbing, since

brass is much more durable. A splash of silver paint and some red highlights for the fuel caps and the sight glass, and that detail job is complete.

With this, it was time to have fun and get a little bit crazy. From the factory, the model weighed about 12 oz, well below my preference of 16. The two bays left open by truck modifications were an obvious option. It turned out that the weights I used were the right width to fill the gap, but the number of segments was a bit challenging.



16. Openings in the frame were checked and measured for spaces to add weight. The Athearn GP60M frame was compared to a Kato GP35 frame to get ideas.

For both ends of the weight to rest on the frame, I would have to use more than one segment. However, it could not be wider than the truck mount's span because the shell would still have to fit. I measured the gap with a caliper and transferred it to a chop-it tool, gambling that the steel blade would be able to handle a

lead weight, since lead is a relatively soft metal. It worked and I chopped two weights of the same length for the front and back of the frame.

I mounted them with super glue. I was careful to taper the side of the weight closest to the truck mount to accommodate the clip, and also to file in a cavity to leave clearance for the u-joint.

Comparing the chassis of the Athearn GP60M to a Kato GP35, I found a couple more places where I could add weights vertically, which I also secured with super glue [16].

I also wanted to replace the Athearn motor with a Kato HM5. For simplicity, I chose the motor as sold with flywheels and motor mounts.

The spacing on the mounts matches the mounting holes in the Athearn frame very well, and a test fit revealed that the



17. The weight added to the frame is coated with silicone paint to keep it from rubbing off on my hands. You can also see the added weight.

flywheel was at the right height for good shaft alignment with the truck tower.

Although the spacing between the mounting and the holes matches, there is much empty space beneath the motor and its saddle that was begging to be filled with weight. Moldable lead from A-Line answers this problem.

The weights are putty-like and can form like clay to fit any space. I first formed them into a rough shape, then inserted the motor and tamped the weight into a more precise fit with a screwdriver.

It not only added more weight, but also gave my motor a firmer foundation on the frame. Because lead is a harmful substance, I coated all the weights with silicone paint after the glue had cured [17].

With the frame drying, I started making final preparations for adding LEDs. Comparing the depth of the headlight holes to the ditch light housings, I decided that I could block the back of the headlight holes with styrene to create a headlight housing.

The potential benefit was that I could achieve brighter headlights since there would be no light loss from shrink tubing, and the amount of clear acrylic for the lens would be minimal.

I used a Molotow chrome pen to coat the insides of the number board housings, the ditch lights, the headlights, and the courtesy lights. Molotow chrome paint gives a realistic and highly reflective surface that reflects light well.

It helps concentrate and intensify light sources while providing another layer to help prevent the dreaded shell glow. After the Molotow paint had set, I used Micro Krystal Klear to create lenses for the courtesy lights.

I also drilled #78 holes at the top of the steps, immediately underneath the walkway overhang, to accommodate wires for the step lights. In order to route the ditch light wiring up into the shell, I drilled two



18. Use a secured piece of masking tape to lay out LEDs for assembly.

additional holes just behind the hole where the cab's mounting pin will rest. With that, it was time to start assembling LEDs.

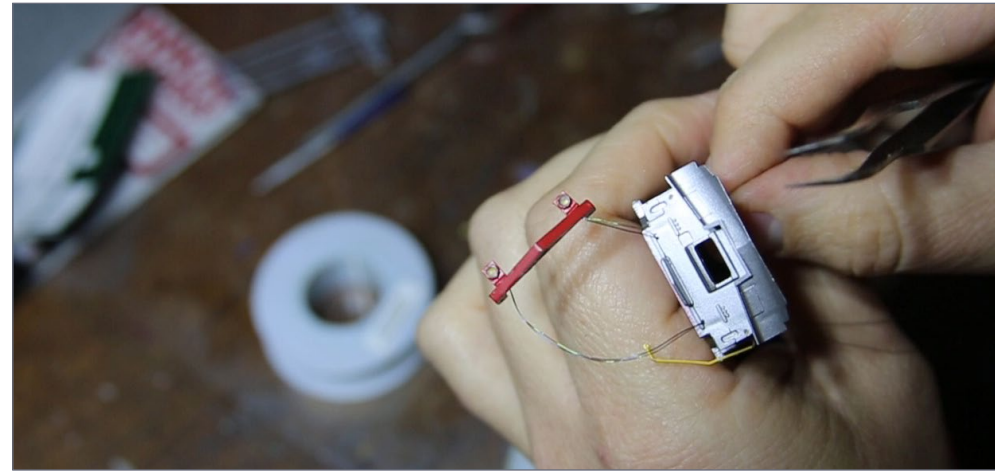
Assembly of the LEDs was fairly standard procedure. I laid a piece of masking tape sticky side down on my glass sheet, glued another piece of masking tape on top of it facing up, and laid out my 0402 Warm White LEDs, making sure that their polarities were aligned correctly [18].

I soldered blue magnet wire for the anode, green for the cathode. I tried to give myself a little more wire than I thought I needed and made sure to coat each assembly with silicone paint before installation. Coating with silicone was a must for every part of this LED installation, because most LED wires had to be fed through #78 holes and the LEDs pulled snug to the holes, meaning almost certain contact between the two wires.



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19. Powering ditch light LEDs required routing wires 90 degrees into the back of a tiny hole in a small housing.

I did the ditch light LEDs first, since the procedure for them is a little different. Whenever possible, if I am working with a headlight housing, I like to have the wires exit out the back, because straight lines are relatively easy to string.

In the case of the ditch lights, I chose to route the wire into the chamber through a #78 hole I drilled into the mounting pins.

This meant that installing an assembled LED would require routing it 90° into a tiny hole in the back of a narrow housing – and that's next to *impossible*.

I had to first string the wire through the channel and into the back of the assembly, where I could reach in with a fine set of tweezers and pull the leads out the front, with enough lead to solder the LED.

Once the silicone paint had cured, I could pull the LEDs back into their housing. I then secured the anticlimber/LED assembly to the front of the locomotive shell with gorilla glue, strung the wires back through the pilot, and up through the walkway into what would

be covered by the locomotive's wide nose [19]. Once so threaded, I twisted and soldered like-colored wires together.

I fitted the blue (anode) end with a 1k Ω resistor at the solder joint, and soldered one of the blue wires I cut off to the other end of the resistor. I used 1/16" shrink tubing to cover and isolate the resistor and solder joint for the blue and 0.8 mm shrink tubing for the green (cathode).

The rest of the LEDs were simpler. I could assemble the LEDs as usual and twist the wires for added durability before installing. I did the cab first, feeding the wires into the #78 holes in the back of the headlight housings, then pulling them out the other end until the LEDs were snug in place.

I was careful not to pull so hard that I risked destroying the solder connection. I twisted and soldered the like-colored wires together, adding a 1 k Ω resistor to the blue anode.



20. Lenses are shaped from acrylic rod against progressively finer grades of sandpaper.

Once the ditch light and front headlight LEDs were in place, I set about making lenses. I cut a manageable length of Plastruct 1/16" acrylic rod and put it in the chuck of my drill.

I then used the drill to grind it against a tapered file to create a convex lens. I honed it using progressively finer sandpaper, ending at about 2000 grit [20]. I cut off the rod almost immediately behind the lens, sanded the back edge smooth, and inserted it into the front of the headlight and ditch light casings.

While the ultra-short lens intensifies the light with minimal loss, it also provides little material to grip, making it a nuisance for sanding or for mounting. With a thin bead of Micro Krystal Klear around the opening, a lot of patience, and a few attempts, I inserted the lenses.

The number board housings took three LEDs each, with the wires fed through three #78 holes in the back panel [21]. The procedure was very



21. Each number board houses three LEDs, for even illumination.

much the same, twisting and soldering like-colored wires together, though in this case, instead of a 1kΩ resistor, I used a 20kΩ resistor to the blue (anode) for a much dimmer LED glow.

I have taken to using high levels of resistance for dimming instead of decoders' Pulse Width Modulation, partially because it does not provide a blinking effect on video, but also because it seems to provide a nicer warm white.

Once I completed the work on the number board lights, I used silicone paint to paste the wires and shrink tubing to the ceiling of the cab, sending the wire leads out the back.

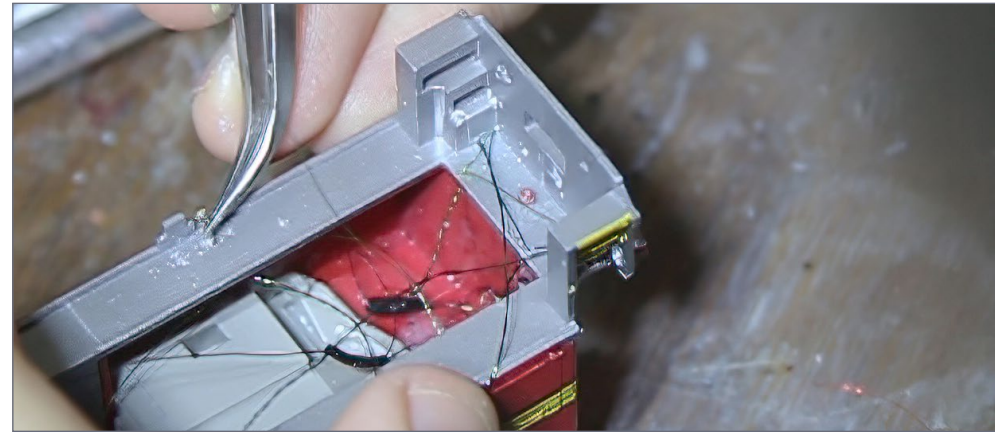
When the silicone had cured, I painted the ceiling with a deck tan that roughly matched the color of the Kato cab interior. I high-lighted some of the details of the cab interior with paint before I fit it into the cab, securing it with Micro Krystal Klear.

Once the cab interior was in, I mated the cab back to the frame and proceeded with wire routing.

I twisted and soldered the blue wires from the headlights and ditch lights together to become a function common and routed them, along with the green wires, along the underside of the cab interior and up the back.

I twisted and soldered the blue wire from the number board to the function common and routed the function common and three function wires toward the dynamic brake opening. I cut five ¼" pieces of 0.8 mm shrink tubing, lined them up side by side, and superglued them to the underside of the exhaust.

Working in the rear of the locomotive, I cut styrene to use as sound baffles to place underneath the radiator and dynamic brake fans. I then installed the rear headlights, following the same procedure as for the front.



22. After the LEDs are positioned and the wires are routed, like colors are twisted and soldered together to form common leads.

I put one LED into each courtesy light housing, with the face toward the exterior, securing them with micro Krystal Klear. I routed the wires to the locomotive ceiling.

I then proceeded to the step lights, where I inserted the LED wires into the holes I drilled at the top of the steps and pulled them snug, making sure that the lights were facing down. I secured them with a dot of Micro Krystal Klear.

Because the hole mounts were working so well to secure the step lights, I wanted to do something similar with the ground lights. I drilled two additional holes on each side of the locomotive shell underneath the cab, just inside from the jack point.

I threaded the ground light wires through the hole and they really helped immobilize the ground lights while the Micro Krystal Clear I used to mount them just in front of the jack points was drying.

I routed the wires from the step lights backwards to meet those of the ground lights, where I twisted and soldered like colors,

attempting to stagger the joints so that any exposed wires would not contact each other. I coated them with silicone paint and secured them to the underside of the walkway.

After soldering the rear step lights into the chain, I routed the wire leads up into the shell, where they met the wire leads from the rear and side courtesy lights. I twisted and soldered like colors.

This time, I soldered a 10kΩ resistor to the blue (anode) wires. I secured a ¼" piece of 0.8mm shrink tubing to the top of the underside of the baffle, just behind the dynamic brake opening.

I twisted and soldered the blue wires from the rear lights and from the ground/courtesy lights together and routed them to the front, along with the green wire from the reverse headlight [22].

With the magnet wires routed and secured, it was time to prepare the shell for mating to the frame. I made sure that all blue wires were mated together. I then soldered the magnet wires onto colored 30 AWG pieces of wire, each about 2" long.

For the wires in the front of the locomotive, I used Green for the lead from the ditch lights, Blue for the lead from the function common, White for the lead from the front headlights, Yellow for the lead from the reverse headlights, and Purple for the lead from the number boards. I secured and isolated each solder joint with 0.8mm shrink tubing.

Once it was shrunk, I threaded the wires through the shrink tubing mounted to the ceiling. From the conductor's side, the order was: Green, Blue, White, Yellow, Purple. Maintaining that order, I soldered the wires into the female ends of a set of five sip pins.



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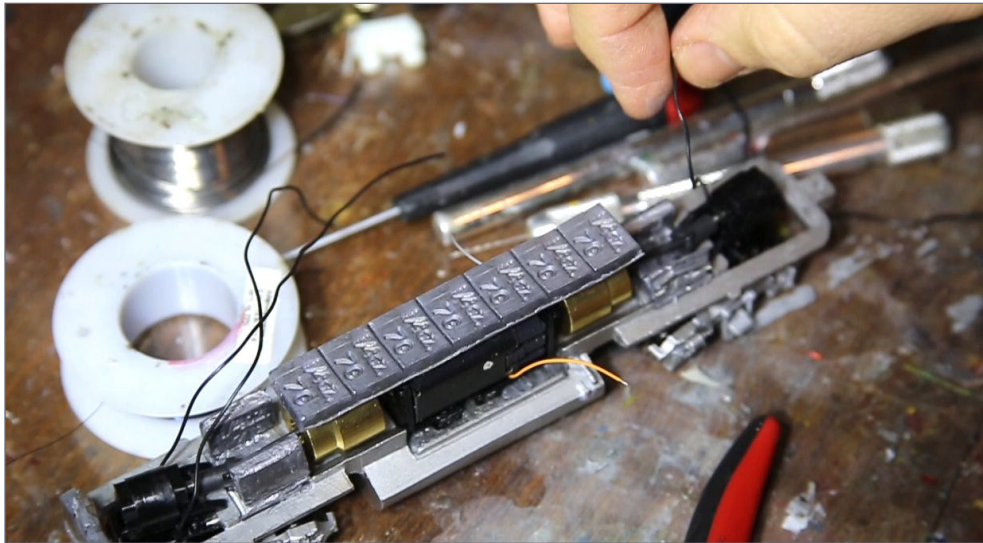
23. Mounting the Kato motor to the Athearn frame required only minor alterations to the underframe.

I soldered the lead from the courtesy and ground lights to a brown wire, insulated with shrink tubing, and fed through the ceiling-mounted shrink tube. I soldered the brown wire into the female end of a two sip pin set—two because I find that connective strength is better with more than one pin. The shell was now ready for mating to the chassis [23].

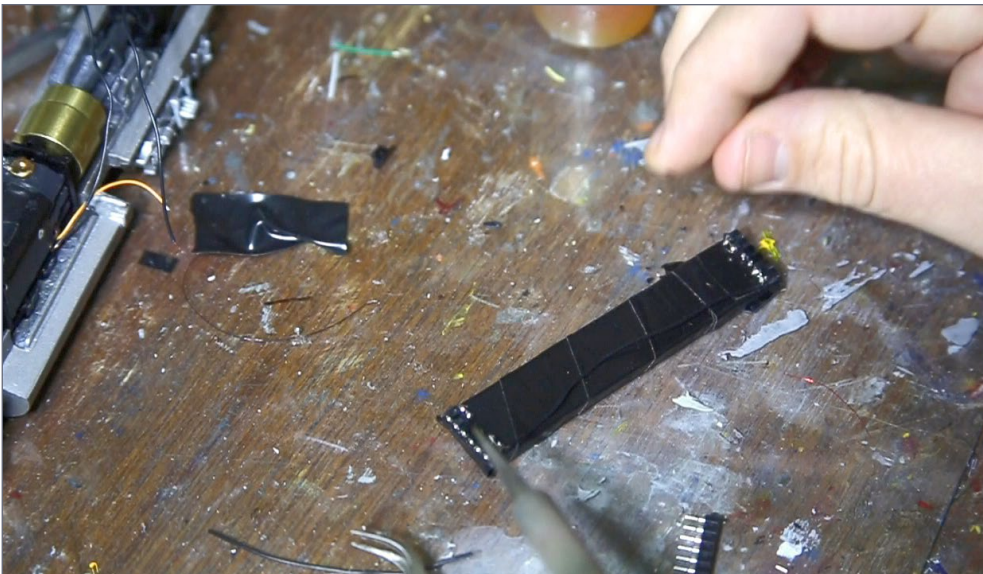
On the chassis again, I prepared the motor for mounting, cutting the copper straps short and replacing them with orange and gray wires. Gray for negative and orange for Positive, assuming the locomotive is moving forward.

In mounting the motor, I discovered the heads of the screws I was wanting to use for the motor were too small for the Athearn motor mount holes. I made washers out of styrene and threaded them through, which seemed to solve the problem [23].

For this install, I am using a TCS Wow 101, which uses a nine-pin wire harness. The major advantage of using a nine-pin harness



24. Weights fill the space that would have been eaten up by a 21-pin motherboard.



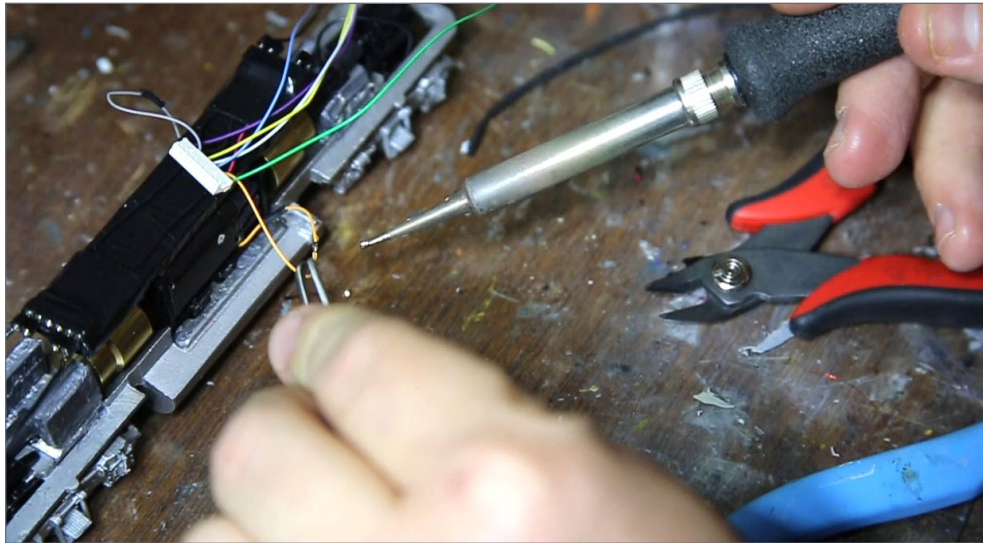
25. Pin sets are super glued to the ends of the weight strip.



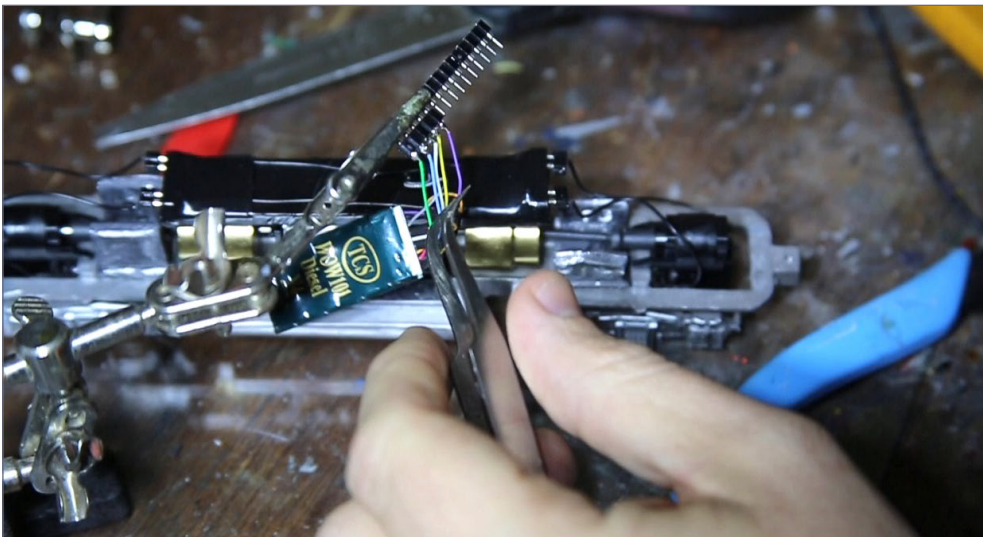
26. Red and black wire leads from this harness will connect to the decoder.



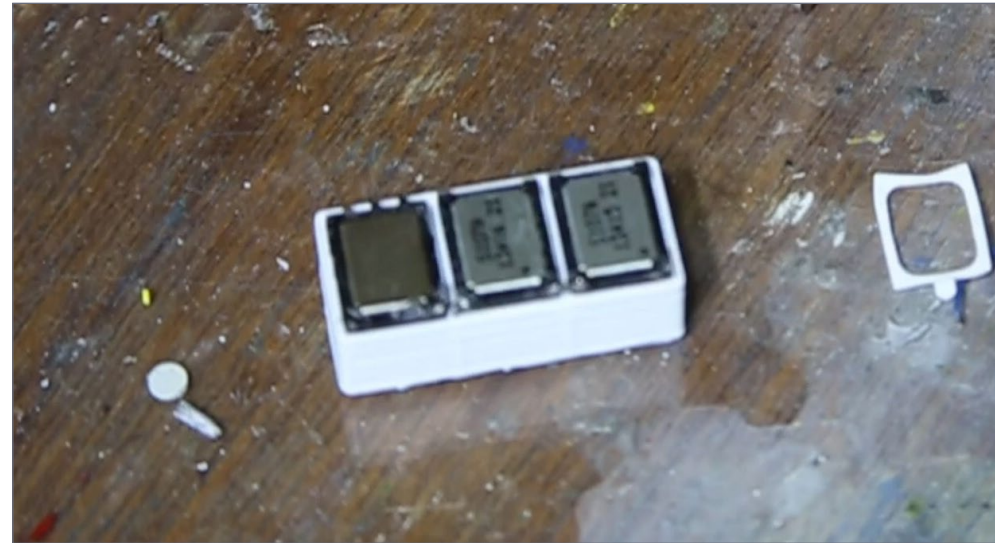
27. The decoder and weight are secured with double-side tape above the motor.



28. Motor and track power leads are soldered in place.



29. The Green, Blue, White, Yellow and Purple wires are soldered onto the male ends of a set of five sip pins from the decoder harness.



30. A customized speaker baffle accommodates three 15x11mm micro speakers with the foil side facing into the baffle.



31. One purple wire from the decoder is routed to each end of the white speaker assembly. The speaker assembly is mounted to fire down through the rear truck well.

decoder instead of a motherboard/21-pin decoder configuration is that you can use the space a motherboard might have occupied to add more weight.

I discovered I could use a seven segment, 1¾ oz. strip of lead weight on top of the motor, with the ends still above the flywheels.

I removed the weight's adhesive backing and wrapped it in electrical tape, both for isolation and for encasement. I cut two six-pin sets of sip pins, and mounted them to the ends of the weight, male ends facing toward the middle of the weight, using superglue.

I soldered red wires to connect the sip pins on the engineer's side and black wire to connect them on the conductor side. I soldered red and black wire leads to the front sip pin sets as these would be connected to the decoder [26].

The ends are secured with another round of electrical tape and the weight is attached to the motor with double sided foam tape [27]. These two wires would serve as the conduit for track power. I soldered pairs of SIP pins to each truck wire and plugged them in.

I then soldered the Red, Orange, Gray, and Black wires of the seven pin decoder harness to the motor and track power leads, being sure to cut out and set aside any excess wire [28]. I soldered the Green, Blue, White, Yellow and Purple wires onto the male ends of a set of five sip pins [29] from the decoder harness.

I am trying a speaker baffle that I found on Thingiverse, modified in Blender, and printed on my Dremel 3D printer. It has accommodations for three 15x11 mm micro speakers [30]. I fit the speakers, foil side facing into the baffle and wired the leads in series. I wired one purple wire from the decoder to each end of the assembly. I secured the speaker assembly so that it will fire down through the rear [31] truck well.



32. We're near the end, with delicate details like cut levers, windshield wipers, and wind deflectors being applied.

The final step, before I reassembled the locomotive, were some final details. I drilled four #78 holes across the top of each pilot to accommodate the cut levers.

I drilled #63 holes into the pilots to accommodate MU hoses (I use 30 AWG single strand wire for this) and the MU Cable detail assembly from Details West. I made four eye loops for each pilot from Tichy Trains Phosphor Bronze wire, and bent cut levers from the same.

I also bent a few grab irons to mount into the free flowing air duct, the rear pilot, and the plow. Checking my reference photos, I installed mirrors, wipers, and other details [32].

Finally, for the number boards, I measured the openings, used a computer graphics program to design them, and printed them on regular paper. I glued them face down onto acetate plastic packing material, which I cut to size and installed into the openings.



Also see the "What's neat this week" weekly video podcast!



WHAT'S NEAT | 36



33. With assembly complete, a night scene was staged to see how the GP60M's lighting looked coming . . .



34. . . . and going.

WHAT'S NEAT | 37

With that, I mounted the shell to the chassis, reinstalled the couplers and handrails, completing the model.

On to programming and testing [34 & 35] the finished model's lighting at night. Finally, we photographed the finished model [36], outdoors on a diorama. ✓



35. Sunlight shows off the improved detailing. ✓

★★★★★
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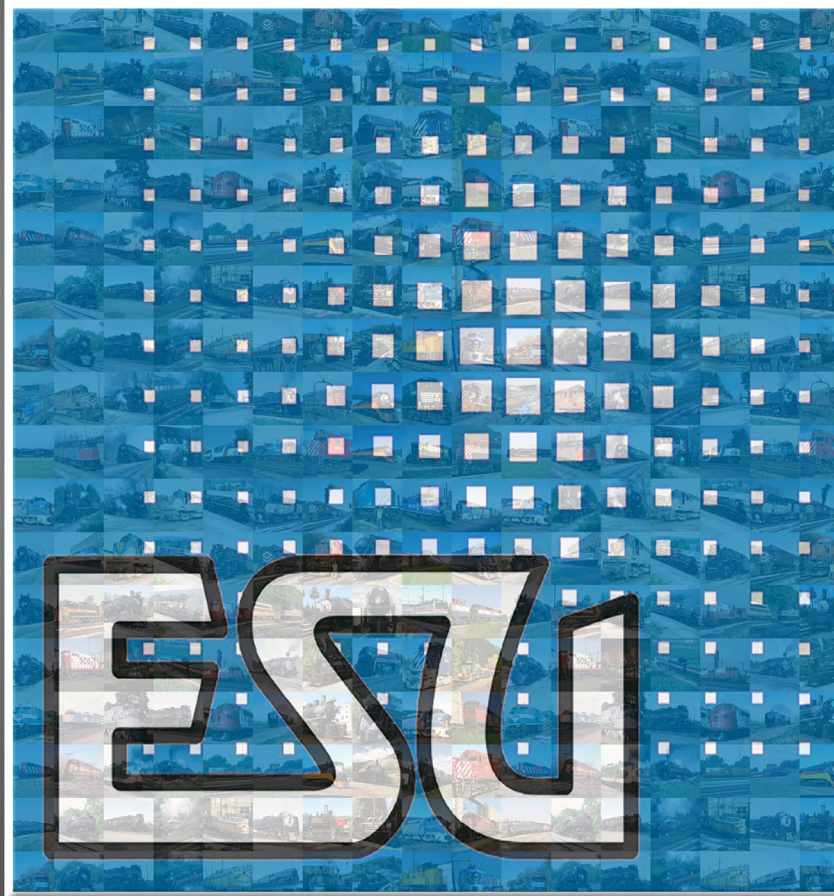


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1. Build this compact
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Model Railroad Hobbyist | June 2020

BOB MORNINGSTAR: supercapacitor based "StayAlive" for
less than \$10 ...

IF YOU WANT TO BUILD YOUR OWN INEXPENSIVE
StayAlive DCC decoder circuit, then read on. My example focuses
on StayAlives for Soundtraxx Tsunami and Econami PNP style
decoders, but you can easily adapt my methods to other decoders.
I call out call out the differences as I go along.

Capacitor-based energy storage for DCC decoders has been
around for about a decade. An internet search finds model rail-
road forum postings from 2011 mentioning the Train Control
System (TCS) KA-1 Keep-Alive® available as an add-on for any



decoder. Other early vendors included Lenz, but their UCP Power Module only worked with Lenz decoders at the time.

TCS has trademarked the term Keep-Alive®, so for the remainder of the article I use the generic “StayAlive” term. I also have found “currentkeepers” used to describe these circuits. CurrentKeeper is a trademark of SoundTraxx

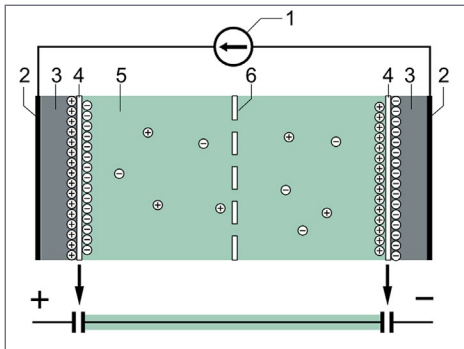
I found *MRH*’s first mention of StayAlives in the December 2012 issue’s “DCC Impulses” column by Bruce Petracca:

model-railroad-hobbyist.com/magazine/mrh-2012-12-dec/di_basic-electronics-for-dcc.

Energy to be stored enters the circuit via the two pin connector, then resistor R1 limits the current flow during charging to reduce the “in-rush” current to the drained capacitors.

Diode D1 limits the current flow to one direction only, and the optional Zener diode D2 acts as a safety device to allow current to flow around the capacitor bank (thus preventing damage to them) when the supply voltage reaches the conducting breakdown voltage specified in the diode manufacturer’s data sheet.

About capacitors



2. Typical construction of a supercapacitor:

1. Power source
2. Collector
3. Polarized electrode
4. Helmholtz double layer
5. Electrolyte having positive and negative ions
6. Separator

Source: Wikipedia,
en.wikipedia.org/wiki/Supercapacitor, Creative Commons License.

Capacitor technologies, regardless of the chemistry used, all store electrical energy in two electrodes, an electrolyte substrate, and a membrane separating the two electrodes.

The two terminals (electrodes) of a supercapacitor have an extremely high surface area and use variations of activated charcoal for construction. This high surface area gives supercapacitors the ability to store large amounts of energy.

A liquid electrolyte surrounds the electrodes – which stay separated from each other by a permeable membrane.

Improvements in electrolytic and electrode chemistry laid the groundwork for the development of supercapacitor technologies.

Over the past decade, the pricing for supercapacitors has decreased significantly, the capacities have increased, and multiple

Continued on next page ...

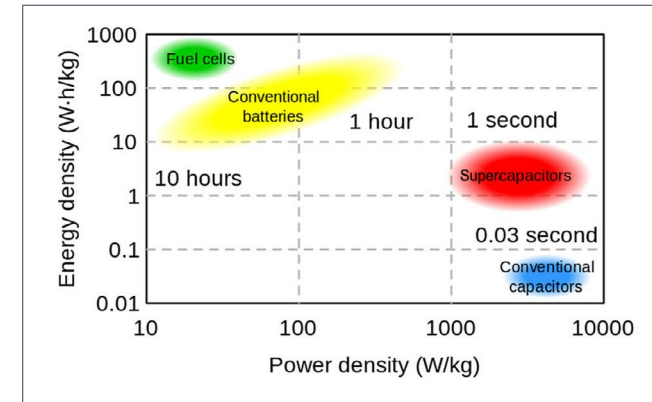
About capacitors *Continued ...*

form factors have become available. Supercapacitors have become popular in battery-based portable automotive jump start units, now available for a very reasonable cost.

The primary differences between traditional capacitors and supercapacitors are two-fold:

- They store more energy than traditional capacitors for the same form factor
- Supercapacitors have a very low operating voltage, generally 1-6 volts

The lower operating voltages can be addressed in model railroading applications by using supercapacitors in series in the circuit. I show how to do this in the article. ■

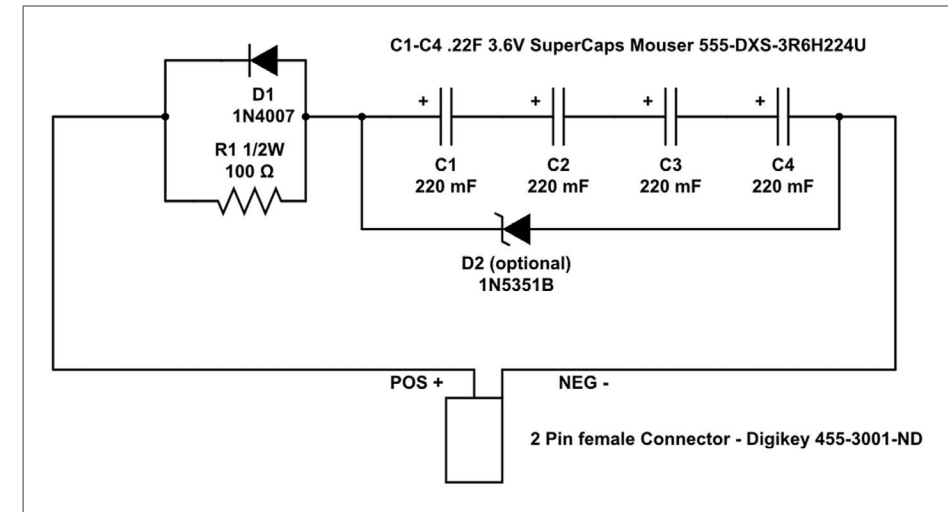


3. Source: commons.wikimedia.org/wiki/File:Supercapacitors_chart.svg, *Creative Commons license*

In the case of a 1N5351B Zener diode, that nominal voltage is 14V. If you are going to use the Zener diode, pick one that will conduct current at a voltage closest to the cumulative voltage rating of all the capacitors but not over it.

In the case of this circuit, that would be $3.6V \times 4 = 14.4V$, thus I use a 14V Zener diode. Using a 15V zener diode exceeds the cumulative voltage of the capacitor bank and will significantly reduce the service life of the capacitors, if not destroy them.

I do not use the Zener diode, since my track voltage rarely exceeds 14V. In the past three years of building and using this circuit, no damage has occurred. But if you don't want to chance it, you can always add the Zener diode.



4. Stay-Alive circuit schematic.

MAKE YOUR OWN STAY ALIVE | 6

Bill of materials

The components needed to build your own StayAlive come in at a total cost of under \$10.00 [Table 1]. Mouser, Digi-Key, and others have some or all of the components needed.

The only component that requires careful selection is the supercapacitor (and Zener diode if used). The other components have a wide tolerance in part selection.

You could pick a different capacitor based on your needs for more or less energy storage; or to accommodate a different physical form factor. The supercapacitors I have used have a very flat form factor of $\sim 1/4$ " (5mm) thick by $\sim 1/2$ " (11mm) in diameter. This flat, long skinny shape when ganged together fits quite well inside a loco shell.

It is critical to the safe operation of the circuit that all four capacitors be exactly the same, no mixing and matching of dissimilar components!

If connecting your StayAlive to decoders with a 2 pin, 1 mm pitch JST micro-connector like the ones used on SoundTraxx decoders, Digi-Key part number 455-3001-ND will work.

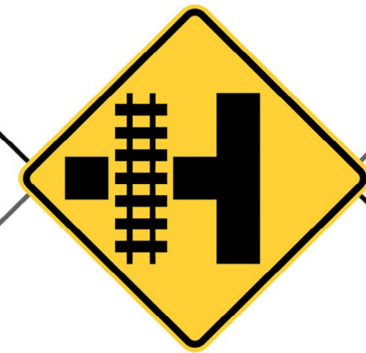
They are priced at \$0.95 cents each in quantities of 10. Each part has a connector at both ends, cutting them in half will double the available quantity, reducing the component part price to \$0.47 per StayAlive [5].

Qty	Component	Part Number	Pricing	
4	Supercapacitors, 3.6V .22F	Mouser 555-DXS-3R6H224U	\$6.64	\$16.66, quantity 10
1	Resistor, 110 Ohm, 1/2W	Mouser 603-CFR-50JB-52-110R	\$0.07	\$0.70, quantity 10
1	Diode, 1N4007	Mouser 821-1N4007G-KR0G	\$0.23	\$2.30, quantity 10
1	Zener diode, 1N5351B	Mouser 833-1N5351B-TP	\$0.49	\$4.90, quantity 10
Total			\$7.43	

Table 1. Bill of materials.



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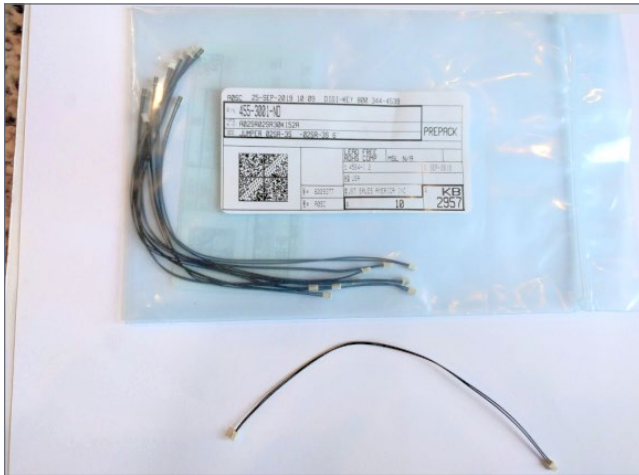
Other incidental components needed that I've not included in the price: wire and shrink wrap. You can buy these at Amazon and other distributors. Ten millimeter shrink tubing works well for encasing the capacitors and associated electronics. I also use 6mm shrink tubing to encase the diode and resistor.

For decoder installs, you can't go wrong with the BNTECHO 30-gauge silicone wire in 10 different colors available from Amazon. This product provides more wire than I can use in a lifetime of decoder installs.

Tools needed include solder, flux (helpful but not absolutely required if you're already using rosin-core solder), wire nips, and a soldering iron. I use a variable heat soldering pencil, Chip-Quik 0.020" diameter 63/37 rosin-core solder, and my own custom-made rosin flux (subject for another article).

Construction overview

I assume that you have basic soldering skills. Remember that when soldering, setup of the components and cleanliness of the parts pay huge dividends in making a solid connection with minimal heat used.



5. JST connector details.

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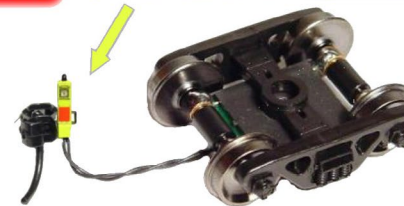
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Tin both sides of a connection before making the joint. Avoid overheating components to prevent damage. Don't worry about excess solder – we will dress the connections with a file or grinding tool when done

Also observe the polarity of the diodes and capacitors during the construction. *Getting any polarity wrong may result in a non-functioning circuit or damage/destruction of components or your decoder.*

I include testing procedures so you can verify the correctness of construction prior to hooking the device up to your decoder.

Construction details

Lay out your components and note the polarities marked on each component. Diodes have a band on the cathode (-) end of the device, the supercapacitors I used have a "+" and a "-" embossed the top and bottom of the aluminum can. There is also a stripe on the packaging pointing you to the negative electrode, see image [6] on the next page, top right.

I use modeling clay to hold the components in place when test fitting the layout and when doing the actual soldering. The clay helps hold everything nicely in place and frees up your hands to hold both soldering pencil and solder.

You do not want to be soldering components and have them move while heat is applied [7].

Conclusion

Your first StayAlive might take an hour or two – after you get the hang of it you can assemble one in about 30 minutes.

With this StayAlive, you can bend your capacitor bank into shapes other than "four in a row." You could stack them vertical or connect them in a stacked two by two configuration.



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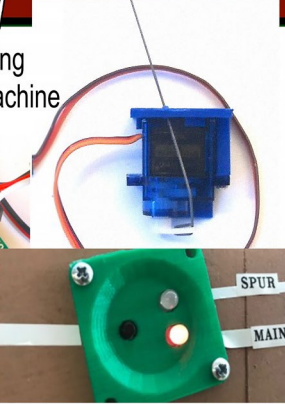
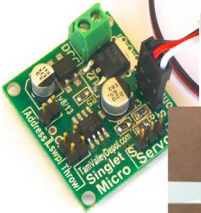


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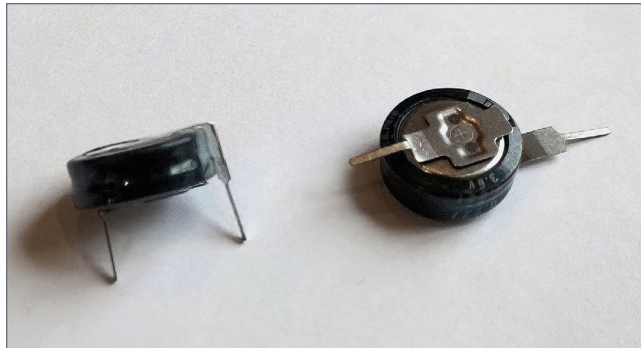
The most critical items to remember is observe the polarity of the components and to test before you install it in your \$100+ decoder

Have fun building your own inexpensive flat form-factor StayAlive!

Step-by-step on the following pages ...



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6. Close up of supercapacitor markings.



7. Use modeling clay to hold the components in place while soldering.

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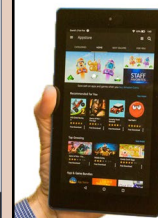
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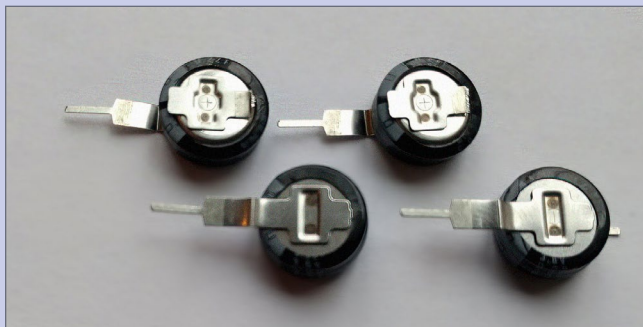
STEP 1: PREPARE AND SOLDER THE CAPACITORS

This is the most time consuming and demanding part of the construction process.

First bend the legs of each cap as shown in [8]. Lay out the components in a line and alternate the polarity orientation of each capacitor.

Starting with the leftmost cap, orient it so the “-” marking points up at you, then orient the next cap so the “+” mark faces upward, then “-” up, and finally “+” up [8, 9]. If it helps, use a permanent marker to number each capacitor left to right from 1 to 4 to keep them straight.

We will refer to side A and B of the construction throughout the build. This helps the cap orientation make sense as you follow along.



8. Caps oriented in order with positive legs removed, except cap 1 left. This is Side B.



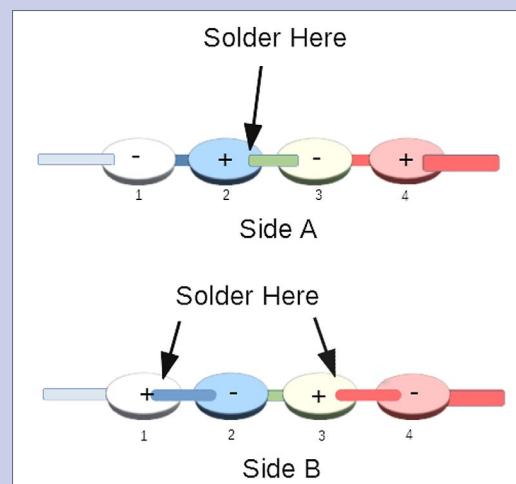
9. Caps in clay “jig” awaiting solder, with side B up.

Cut off all the “+” legs except for capacitor #1.

Use Drawing 2 and Table 1 below as a guide of which legs to cut off and which to solder. Why cut off the positive legs? They are not needed as we will use the negative legs to make the bridging connections, and it will make the entire soldering operation easier. It also allows us in later steps to fold capacitors on top of each other

to make other StayAlive geometries.

You will be soldering the “-” terminal of one cap to the “+” of the next capacitor. In total there will be three solder connections, one on side A and two on side B.



Drawing 1. Capacitor solder points.

STEP 1: PREPARE AND SOLDER THE CAPACITORS *CONTINUED ...*

Now that you have the capacitors prepped and in the right order, use modeling clay to make a jig to hold the caps in place while making the soldered bridge connections.

Look at [10] to see what side B will look like after the solder connections are made. Take a Dremel tool with a grinding disk or a file and gently remove any excess solder, but not so much as to compromise the strength of the connection. We will then turn each cap over in the jig and make the connections to side A.

Capacitor #	Positive terminal	Negative Terminal
1	No solder	Solder to positive leg of cap 2
2	Solder to negative leg of cap 1	Solder to positive leg of cap 3
3	Solder to negative leg of cap 2	Solder to positive leg of cap 4
4	Solder to negative leg of cap 3	No solder

Table 2. Capacitor solder leg connections.



10. Side B soldered.



11. Side A soldered.

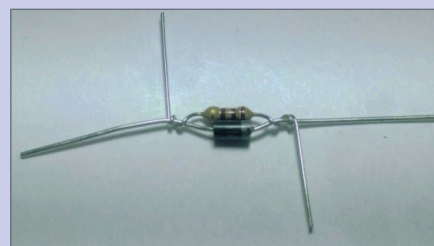


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STEP 2: PREPARE AND SOLDER THE RESISTOR / DIODE ASSEMBLY

Next, put together the diode/resistor assembly part of the Stay-Alive circuit.

I used a general purpose 1N4009 silicon diode and a ½ w 110 Ω resistor. Wrap the leads of the devices and solder them together [12, 13].



12, 13. Diode/resistor assembly.

Now mate the diode/resistor assembly to the capacitor bank. Solder the components together using the red circles as a guide. Make sure you are soldering the anode end of the diode to the “+” capacitor lead [14].



14. Solder the end of the resistor/diode assembly to the capacitor bank as shown.

STEP 2: PREPARE AND SOLDER THE RESISTOR / DIODE ASSEMBLY *CONTINUED ...*

After soldering the components together, you will have an assembled StayAlive that looks like [15].

If you're adding the Zener diode, the anode (marked) end solders to the "+" capacitor lead (red circle in [14]), and the other end of the Zener diode solders to the "-" end of the capacitor array. I ordinarily do not add the Zener diode and I have been fine.



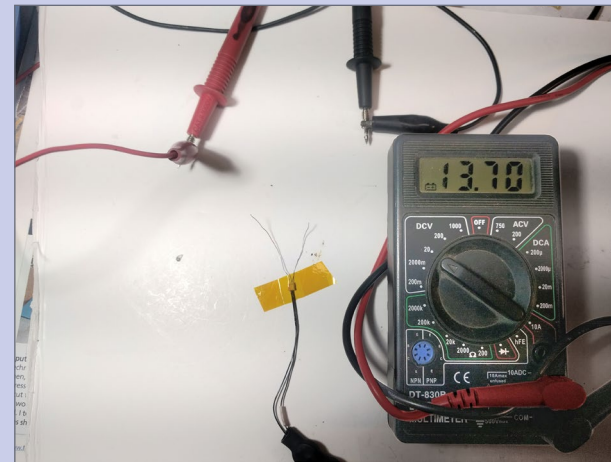
15. StayAlive completed minus shrink wrap.

...
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STEP 3: TESTING THE STAYALIVE

The next step is to test your StayAlive before encasing it in shrink wrap/tubing. Apply a DC voltage that is less than the working voltage rating of the StayAlive, in this case less than 14.4 V.

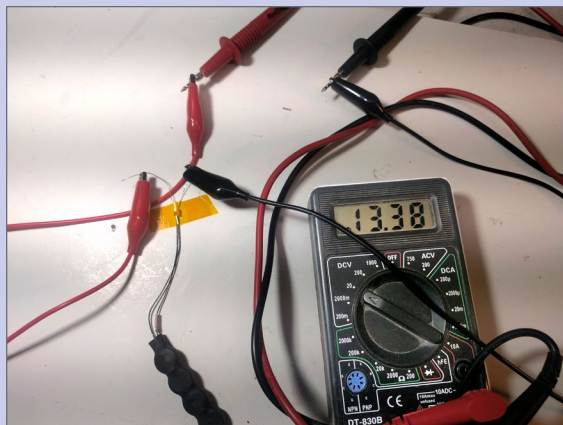
Make doubly certain that you apply the negative supply voltage to the wire lead that connects to the negative terminal of the capacitor bank, and that you connect the positive power supply wire to the wire leading from the diode/resistor assembly. Verify the supply voltage with a VOM before making the final connection.



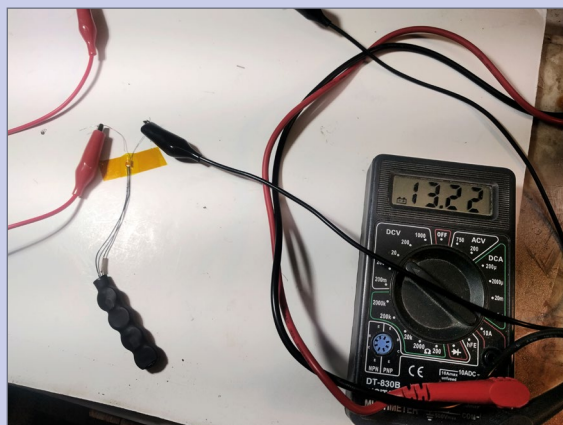
16. Verify power supply voltage before connecting – it needs to be less than 14.4V.

Attach the supply voltage to the StayAlive and let the capacitor bank charge for a minute or two, then remove the charging supply leads and apply the VOM test leads to the StayAlive leads.

Without the power supply connected, you should at first get a voltage very close to your supply voltage that will begin to steadily decrease over time [17, 18].

STEP 3: TESTING THE STAYALIVE *CONTINUED ...*

17. Discharge voltage at start of test.



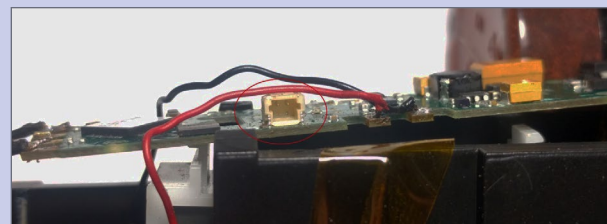
18. Discharge voltage after 30 seconds.



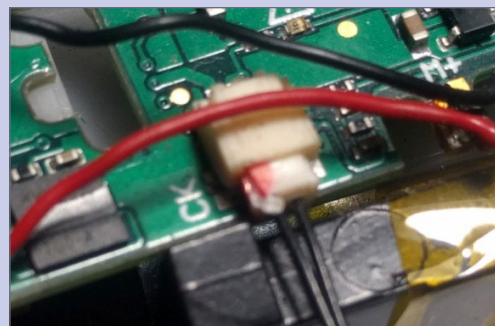
STEP 4: ADDING A JST PLUG (OPTIONAL)

If you want to install the StayAlive on a decoder equipped with a male 2x1mm pin JST connector, then follow this procedure:

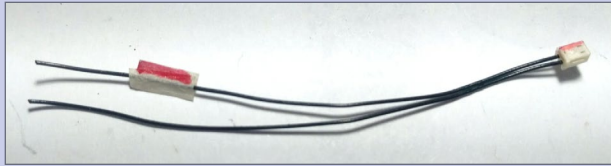
- On Soundtraxx decoders, the current keeper female connector is located on one side of the decoder board, refer to the red circle in [19]. The pin to the left is the + positive lead. For other decoders, consult your decoder manual.
- Take the male JST connector listed in the bill of materials, plug it into the decoder temporarily to find the positive side of the plug, and mark the positive lead as shown in [20] and remove it from the decoder. Mark the wire lead for the positive pin as in [21] and [22]. I do this so I have no chance of crossing the wires when making the final solder connections to the StayAlive.



19. Soundtraxx Current Keeper JST female connector.

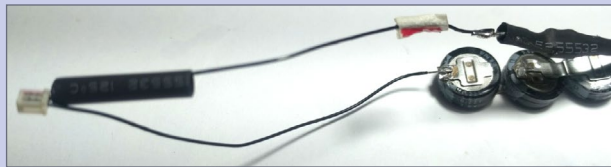


20. Closeup of the JST connection, note the CK board marking on the left side and the red marking added to the connector.

STEP 4: ADDING A JST PLUG (OPTIONAL) *CONTINUED ...*

21. JST connector positive lead marked.

Connect the female JST plug and lead to the StayAlive as depicted in [22]. I have included an additional section of shrink tubing that I will slide down over the solder connection and shrink with heat to prevent a short circuit between the solder connection and the negative terminal of the leftmost capacitor.



22. Installation of the JST leads.

Note: For non-Tsunami or SoundTraxx Econami decoders, you will need to consult the manufacturers website and technical reference material to find the appropriate positive and negative solder pads to connect to.

In the reference section, I provide links to websites by Mark Guries and Marcus Ammann that have a wealth of material on how to find the appropriate StayAlive locations for various decoders.



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STEP 5: FINAL ASSEMBLY

I encase the StayAlive components first with 6mm shrink wrap tubing around the diode/resistor assembly, then encase the entire StayAlive in 10mm shrink tubing.

Use the tip of the soldering iron or a hot air gun to shrink the tubing [23]. Do not install the 10mm shrink tubing until you decide what type of final wiring connection you will use.



23. Shrink tubing installation.

Finally, I slip the 10mm shrink tubing over the entire assembly and apply heat to shrink tubing.

As a precaution against pulling the wire leads out, I apply two part epoxy to the end of the assembly where the wires attach. The epoxy provides more mechanical resistance than relying solely on the soldered connections.



24. Assembled and ready to install StayAlive.

References:

General Information and Theory of Operation of Supercapacitors:
en.wikipedia.org/wiki/Supercapacitor

“More Stay-Alive Insights” MRH May 2019 Marcus Ammann and MRH Staff

“Cap that Decoder” Mike Garber, Crossties (James River Division of the MER, NMRA) Feb 2019 (focus on non-supercap decoders) www.nmra.org/sites/default/files/sr202002-keepalives.pdf

Easy DIY DCC Keep Alive www.youtube.com/watch?v=EOE0BCVJ0IU&feature=youtu.be

Marking your own DCC StayAlive model-railroad-hobbyist.com/magazine/mrh2019-06/electrical-impulses

Connecting StayAlives to various manufacturer's decoders by Mark Gurries: sites.google.com/site/markgurries/home/decoders/keep-alive-compatibility

Connecting StayAlives to various manufacturer's decoders, Marcus Ammann: www.members.optusnet.com.au/mainnorth/alive.htm

General Overview of StayAlives for DCC: dccwiki.com/Energy_Storage ✓

BOB MORNINGSTAR



Bob Morningstar has been a model railroader since his parents gave him a Marx HO scale train set in 1968.

Bob based his current layout on the Western Maryland Railway as it existed in the late 1970's.

Bob also has a strong interest in the operations part of the hobby and participates in a round

robin ops group in his local area. You can find more about Bob's layout on the web and can be viewed at wmrwy.com.

Bob's manages the cybersecurity engineering division for his employer and is a retired Air Force Lt Colonel. He lives in South Central Pennsylvania with his hobby-supportive wife, Jane. ■



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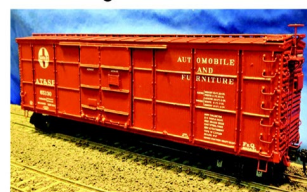
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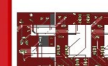


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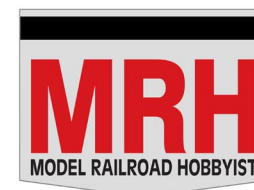
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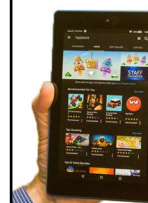
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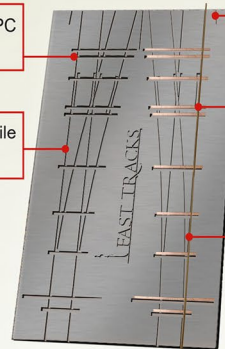


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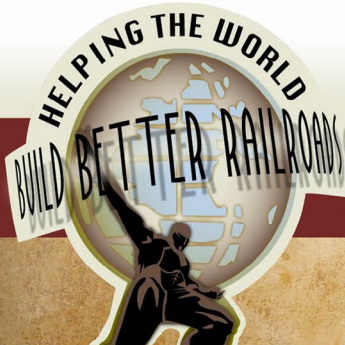
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The K10 Hobby Shop Layout



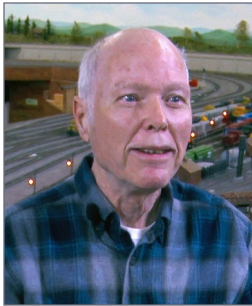
***MRH visits the 60' x 81' K10 Hobby Shop
layout in Maryville, Illinois ...***

1. Retired military pilot Ken Kroschwitz built a large prefab building to host a hobby shop and this nicely done HO layout. In recent years Ken has developed Parkinson's, but he carries on running his K10 hobby shop and hosting this large layout behind the shop.



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MRH: KEN, AS THE PROPRIETOR AND OWNER OF the K10 hobby shop and layout, tell us a little bit about why model trains?



KEN KROSCHWITZ: I grew up in New Jersey in the 1950s. For my first Christmas at six months old, my Dad got me a Lionel train. Then every year for Christmas, it was more trains.

I continued on as a teenager by building an HO layout in our basement. Then I went on to college and stopped modeling for a while

– I just collected.

I went to flight school and spent 20 years as a military pilot. I did not do a lot of model railroading during those years. Sometimes I did have something set up when I was stationed somewhere for a while, but at other times when I was on a ship, not so much.

MRH: How did you go from being career military to starting K10 and this layout?

Ken: In my last job after retiring from the military, I was a helicopter pilot at Arch Air Medical in St. Louis. I worked twelve hours a day, four days on, and four days off. Because I had so much time off, I needed something to do.



2. From the outside, the K10 store and layout looks like a modest enough structure. Once you get inside, however, the magic begins!

So I investigated buying a building to put a layout in. Because used buildings were just as expensive as new buildings, I finally opted for a new building. But then I had to find a place to build it.

I chose Maryville because they gave me the zoning to live in the building, as well as having my model railroad and hobby shop in that building. I chose Morton brand prefab buildings because they had the best building for the dollar at the time.

We began construction in March of 1997 and continued through the summertime, finishing by Halloween. There was a lot to get organized since I had decided to put a hobby shop on the front of the building.

The parking lot and the like still had to be completed. I bought some 40-foot containers to put things in – things necessary to run a hobby shop business to go with the layout.

MRH: How did you do the layout plan?

Ken: The planning for the layout began before I even built the building. I planned while watching trains. The St. Louis area (Valley Junction) was a great location for watching trains. I would sit down and watch trains for hours while working on a layout design.

The basic layout plan just came and continued to adjust it here or there. I had two years to work on it, while sitting there watching trains. I kept changing turnouts from right to left and using a little genius here or there to make the plan better.

When we finally had a finished track plan, we had the building with a 60' x 81' space ready to go.

MRH: When did you actually start building the layout?

Ken: In about June of '98, we began construction of the layout.

We built a balcony, if you want to call it that. The layout benchwork took about three years to finish. We started on one side of the building and worked our way around. All the sawdust stayed in this room.

We put the benchwork on kitchen cabinets. Right now, there's 137 kitchen cabinets that hold the layout. The layout may be a bit lower than most because of the kitchen cabinets.

The kitchen cabinets are 34-1/2" tall, with 3-1/2 to 4" of benchwork on top, bringing the layout level to about 39". Some eight people helped me, most retired – so we worked on it for maybe 40 hours a week.

The layout construction worked its way around the building, and things were slow at first. But after we got the technique down with the kitchen cabinets, it went pretty well.



4. On one side of the layout, this balcony has stairs that feed into each of the aisles. The dispatcher also works from this location, which gives a birds-eye view of the entire layout.

MRH: Did you stick with the plan, or did you make any changes along the way?

Ken: We didn't change much from the original plan. We made the biggest change in the southwest corner with the big mountain on the layout. We had to change it because of too much track in the original plan.

I designed the layout the way I did because I wanted a big yard. The Santa Fe yard runs 26 tracks across – and from drill track to drill track, east to west end, the yard runs about a hundred feet.

So it's a significant yard but that's what I like: yard operation. Other people like road switching operation and others just like train running.

MRH: Did What's the minimum radius on the mainline?

Ken: The minimum radius is 37-1/2". That's what the Peco large turnout curve radius turned out to be. We like the over-centered spring mechanism they use. We use that to our advantage because with 473 turnouts, we don't have to bother with turnout switch machines. It saved us a lot.

For example, the area on the north side of the layout, the DEW line as we call it, has a hundred turnouts just in that one section along the wall. Using powered turnout throws would have driven the cost up, way up.

MRH: That's some great practical insight – using finger-flicking turnouts to avoid all the hassle of under-the-layout turnout mechanisms.

Ken: At layouts and clubs that I had belonged to, with the Tortoises and twin coil turnout throws, it seemed like you were



5. The entire layout sits on kitchen cabinets, which provides lots of storage space for equipment, tools, and supplies to populate and maintain the layout.

always tinkering with them. We didn't want those problems, so we just went with Peco center-over turnouts where you directly flick the points over.

So we now we have more than 470 of these turnouts, with very low maintenance and no need to crawl around under the benchwork!

The mainline is 1004' long. The first Sunday of each month we host open op sessions for the kids. They all travel around following each other – you are looking at up to 18 trains. It's chaos at its best!

K10 member, Tony Pellegrino



MRH: Tony, how did you get into the hobby of model trains?

Tony Pellegrino: At about two years old, I developed an affinity for trains – anything trains. Brio trains, train videos, TV shows, you name it. Apparently before I was born, my dad Joe wanted to build a model railroad but his wife said, “No, you're not building a model railroad! That's for kids!”

Three years later I was born, mom relented, and he got his model railroad! So since then, we've built five railroads together. We've spent 37 years so far enjoying the hobby together, which has been great.

MRH: How did you get associated with Ken and K10?

Tony: Back in 1998, when K10 was just getting started, a coworker of my dad's, Don McReynolds, brought us here and showed us the layout. We were impressed, and we started coming to help out. My main interest was – and is – realistic operations.

With Ken's help, we developed an ops plan for the railroad. Developing an ops plan for a railroad this size turned out to be a challenge.

This layout has three class 1 railroads on it. There's the Santa Fe, the Union Pacific and the Southern Pacific. We also have two short lines, the Switchback Railroad, and the Dugan, Emdey and Western (DEW).

MRH: Wow, that's a lot of layout. How did you tackle the problem?

Tony: We switch over 500 cars in a session. We run over 20 locals, and we run maybe 10 or 12 transfer trains. So there's plenty of work. Trying to coordinate all this is kind of like herding cats.

We developed a software system that generates four-cycle switch lists. Most people are familiar with four-cycle car cards. Ours uses the same concept. We just make switch lists for the entire train instead.

So every four cycles, the entire thing will repeat itself. The software also generates yard lists for the yard masters to switch cars with, and to interchange with the other railroads.

MRH: So you're hosting regular operating sessions, how are those going?

Tony: We operate the third Thursday of every month, and we have between 10 and 20 people come and operate. We've been doing that for probably 15 years.

We just redid the system about two years ago, and that renewed the interest. Everybody got bored with the older system because we had ran it so many times.



6. Tony developed a car forwarding system based on car type and color – like a black tank car – and uses *that* to control car movements. The effect is similar to using car numbers, but it reduces the massive “matching car number” headaches for a layout with over 600 pieces of rolling stock.

We added some new challenges and new industries –reception has been great. We've had a lot more interest, and a lot more people showing up – and continuing to show up, which is important.

MRH: How does your switch list car forwarding work?

Tony: We don't do car numbers with our car forwarding. We do blocks of cars by color, so you'll switch two red box cars in for one blue box car.

It sounds elementary, but in essence it works the same as doing car numbers. It allows us to restage the railroad much easier than requiring us to look through 600 cars to find one car. We can substitute blocks of cars, so we don't run out of car cards.

MRH: That sounds intriguing. How does it work exactly, do I just pick any brown car, for instance?

Tony: Normally we're trying to make it fairly obvious. The orange boxcar is bright orange, the brown boxcars are brown.

We make up the trains before you take them out of the yard, so they match the switch list. Even if you have three brown boxcars together, your switch list may say a group of two brown cars, and then one more brown car as well.

The beautiful part is if you screw it up and put two of the wrong cars in the wrong spot, it doesn't matter as long as they're both brown. It's very forgiving – we call it operations 101: an introduction to serious operations.

Many people here don't have their own railroads and have no experience with operation. So this works well to get them interested in that side of the hobby. It seems a lot of people feel intimidated by ops.



7. The K10 layout models three different Class 1 railroads: the Santa Fe, the Southern Pacific, and the Union Pacific. You can see part of the UP route here.

So we use this easy, laid-back way to get them interested in that side of the hobby when they have had no exposure to it.

MRH: Is this a purchased package? Or did you program it yourself?

Tony: To develop the switch list system, I used Google sheets. I basically have an inventory of all the cars, or the blocks of cars on the railroad, and the industries and which kind of cars they take. The system matches the car types to the industries and cycles them through a four-session cycle.

It also tracks the routing of the car. If it goes from the Santa Fe to the UP, it will automatically calculate that it needs to interchange on interchange train, and get it to the receiving railroad before it puts the car in another train outbound on the UP.

It took me a couple months to write it and get everything to work correctly, but it works reliably now. You just generate switch lists, and each month it updates itself.

Then we hand out the switch list and the operator goes their way and switches the train.

MRH: So you are not tracking by car number?

Tony: You will switch five red covered hoppers – you'll pick them up from the white grain elevator and take them back to the Santa Fe yard.

They'll get classified and sent to the DEW, and a local train will take them to the ADM mill on the DEW. And like I said, it works just like car cards with car numbers. It's just not as detailed.

MRH: Yes, it seems like the traffic movement would be the same.

Tony: Yes, it does the exact same thing. You just don't have to worry about an individual car. You still have the five cars that represent the block, which you're moving.

MRH: Do you have a dispatcher during an op session?

Tony: We do for the UP and SP. They run as a combined railroad.

The Union Pacific and Southern Pacific railroads run by verbal dispatching. Each session has a dispatcher that clears blocks, using verbal track warrants. It'll give you a section on track from Devor to Eco Mills, and you have that track.

I can also issue instructions like, not in effect until after the arrival of train XYZ. Or they'll be given limits ahead of XYZ, which means if you're train XYZ, you will be passed from behind. Things like that.



8. This section of the Santa Fe route (lower track) includes a number of dramatic bridges. The upper route belongs to the Union Pacific line – the line in the distance, to the Southern Pacific.



9. Near the yard where the Union Pacific and Southern Pacific interchange cars stands this extensive steel mill complex with plenty of spurs to be switched.

Everybody wears a radio, and the dispatcher communicates with the train crews that way and keeps track of trains on a dispatcher sheet that we've created for the railroad.

We try to model not just the car forwarding but also the handling of traffic as well as we can, without making it too intimidating for a first-time operator.

MRH: What kind of control system are you using?

Tony: We use Digitrax. We have one of the largest Digitrax installations I'm aware of. We're on a first name basis with a lot of the guys at Digitrax because of the size of this layout. Digitrax has worked reliably for us the entire time.

We have ten boosters, which is a lot more than even most clubs. But we've had no problems with it. It's been great.

MRH: You're using wireless rather than tethered throttles, correct?

Tony: As you can imagine, if the system was tethered, folks would be walking around tripping over each other. Tethered throttles would be a complete pain. So it's all wireless.

We have about 18 throttles, and we also allow phones, using the WiThrottle through JMRI, and we also have the Digitrax WiFi system as well. So we can take any number of operators at one time between using the phones and the throttles.

MRH: Tell us about your decoders. Do you have a particular type of decoder that you use? How you program them?



10. The K10 layout also hosts a monthly session specifically for kids with an accompanying adult. They get to run a train around the massive layout over the various routes for four loops. That's sure to leave a lasting impression and help spark some new blood for the hobby.

Tony: We used to use Digitrax 163 decoders forever. More and more, we're using out-of-the-box locomotives with sound. We don't really have a standard for decoders anymore, which is both good and bad.

The kids love the sound on Sundays. Those who operate on Thursdays, some of us like it, some of us don't like sound as much.

The sound has definitely generated more interest from the kids, which are the ones we are trying to expose to the hobby. So it's been a plus to get the sound use onboard.

MRH: What's your take on those sessions with the kids?

Tony: The first Sunday of every month we're open to the public. For a donation, as long as your kid is tall enough to see over the benchwork, we'll put a throttle in their hand and teach them how to run trains on a DCC wireless system, which is pretty cool.

There are not very many places in the country that allow you to do that. You can also bring your own equipment, or you can run the equipment that Ken provides.

On those days, it's a "four loops around the room" operation. It gets people introduced to the hobby and shows them what DCC can do. And it shows that the hobby is not just about little kids' toys anymore.

This is a hobby for adults too, and it can be taken as seriously as you want to take it.

MRH: Any feedback from the parents?

Tony: Mostly positive. A lot of them get interested just because their kids first get interested in the hobby. It's a place where they can bring their kids and have a shared experience with them.

And the kids get to run the trains and the parents will help out to make sure that they're going in the right direction on the turn-outs, controlling the train properly, things like that. So it's a good way for parents and kids to bond.

K10 member, Joe Pellegrino (Tony's dad)



MRH: How did you get into the hobby?

Joe Pellegrino: I came home from some place where I had seen a model railroad, and I thought it would be cool to have. I told my wife I wanted to build a model railroad, and she said, "No, that's a kid's toy!"

So no model railroad.

Then Tony was born and somewhere around six months, trains became his focus. He got one of the first Lego trains ever made – and he still has that. He also had Brio trains, lots of toy trains, push trains, and so on.

As Tony got older, my wife's uncle sent him a Santa Fe passenger trainset. That led to our first layout, which took over one side of our master bedroom.

It was a 4' x 8' and Tony couldn't play with it unless I was home. So every time I got home from work, the first thing we did was go play trains. We didn't eat supper first, didn't go to the bathroom first – no, we went and played trains *first*. That started the hobby for me.

MRH: Where did it go from there?

Joe: The hobby for me started with Tony's interest. We've learned a lot together. We have learned to build a lot of the scenery through our work here at K10 actually.

A lot of our track planning skills, Tony learned by going to other places to operate. He developed that through the years until we got to our fifth layout, which is probably one of the best ones we've built. That's where we are today with our own layout.

MRH: How did you get affiliated with Ken and K10?

Joe: Dominic Reynolds, a fellow employee at Shell Oil Company was a model railroader and my son and I were model railroaders. We all got together and Don taught me how to decal locomotives and so on. We did the hobby together.

One day Don called me up and said, "You need to come with me to Maryville, Illinois. They have a train shop there you won't believe!"

I wasn't real enthusiastic about it at the time, but some 6-8 months later, we finally made it over here. Don and his son Chris, along with myself and Tony visited K10 here and we became regulars on Thursdays.

At first we didn't do too much. We just roamed around, handed people tools, and so on.

Eventually, we got into the building of the layout. When we first visited, the benchwork was done and most of the track was done. The DEW had been scenicked by a really good guy who felt he "owned" the scenery. It was his, and he wouldn't let anybody help him. It took a while for him to allow us to do things.

Finally, I went to Kenny and told him how I kept asking Paul (the scenery guy), "Let me help, please let me help". But Paul would say, "Here, I'll show you how to do it". And he would do it.

I said, "Ken, Paul's not letting us do anything. He's just continues to do it". Since Kenny wanted to get some grass down on all the

plywood, he said, “Come over here and build this scene by the meatpacking plant.”

So Tony and I started working over there. We carved out the foam, we put the ground foam down, put some trees in, those kinds of things. Paul came over to have a look and remarked, “Wow, that looks pretty good!” So that’s how it started.

From there we (the McReynolds and the Pellegrinos) just dove in and started doing all the scenery along with Paul. And that’s how it went for a long time.

MRH: So what is your role here now as part of the group

Joe: My role, along with many others, is as a volunteer to do about anything that needs to be done. The most important thing



11. The front of the K10 building hosts this hobby shop. Ken does the hobby shop as a secondary income and to get wholesale prices on equipment for the layout. It also works in concert with the layout to get folks started in the hobby after being inspired by running trains on the layout.

is setting up third Thursday ops night for adults. I manage that and make it happen. I also get the trains restaged every time.

I generally do all the dispatching because everybody else seems too intimidated. They don’t like to dispatch, so I just do it. I hardly ever



12, 13. Left half of the K10 layout as viewed from the balcony. In the foreground of [13] you can see the Southern Pacific yard.

run trains here. I also work the shop, putting stock away, and those kinds of things. So I am a general volunteer type worker.

MRH: This layout is really big. Is it too big?

Joe: Wow, can a layout be too big? No, I don't believe so.

When people walk through that door into this layout for the first time, they're pretty intimidated. Once they've been here a few times and they start to operate on the railroad, all of a sudden it's not as big as it seems.

Could this layout be twice as big? It would be awesome if it were twice as big. Kind of hard to do, though. It would take a lot of money.

But it would be crazy to run something bigger than this one!

MRH: What do you like best about this layout?

Joe: What I like best about this layout is the reliability. After 20 years, we are starting to get some issues. We're fixing those, but this railroad has run reliably for 20 years.

Rarely ever do we get derailments that are not caused by an operator somewhere. We have some specific locations with problems, but we're working on those.

All in all, it's the reliability of this railroad, it's the size of the railroad that I like best. You can't build one in your home basement *this big*.

The number of cars we move in one session is just unbelievable. And the camaraderie that we have with everybody here is really, really good.

MRH: What would you say is your least favorite thing about this layout?

Joe: Least favorite? I almost can't think of one really. It does everything that we want it to do. There have been a few folks in the past who have tried to participate and help, but they didn't do a very good job. Eventually they weeded themselves out.



14, 15. More of the layout to the right of [12, 13] as viewed from the balcony. In the distance where Tony is standing [14], you can see the extensive Santa Fe yard.



16. More of the layout to the right of [15]. Along the far wall to the right you can see part of the UP yard. In front of that, you can see the peninsula with the steel mill complex that's on the SP route.

If I had to explain it, I would say it's just those few who came and didn't understand the philosophy of this railroad and its intention. They did what they thought was best, but it just didn't fit this railroad. Eventually those folks all left.

Most of the current folks today fit right in line with what we're doing here, so it's pretty good. That's probably my least favorite part, dealing with people who are a poor fit here.

MRH: Ken mentioned the Peco center-over spring turnouts. How do you like them?

Joe: I think the Peco turnouts have been fantastic. A few people don't understand how they work, but they figure it out pretty fast. If we had would put something in like Tomar or Caboose

Industry's ground throws, those would break frequently, although they're pretty reliable in a home layout setting.

With as much use as this place gets, I think they probably would not work out as well here. The Peco turnouts have been the right choice for this railroad, no doubt.

It actually helps people understand how turnouts work to have to throw them by hand, rather than relying on some electronic circuitry that may or may not throw the right turnouts at a distance.

So I think the Pecos were definitely the right choice for this railroad.



17. The layout also plays host to more serious operating sessions one night a month. These op sessions have plenty of switching opportunities, such as switching this tank farm on the Santa Fe route.

MRH: That is an interesting perspective. The thought of crawling under the benchwork working on Tortoises and maintaining them for almost 500 turnouts would be a huge effort.

Joe: Wouldn't it though! It would definitely be fun trying to make some of them align all in the right direction, such as in a yard! When you have six or seven turnouts you need to align, they all need to be thrown together, so that when you push the button for track seven, they all go to track seven.

Yes, that would be fun. I know you can do that, and it would work great for layout with a hundred turnouts, but not for 470 plus turnouts!

MRH: How has using the Digitrax system been?

Joe: We like Digitrax because we know Digitrax. The other systems such as NCE have their benefits also.

With Digitrax, we've been able to expand this railroad easily, and create the power blocks as needed. We don't have many issues with locomotives that eat up the power and don't start.

We have a number of people who have learned the Digitrax system very well.

If you have any questions whatsoever, you can come in here and we can probably find someone with an answer for you. That's with the group that's here on a Thursday night.

So Digitrax has been our choice here at K10. I'm running with Digitrax on the home layout. The other brands are similar, and they have the same benefits and downsides as the rest of them.

There's no one perfect system out there.

MRH: How is maintenance on this layout?

Joe: The maintenance on this railroad has been mostly track cleaning and wheel cleaning. We're still using the eraser type track cleaner. We had used Goo Gone, but we quit using Goo Gone in the last year or so, after we realized it was making bigger mess than we anticipated.

We've gone to isopropyl alcohol, and that has made some difference. We have worked really hard on turnouts because the turnout points need to make contact with the outer rail. We've had some issues with some turnouts, because the points can get bent.



18. The layout uses all Peco center-over turnouts, which has totally removed the need to have under-the-layout mechanisms like Tortoises or solenoid/servo control. With almost 500 turnouts on the layout, not needing to crawl under the layout to maintain the turnouts has proved to be a wise move. The only limitation: make sure all turnouts can be reached from the aisle.

After a Sunday session with the kids running around, they accidentally knock over trees or move buildings, so we go back and fix those.

Every once in a while, there'll be a car problem where a coupler has fallen off, so we have to find the loose coupler on the layout somewhere, and then put it back on, those kinds of things.

But the hardest part has been the wheel maintenance of our locomotives. They pick up a lot of dirt. So we're moving forward with a hint from you guys, *Model Railroad Hobbyist*.

We're going to start using mineral spirits and see how that works for us, and move forward with that. That sounds like a really good idea, because we're still having issues with dirty track. We're looking for any way to help solve that.

MRH: When the kids operate, it's just through trains – there's no switching, right?

Joe: Correct. When kids operate on Sunday, they just chase each other around the railroad, and it takes approximately 12 to 15 minutes for them to make the entire four lap loop.

Some try to go fast, some go really slow, and it causes bottlenecks.

We keep folks stationed around the railroad to help alleviate the problems that may occur with the kids. Most of them do well, but there's always a few that get a little rambunctious. We try to manage those as best we can.

MRH: So in the adult session, do you have switching?

Joe: On the adult session on Thursdays, we do switching, as Tony explained with the car switching lists that we have.



19. As to era, the layout loosely aims to model the late 1990s to the early 2000s with the equipment Ken provides. Group members can bring their own equipment as well, and the era is pretty much anything goes in that case.

One thing Tony didn't mention – and one of the reasons for the simplicity of using the car color-and-type switch lists to do our switching is how it saves us from car card headaches.

If we had car cards for over 500 cars in car boxes around this railroad, after Sunday session with the children, it would be an absolute nightmare trying to match those car cards back with those cars.

The car color system has been perfect for us. We don't have to worry about losing cars, swapping cars, moving cars, or any of that. We have a switch list and it works.

MRH: Talk a little bit about how you do car uncoupling. Do you use magnets, coupler picks, what?

Joe: When we do switching on this railroad, most of the time with locals we send out, we use a coupler pick.

For a long time, the guys used to just lift a car off the rails and put it back on. But now we use picks. That was a learning curve there with the guys. They had to figure out how the picks work. But they've gotten better at the picks, so they're working really well now.

So for the locals that do switching, we use the picks. But in all the yards, the Santa Fe, SP and the UP, we have a magnet at each track. So you can just pull in, uncouple, and go. That makes it a lot smoother in the yard to have the magnets.

When we're doing switching on this railroad, the nice thing about it is that almost all the switching can be done off the mainline. When you get to an area to do your switching, 99% of the time, you're off the mainline, which is great for the dispatcher. He doesn't have to worry about locals blocking the main.



20. While Ken provides equipment appropriate to the Santa Fe, Southern Pacific, and Union Pacific lines, group members can also run their own equipment, such as this set of locos paying homage to the freelanced Appalachian Lines of Tony Koester, Steve King, and Allen McClelland.



21. The group calls the Santa Fe route the "low line" since it tends to run under the Southern Pacific and Union Pacific routes on the layout.

We do have a couple places where sometimes you may need the main for a bit, but it works pretty well.

MRH: Have you always been DCC?

Joe: When the original train layout was built – what we call the lower level, the Santa Fe side – was all analog. We had 22 transformers running the analog section of this railroad.

There were no blocks switches or anything like that. Each transformer was insulated in its own block. When you ran from one block to another, you just picked up the next transformer.

It helped a lot to have a track arrangement that allows the local to get off main, so it was away from those transformers and on their own transformer.



22. Joe Pellegrino helped do a lot of the scenery on the K10 layout. Here an SP train winds down through an extensive hand-carved rock canyon.

But once we switched over to DCC, that's really not necessary any longer as to how the locos get their power source. But this design does help keep them off the mainline when the locals do their work.

MRH: Based on your experience in the hobby, what would be your advice to someone brand new coming into the hobby?

Joe: When people ask me about how to get into the hobby – and we have a lot of that – it's amazing the number of people that walk in to the hobby shop and want to "piece buy" their own custom trainset.

When they walk in here and see this railroad, their eyes light up like a little kid's. We try to convince them to start small. Start out with just a 5' x9' – a ping pong sized table.

You can literally buy a ping pong table, set it up, and go with that – it's quite solid. With a 5' x 9' table, you can do a 24" radius curve real easy. It works well and there's plenty of room for some structures or scenery.

We also give them advice on what control system to use. Naturally it's Digitrax for us, and we get them into that part of the hobby as cheaply as we can, with the smallest and most affordable system.

We also advise them on wiring, and voltage drop, and those sort of things, so that they get a feel of what to do when they start expanding. If you're 30' away, you're only going to get 12 volts instead of 14 volts, so your engines will slow down.

Just give those kinds of little hints, and advise them to not put track everywhere. Include room for some switching. Start slow and get the feel for things.

My problem is, I give them lots of options that cost more money, and I have scared people out of the hobby. After they walk out, they have that glazed deer-in-the-headlights look in their eyes. I know they're never coming back, and we've lost a customer at that point.

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So I try really hard not to do that anymore. I just give them basic information, and if they ask pertinent questions, I will answer those questions. But I don't try to overwhelm them, because it will drive them away from the hobby before they even get started.

MRH: This layout is going to be open for the St. Louis convention this summer. When people come to visit this layout, what would you hope that they'll take away from the visit here? (Sadly, this has changed due to Covid-19 and the convention being cancelled – ed.)

Joe: The NMRA 2020 in St. Louis this year is pretty new for all of us. We had a convention many years ago, but it hasn't been back. I think it's going to be interesting to see how much hobby enthusiasm this draws to St. Louis.

When visitors come here, I would like for them to take away that this is a very large layout that is fun to run on. And it doesn't have to be complicated to have a great time doing ops. But I think most of the folks that come to the NMRA conventions generally do ops anyway.

We had a local session here where we invited some folks from the Midwest, and they all came.

These guys were big-time operators, and they all know how ops works. They came in here and had a blast, even though it was a rudimentary system. They had a blast, and they all want to come back.

I hope the convention goers realize how much fun this layout can be, as I think that would be a great takeaway. ✓



23. The K10 layout operates quite reliably for a large club layout – having very few derailments or equipment issues. They're also adding more locos to the layout with sound and lights such as this KCS heritage diesel. The kids love the trains with sound and lights best of all!

Note: Now that the 2022 Convention in the UK has been cancelled, there is discussion about St. Louis being the convention location for 2022 and that we try again. We hope that happens, because the K10 layout and other layouts in the St. Louis area are well worth seeing!

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Double deck benchwork construction



Model Railroad Hobbyist | June 2020

NEIL DENBY builds double sided, double deck free-standing layout benchwork ...

WHEN I WAS A YOUNGSTER IN THE SIXTIES, MY Dad arrived home one evening with a box full of Hornby/Triang trains, track, and buildings he had been given by a client. In short order, I constructed a table top layout with a hill in the back and track through a tunnel.

The layout had three roundy-roundy loops coupled together with turnouts – the cat and I ran the three locos and many

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railcars, all from the box of parts Dad brought home. (The cat seemed more interested in batting the trains *off* the tracks ...)

When I left home and joined the military, I took the layout apart and packed the trains up in a box.

A few years later after I fell in love and got married, I passed the box of trains on to my new brother-in-law who was 10 years my junior. He used them for a while and then passed them on again.

I had no time or room for trains any longer, I was busy raising two boys and dealing with military life. In 1991, I retired from the military and got a job in the real world security industry as a technician.

Re-entering the hobby

Around 2005, this same brother-in-law called to tell me about a big closing-down sale at Santa Fe Models in Auckland where we were living at the time. Because he was back into model railroad-ing again, he asked me to go have a look, and see if I could find anything worth buying for him.

You can guess what happened next. I bought one or two items for him, and about \$800.00 worth of sale items for myself. Surprisingly, my wife encouraged this!

Over the next 10 years, I discovered how much the hobby had changed in the previous decades, which changed my buying habits. I started buying DCC and more up-to-date and locomotives and rolling stock. I ended up with about 50 locomotives, and lots of rolling stock.

“Over the next 10 years, I discovered how much the hobby had changed ... I started buying DCC and more up-to-date and locomotives and rolling stock.”

My locos all have DCC, many with factory sound, or sound I have installed myself. I partly finished a small layout in my garage until I retired in 2015 when we decided to relocate. I had been a member of the North Shore Model Railway Club in Auckland, New Zealand.

We built a new home in Matamata, also known as Hobbiton. Since we have been here, I have joined the Greater Waikato Railway Modelers Club, which is based in Cambridge, about 50Km from home.

The new layout space

When I designed our new home, I got to specify the garage size and included facilities. I made my layout room two cars wide, and two cars deep. Yes, there's space for the car too.

But I have plenty of space for a layout and for the crew room when operations are on. My garage layout room has no laundry, no garden tools, no lawn mower, and no workshop in it.

Outside I have added two good sized sheds where I can do all the dirty work. My drop saw is in one of the sheds, and the other has my workbench and an airbrushing bay which has fans venting to

- Keep wiring runs and connections orderly, with easy connection and ease of access (most of us older guys and gals don't work at our best under the benchwork!)
- Maintain easy reach as much as possible
- Build with future portability in mind. If the layout ever needs to be moved and re-erected, I am building in pre-planned break points
- Consistent, strong, and economical construction method with all the layout corners rounded
- Adequate aisle space for operators to easily pass each other. Seems tummy size plays a part here!

Construction)

Taking advice from model railroad magazines and online sources, I decided to construct a one-fifth scale model on a sheet of plywood the shape of my garage, with my goal being to prove my plan would fit and function as I wanted. This gave birth to MiniMe, because at my height of 5'-6" I wanted to determine the perspective from my viewpoint.

This has proven to be a valuable planning tool, and I highly recommend it. The necessary "pause" to build this miniature mockup before the layout building starts has paid off, I assure you.

Too often, we get over-eager to put the track down. The idea of catching any gotchas in advance gets overlooked. This came home to me very pointedly when reading about an experienced model railroader on his fourth layout – he lamented that he needed to not be in such a hurry – he should have learned by now to construct the backdrop and paint the sky *first!*

I decided to use plywood because in New Zealand, plywood goes for half the price of timber, plus it's straighter and stronger. I did reuse three L-girders under the helix section salvaged from my last layout.

From the photos of the miniature mockup, and the early layout construction, you can see the "standing tree" method of construction I have used. The dimensions came directly from my one fifth scale model which I transferred to the carpet on the floor with masking tape. This gave me the exact position of each stud, and the length of the tree "branches" for each side [3].

In April 2018, my first tree supports went up, and I secured them to the floor to keep them in position [4].

Since I had all the plywood cut, and on hand, the first part of the framing happened quite quickly. I treated the project like a job,



2. MiniMe and my one-fifth layout scale model.

which meant that I did a full day's work, rather than doing a bit here and a bit there.



3. Dimensions transferred to the floor.



4. The first free-standing tree frames go up.

I am very much a list maker and process-orientated, which led me to do things in the right order. There is nothing worse than having to redo something. I won't say that never happened, but it has been minimized [6-8].

I made the main center supports of two laminated pieces of 21mm (7/8") plywood, giving me a piece 42mm (1.5") thick. I made these supports 75mm (3") wide and 1800mm (71") tall, glued and brad-nailed together. This approximates a 2x3" stud. The joist cross pieces are 21mm x 75mm (1x3") plywood.

By the way, I have glued and brad nailed the whole layout using my Ryobi 18 gauge nail gun. It accepts nails from 15mm up to



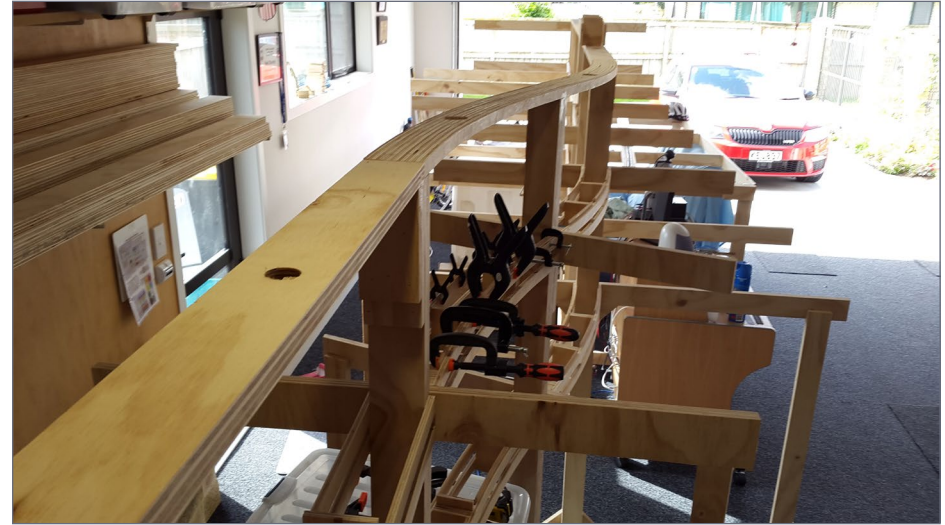
5. Securing to the floor.



6. Joining the tree frames together.



7. Setting the S curved section.



8. The upper laminated beam.

50mm, which makes it very versatile and speeds construction as compared to the drill, countersink, and screw method.

The only screw joints I have, come at the module seams, where I used no glue

My buddy Richard cut all the plywood for me on a dimension saw at his work. Believe me, having perfectly sized timber is great.

Most of the main benchwork tree supports have feet for lateral stabilization, but you can leave some out to accommodate underside storage, as I have done. At the ends of the feet I used a small L bracket to fix it to the floor [5]. This removed the possibility of the layout moving or tipping if someone leans on it or bumps it.

I store a three-seater and a two seater couch under my layout which can be brought out when the operation crew arrives for

the start of a session. The long side of the layout has an “S” curve as it narrows to allow for the helix to fit, and also leave a walkway to the center.

I constructed a laminated upper beam for the long portion of the layout. I angled a supporting stud to fit on the ends, which made aligning the upper and lower levels to the beams quite a straightforward task.

As you can see [6], the tree supports have cross members for the lower and upper level tabletops. I decided, after much consideration, to have the bottom level at 1000mm or 39” and the top at 1400mm or 46”. This leaves a nominal 325mm 13” gap between lower and upper levels. It does make the upper level a bit of a stretch for me as I am only 5’ 6” tall.



9. Backdrops fitted. Likewise on the other side as well.

On the lower level, I have a 70mm or 3” drop from the front deck to the rear deck because it fit my plan better, and I wanted a gradient, not a dead flat line. The distance between the support trees is 800mm or 31”.

Because the layout is on both sides of the tree, all cabling can be dropped down the center, and sitting on the floor underneath to work on the wiring makes it easy to deal with. After I completed the main framework for the long side of the layout, I moved on to doing the backdrop sky for that portion [9].

Around about this time, I had the concrete laid for my second shed. This gives all my tools and materials somewhere to live.



10. Marking the helix for fit.

Once I had completed all that, I moved on to the rear part of the layout and the connection to the helix.

I moved the helix back a bit from my original plan to give more room at the front for the brick works business and some other scenery. With the shed up and all tools moved out of the way, I completed the framework around to the helix. The L-girders I have used here came from my last layout, so they did not go to waste [10-13].

The helix has a radius of 30" and takes three and three quarter turns from bottom to top. The gradient is about 1.9% [14-16].



11. Progressing the levels round towards the helix.



12. Setting out on the floor to test fit.



13. Fitting the helix on to the tabletop.

That is a long distance and you don't appreciate how far it is until you do it. I found it challenging to get this right, but not so much of a problem in the real world, because a bit of distance doesn't matter to the prototype. I also have a run around track as an alternative to entering the helix, which has a 34" radius – Richard also cut this for me.

The 100mm drop in level came about because my plan calls for a stub-end passenger terminal served by double tracks from both east and west on top, without being encumbered by a loop track or the helix.

Per my logic, I want to enable freight trains to transit under the passenger terminal and have full access to the helix. It does mean, however, that passenger trains need to traverse around the upper level to access the helix.



17. Helix run around and connection from east and west.

The east and west gradients get switched via the upper level double tracks that proceed around to the Passenger Terminal. Trains on the lower level can also loop around the helix and service the brickworks factory, or just pass on by to a different destination on the lower level.

I expect the helix interchange area will be the busiest part of the layout, and will need strict management and traffic control.

The helix can be accessed from east or west on both the upper and lower levels. Both upper and lower levels can loop around the helix without entering it. The first track gang that built the lower interchange for this helix/loop part of the layout really screwed it up, so they were fired and a much smarter crew were brought in. Live and learn!

Since I have essentially completed this part of the layout now, next I want to construct control panels to give local, and eventually remote control from a JMRI CTC panel (he says, in a hopeful tone).

On to the roadbed and track

I have installed fixed tabletops of 12mm (1/2") plywood on the whole layout as the starting point for the track, and the starting point for the scenery. If the terrain needs to go below the tabletop, I will just cut holes as necessary and add the base height I need.

I do intend to chop into the fascia to get the terrain changes and contours I have visualized. I made the front fascia made from 12mm (1/2") plywood, but where I needed curved corners, I laminated 3mm (1/8") hardwood to do the job.

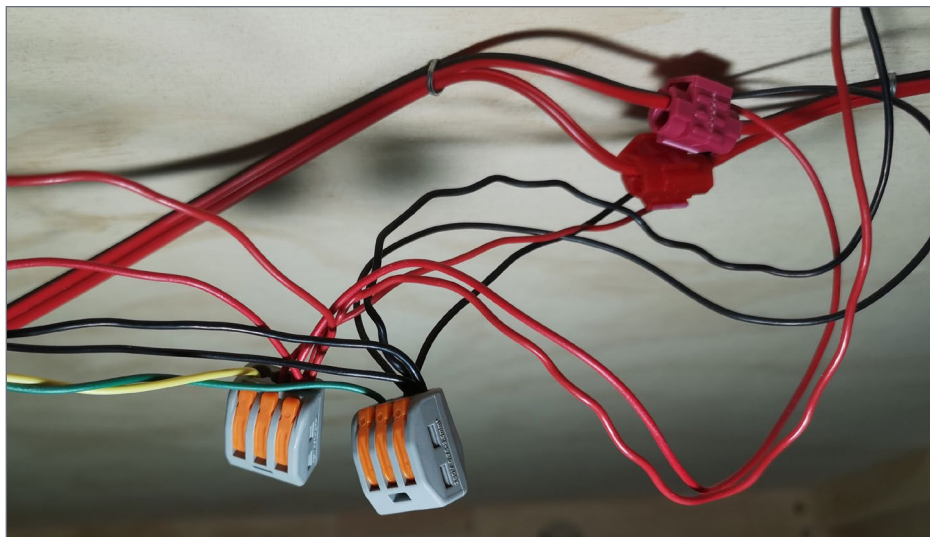
With all the tabletops all fitted, I decided to lay some track and get trains running. Richard cut some master radius templates,

so I did not need to draw arcs with string to set up curves during track laying. I am using a 5mm (3/8") high density foam for my underlayment.

I very much made an economic decision here, because cork underlayment costs about \$8.00 a length. This foam cost me less than a dollar per length. Mind you, I had to invent a cutting jig to cut it to the same dimensions as cork roadbed. I have posted a segment on my YouTube channel (youtu.be/mLJqChoT6MY) that shows how I did this.

I decided to invite the guys from the club for an operating session before 2019 year end. Having set this goal, I worked toward it, and by October 2019 I had all the track laid top and bottom to access the helix so trains could now run.

After I had laid the track, I had a visit from Jayden, who is "the guy" (niece's husband) who will paint my backdrops. On his advice, I



18. No Solder DCC BUS connections.

had to mask off the track, and spray a lighter color gradient on the lower half of the sky.

In November 2019, the Greater Waikato Railway Modelers Club members came for a running day. This turned out to be a hit with the guys, because they run the club layout using DC with Block control – so running on DCC was a new experience for them. I am pleased that the layout ran well with only a few glitches, and no incidents in the helix.

The last few pictures [19, 20] give an overview of where I am at now as of this writing (April 2020). I have lit the entire the lower level [lead photo], and have added curtains on all the windows. That's thanks to my buddy Neville – he and his wife helped out recently – until China put a spanner in the works of the world, that is.



19. Overview toward the front.

I look at where I am today, and then look back to where I started. It gives me the confidence to carry on and make more progress on this thing! ✓

Visit Neil's YouTube channel for regular updates on his layout progress: www.youtube.com/channel/UC5sc5tmRyNDW--fqyuMaCNw.

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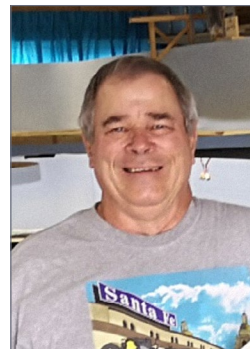
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20. Overview from the rear corner.

NEIL DENBY

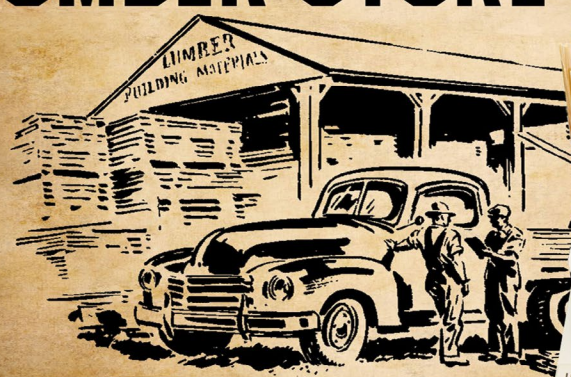


Neil lives in Matamata, New Zealand. Neil is 69 years young and retired ex-military. After time in the military, Neil finally retired, and worked in the civilian security industry before finally retiring from that as well. ■



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LOOK column

Model Railroad Hobbyist | June 2020

JEFF SHULTZ looks at a ScaleTrains.com Dash 9-40C ...

WHEN SCALETRAINS.COM INTRODUCED ITS DASH-9 lineup at the 2019 Railroad Hobby Show in West Springfield, MA, I quickly took photos of all the new samples and headed back to the *MRH* booth to work on editing and uploading the photos.

That is when I discovered this odd looking locomotive in the middle of a photo [1]. It was a standard nose swan among the safety, or wide cab, ugly ducklings. I grant that your opinion on the attractiveness of the noses may differ from mine!

Some research revealed this to be a Norfolk Southern “Top Hat,” the lone standard cab model of the Dash-9 line, purchased only by NS, and even more interestingly, it was a Dash 9-40C/C40-9, configured for 4,000 horsepower instead of the standard 4,400hp of the rest of the Dash-9s. Plans included releasing this option in the second run of Dash-9 locomotives.

I wrote a First Look article on ScaleTrains’ first run of the Dash-9s in the April 2019 issue of *MRH*, and the basic locomotive hasn’t changed.

FIRST LOOK | 2

★★★★★
RATE THIS ARTICLE

This model of a six-axle GE has incredible details including:

- walkway and ground lights
- etched metal grills on the radiator intake and exhausts
- plumbing and traction motor cabling
- wire grab irons
- snowplow
- MU hoses
- uncoupling levers
- windshield wipers
- mirrors
- sunshades
- openable cab windows
- many other factory-applied details

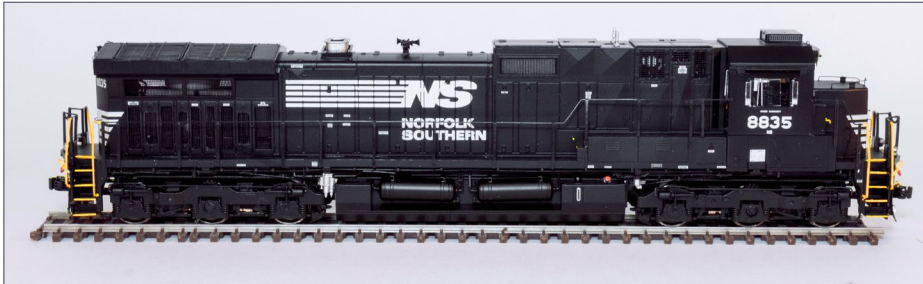


1. First sighting at the Railroad Hobby Show in 2019.

FIRST LOOK | 3

The paint is crisp with tiny lettering legible – and the cab windows open!

The standard cab makes the Norfolk Southern Dash 9-40C unique among the Dash 9s. A year after GE introduced the Dash 9 with wide cabs, Norfolk Southern ordered 125 locomotives with standard cabs, numbered 8764 to 8888.



2. Engineer side view.



3. Rear quarter engineer side view.

FIRST LOOK | 4



4. Close-up radiator and truck view.

The “Top Hat” name came from the location of the air conditioner on the roof. According to Wikipedia the locomotives went through an upgrade program to 4,400hp in 2015, and was then further rebuilt as AC44C6Ms with wide cabs, AC traction, and other improvements between 2015 and 2018. As AC44C6Ms, the units were renumbered from 4000-4124.

This Rivet Counter model comes equipped with a LokSound 5 DCC sound decoder with ESU’s “Full Throttle” functions, FDL-16 prime mover and auxiliary sounds, including the horn, bell, air compressor and more. The motherboard also includes a 2-capacitor PowerPack stay-alive circuit.

The model has a full suite of LEDs, including front and rear headlights and ditch lights, and lighted number boards, walkway lights, and ground lights that come on when you run the engine startup

cycle (F8). The ditch lights flash when blowing the horn, per prototype practice. From F0 to F21, the decoder setup does not use F7, F14, or F15.

When it comes to running, I tested the locomotive with a TCS UWT-100 throttle with 126 speed steps. On step 1, the locomotive crept through my Accutrack II speedometer at 0.9mph.

At speed step 126 it whistled through at 70mph – also sailing through the 18” radius reverse loop around my staging yard without a hitch. Speed step 10 registered as 5.1mph, step 25 as 15mph, and step 38 as 24mph (for those who maintain a 25mph maximum speed on your layout).

The locomotive ran smoothly, with ScaleTrains.com’s standard of momentum in the decoder. ✓



5. Front aspect.



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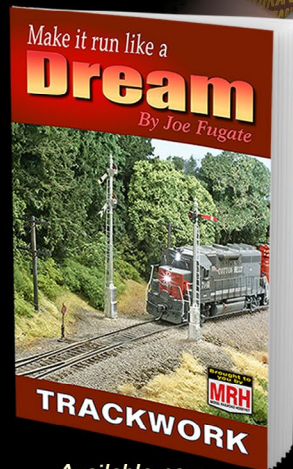


6. Engineer side, with the “Top Hat” AC and standard nose shape.

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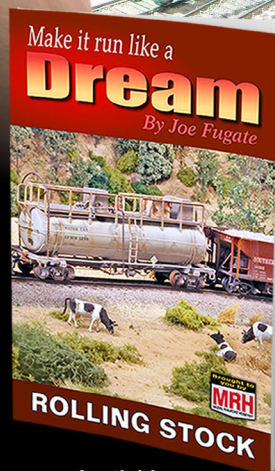
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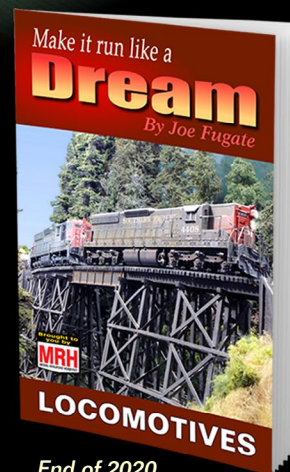
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Model Railroad Hobbyist | June 2020



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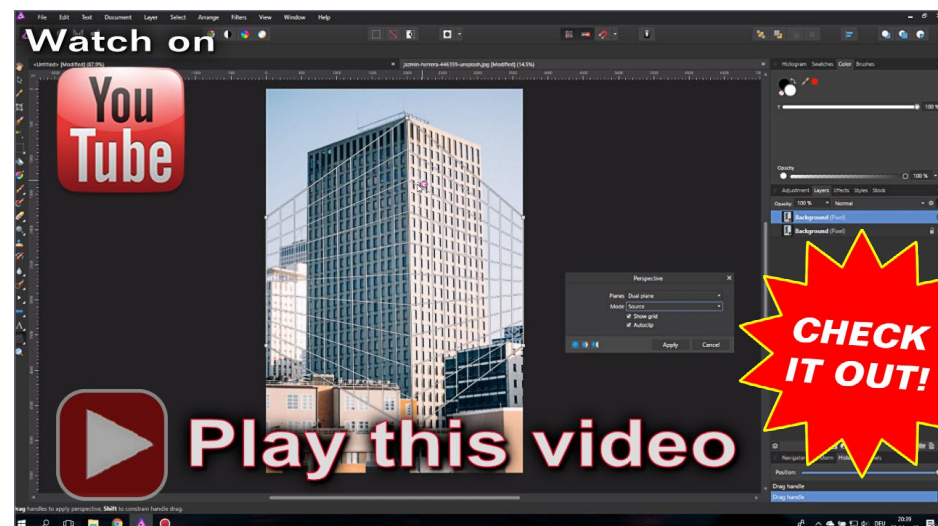


Photo editing for modelers ([Affinity Photo](#))

This is not a model railroading video per se, but it's about some cool features in a very powerful and affordable photo editing program: *Affinity Photo*. Right now it's on special for just \$25, and wow!

If you have ever wanted to make your own photo backdrop or if you've wanted to take some building photos and make flat photo-realistic walls for a model, here is your tool! ■



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JUNE NEWS

column



Model Railroad Hobbyist | June 2020

RICHARD BALE and
JEFF SHULTZ report the
latest hobby industry news

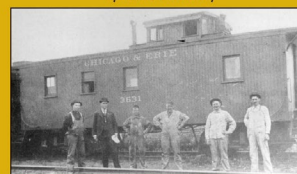
★★★★★
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NEW PRODUCTS FOR ALL SCALES

ERIE LACKAWANNA
THE WEST END
VOLUME TWO



The Chicago & Erie
1895 to 1917
By Donald E. Hanley

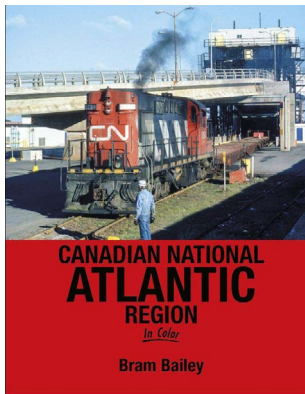
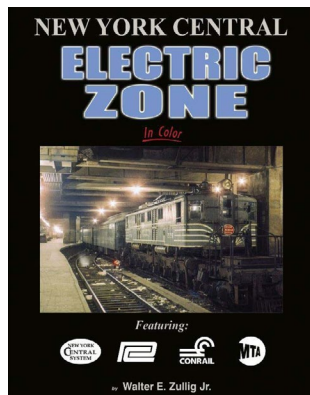


Don Hanley has released *Erie Lackawanna – The West End Volume Two*. Covering the history of the Erie/ Erie Lackawanna's line between Marion, Ohio and Chicago, Illinois between 1895 and 1917, the book includes information on the conversion from single-track into a double-track mainline, the entry of the Erie Railroad into Chicago over the Chicago & Western Indiana Railroad, the elevation of the C&WIRR tracks, and the

store of the Erie's Lake Line operations on the Great Lakes. With over 450 pages, the book also includes over 225 historic photos, illustrations, maps, and drawings. For more information visit dehanley.com.

► THE LATEST MODEL RAILROAD PRODUCTS, NEWS & EVENTS

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New books from **Morning Sun** include *New York City Electric Zone* by Walter E. Zullig, Jr. A 1903 law prohibiting the use of steam locomotives in Manhattan became the catalyst

that started the predecessor companies of the New York Central and New York, New Haven & Hartford Railroads on the path to electrification. Starting with that era, *Electric Zone* documents the story of the massive electrification projects of both railroads with special emphasis on the new Grand Central Terminal that opened in 1913 and continues to serve the public today.

Also new is Bram Bailey's *Canadian National Atlantic Region*, which features photos of operations in the provinces of New Brunswick, Prince Edward Island, and Nova Scotia from the late 1970s to the mid-1990s. For additional information contact a dealer or visit morningsunbooks.com.



O SCALE PRODUCT NEWS

3rd Rail/Sunset Models has announced that reservations are being taken for the GE E60 family of electric

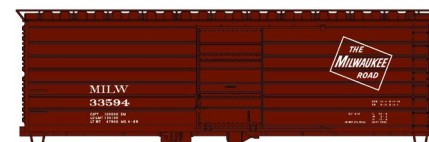
locomotives in O scale. A family of six-axle, 6,000 hp. electric locomotives, they were built between 1972 and 1983. Amtrak E60CH (HEP), E60CP (steam generators), and E60MA (modernized), as well as NJT versions are available for reservation. The models will feature ABS bodies with brass details and pantographs, ball bearing trucks, an illuminated cab interior, and TMCC (3 rail) or ESU LokSound DCC with sound (2 rail). For more information visit your dealer or 3rdrail.com.



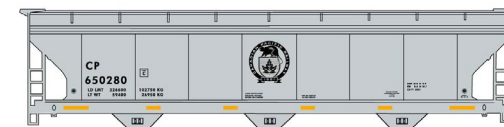
Lambert Locomotive Works has acquired the production rights to Tom Yorke's Junkyard Dog. Based on a diminutive Porter locomotive, the resin kit is designed to convert a Bachmann On30 trolley to a diesel switch engine. A release date is pending. For additional

information visit lambertlocomotiveworks.com.

HO SCALE PRODUCT NEWS

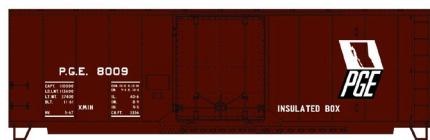


New HO scale freight car kits released by **Accurail** include this 40' Milwaukee Road rib-side boxcar. The model represents a car built in 1940 and redecorated with the small 1968-1974 era MILW mark.



Accurail has released a special 3-pack of ACF triple-bay covered hopper cars decorated for Canadian Pacific.

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Accurail's HO scale kit for this 40' Pacific Great Eastern insulated steel boxcar with plug doors is based on a prototype

built in November 1961.



This 50' Grand Trunk Western riveted steel boxcar was built in October 1953 and rebuilt

14 years later. It is not known if the Superior doors were original equipment or acquired during the 1967 rebuild.



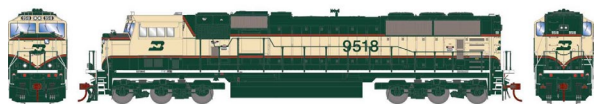
Accurail's HO scale kit for this Canadian National 70-ton triple-bay hopper car with offset sides represents a proto-

type built in March 1959.



Accurail's latest kit for a 36' Fowler wood boxcar is decorated for New Haven Railroad. The HO scale model represents a proto-

type built in 1928 with a horizontal brake wheel mounted on a vertical rod. All Accurail HO scale kits include Accumate knuckle couplers and appropriate trucks with plastic wheelsets. For additional information contact a dealer or visit accurail.com.



with a new run of Genesis SD70MAC diesel locomotives. Road names for the HO scale model will include BN's new green and cream executive scheme.

Athearn's production schedule for April 2021 leads off

JUNE NEWS HO SCALE | 5



Also in green and cream is BNSF locomotive No. 9647 that briefly wore a test

scheme that earned the nick name Vomit Bonnet. No. 9647 was later repainted in the familiar orange, yellow and black swoosh scheme, which is also in this release.



Additional road names include PRLX-Progress Rail Leasing, and four Alaska units with the name of a different Alaskan city displayed on each cab.



Completing this run of Athearn Genesis SD70MAC are diesels decorated for CSX, and TFM-Transportación



Ferroviaria Mexicana.



Athearn's April 2021 schedule includes a new run of Genesis GP7 road switchers.

Road names include both B&O and C&O Chessie System units.



Additional road names include Illinois Terminal, Western Pacific, and Sacramento Northern in WP paint.

JUNE NEWS HO SCALE | 6



parent NYC's Lightning Stripes scheme.



rated in Santa Fe's Zebra Stripe scheme.



Athearn HO scale Genesis series locomotives feature an onboard DCC decoder with SoundTraxx Tsunami2 sound.



Athearn's April 2021 production schedule includes a 60'

Gunderson 100-ton high-cube boxcar. The ready-to-roll model features wire grab irons, etched end platforms, and roller-bearing trucks with 36" metal wheels.



In addition to the TTX Railbox scheme shown, road names will include Canadian Pacific, General

American Marks, Mississippi & Tennessee, and two Arkansas Oklahoma schemes. Athearn's model accurately depicts a Gunderson-built boxcar, however some of the paint schemes offered appeared on a similar Trenton/Greenbrier-built prototype.



A 57' Trinity 3-unit spine car is included in Athearn's April 2021 schedule. The low-slung model features heavy diecast construction, etched-metal walkways, and 33" metal wheels. A minimum

A New York Central GP7 will be available along with a Peoria & Eastern unit wearing

Single GP7A units and GP7A/B sets will be available deco-

JUNE NEWS HO SCALE | 7

track radius of 20" is required for reliable operation. Road names include BNSF and three variations of TTX.



Additional intermodal equipment coming from Athearn next April includes

a 53' Wabash Plate trailer. Carrier names will be JB Hunt, Central Transport, ACE, Werner, and Schneider. Non-lettered owner-operator trailers will be available in white, orange, and pale blue.



A spotting feature of the 1990s-era piggyback trailer is the uneven spacing of the

exterior ribs. Wabash subsequently favored the DuraPlate construction over the Plate trailer, but both types are still seen in use today.



53' JINDO Containers will also be coming from

Athearn next spring. Carrier names will include UPS, Swift, Canadian Pacific, Estes, Ferromex, Florida East Coast, Pacer Stacktrain, Werner, and two Canadian National schemes.



Features include separately applied Patch-type door

closure rods. They will be available in 3-packs with each container individually numbered.



New **Roundhouse** brand products coming from Athearn

next April include EMD GP59/GP60 diesel road switchers. In addition to an EMD Demonstrator, road names for the HO scale model will include Norfolk Southern (Operation Lifesaver), NS

Southern Heritage, Denver & Rio Grande Western, CSX, Vermont Railway, BNSF, and Southern Pacific.



Standard DC models will be DCC-ready with a 21-pin NEM plug. Factory

equipped DCC locomotives will have a non-sound NCE decoder. For additional information on Athearn and Roundhouse products contact a dealer or visit athearn.com.

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Atlas has released a 64-page on-line consumer catalog of HO, N, and O scale products. It can be accessed at download.atlasrr.com/SpringInStockVoll.pdf?mc_cid=a3c8ab63a2&mc_eid=6bff0ec9ce.

.....



R. Bale

PRR P5 ELECTRIC LOCOMOTIVES

The Pennsylvania Railroad class P5 electrics comprised 92 locomotives constructed in the early 1930s for high-speed passenger service along PRR's Northeast Corridor. The success of two initial locomotives resulted in orders for 90 class P5a electrics with production split between General Electric and Westinghouse. The GE examples were assembled at Erie, Pennsylvania. Final assembly for the Westinghouse order was subcontracted to the Baldwin Locomotive Works. The P5a designation reflects a modification to the original cab design after a fatal grade crossing accident. In daily high-speed service P5 locomotives suffered from reliability issues centered on high torque from the dual traction motors causing heavy damage to the axles. Development of PRR's highly-successful GG1 electric locomotives in the mid-1930s bumped the P5s to slower freight service.



Broadway-Limited has released five versions of Pennsylvania Railroad's P5a electric locomotive.



In addition to PRR passenger and freight variations, the HO scale locomotive is available in fantasy schemes for three

railroads that operated main lines under wire: New York Central, Great Northern, and Milwaukee Road.



The well-detailed model features Paragon3 Sound & Operation System with Rolling Thunder in both DC and DCC environments. For additional information contact a dealer or visit broadway-limited.com.



Classic Metal Works is releasing several new 1:87 scale vehicles this month including 1941-46 Chevrolet flatbed trucks decorated for REA. Printed signs are included with the model.



Box delivery versions of the 1941-46 Chevy truck will be available decorated for Coca-Cola and REA.



A 1957 Chevy tractor and tank trailer will be available for ESSO, Phillips 66, and Millstone Fire Dept.



A White model WC22 tractor with a bottled drink trailer will be decorated for Peoples Beer and two Coca-Cola schemes.



Completing Classic Metals June release of new 1:87 scale vehicles is a 1960 Ford pickup and trailer. The vacation trailer with tandem wheels will be

available in green and red. For additional information contact a dealer or visit walthers.com.



InterMountain Railway has released its HO scale 10'6" Modified 40' 1937 AAR steel boxcar in 16 paint schemes. Road names include Erie

Lackawanna, Rock Island, New York Central, Fort Worth & Denver, Missouri Pacific, Southern Railway, Union Pacific, Chicago & North Western, Missouri-Illinois, Erie, and SOO Line.



Additional roads include Duluth, South Shore & Atlantic, Gulf, Mobile & Ohio; Toledo, Peoria & Western; and two Canadian Pacific schemes.



The models come with Bettendorf-type trucks with machined metal wheelsets.



RATE THIS ARTICLE



R. Bale

PFE REEFERS

Pacific Fruit Express was a joint 1906 venture of the Southern Pacific and Union Pacific Railroads. PFE developed a fleet of thousands of refrigerator cars carrying agricultural products in interchange service throughout the nation. In the 1930s and '40s thousands of the older wood cars were refurbished incorporating new improvements including retrofit electric fans, convertible ice bunkers, AB brakes, steel roofs, and convertible interior bulkheads. Many of these rebuilt cars continued in service into the 1960's.

Also new from InterMountain are PFE ice refrigerator cars in seven decorating schemes. The HO scale models represent cars with steel underframes and wood bodies built in the 1920s. Unless otherwise noted, the PFE cars all have orange sides, brown roof and ends, and black ladders, door hardware, and underframes. All of the HO scale ready-to-run models come with machined metal wheels in Bettendorf-type solid-bearing trucks.



This PFE R-30-18 (IMRC #47402) represents five cars produced in 1923 that were rebuilt in Roseville, CA in July

1941. The decorating scheme includes two unique brown stripes on the car sides. The SP herald is on one side and a three color UP Overland herald is on the opposite side.



The decorating scheme on this PFE R-30-18 (IMRC #47401) has an SP herald is on one side and a three color UP Overland

herald is on the opposite side. The model is based on a prototype built in 1923 and rebuilt in 1942.



This double herald R-30-18 displays both SP and UP heralds on each side. InterMountain's version of this PFE reefer represents a car built in 1922 and rebuilt in August 1943.



When rebuilt in 1944, the ladder and hardware on this 21-year old R-30-18 PFE reefer (IMRC #47404) were painted orange. Note the black and white UP herald.



The black circle above the left truck represents the grille of a Preco fan this PFE R-30-21 reefer (IMRC #47416) received during its 1946 rebuild. The car also received dual heralds with the UP version in full color. A similar group of post-war rebuilds (IMRC #47415) got single SP and UP heralds on opposite sides.

Fundamentally, this series of InterMountain reefers are accurate models of the PFE prototype. Reports of minor assembly errors, including incorrect positioning of underframe appliances, can be readily corrected by competent modelers. For additional information contact a dealer or visit intermountain-railway.com.

KatoUSA has released HO scale models of the Gunderson MAXI-IV 3-unit articulated double-stack well-cars. Each car accommodates containers from 20' to 53' long in the well, and containers 40' to 57' long in the top, or double-stacked position. The models are



composed of a metal injection-molded frame that provides stable operation with or without container loads.



Like the prototype, Kato's HO scale model has 33" wheels in the end trucks and 38" wheels in the middle trucks.



Road names include TTX (both old and new logos), BNSF (Swoosh), and Pacer Stacktrain. Kato containers (sold separately) have a magnet and a metal plate

to hold it securely to the well car bottom or to the top of the lower Kato container. For additional information contact a dealer or visit katousa.com.



Maple Leaf Trains is selling accurately dimensioned HO scale pallets. The 48" x 48" pallets are laser-cut from thin plywood. They are sold in 12-packs.



Also new from Maple Leaf are two sizes of laser-cut wood crates. They can be assembled with the top either closed or open. Available

sizes are 48" x 48" x 42", and 27" x 27" x 31". They are sold as a set that includes five large and 10 small crates.

Other products newly released by Maple Leaf Trains include 2x4x8 lumber stacks, brick wall sheets, and office desks with drawers. For additional information visit mapleleaftrains.com.



R. Bale

STEAM HEATER CARS

Auxiliary cars with steam generating units were introduced in the diesel era to provide steam heat to passenger trains. When passenger trains were hauled by steam locomotives, there was always a reliable source of steam, but unless a diesel locomotive was specially equipped with a boiler and water tank, heat could not be provided. Heater Cars were often rebuilt from boxcars, B-units, and old steam locomotive tenders, so they varied in shape and size from railroad to railroad. In Canada, purpose-built steam generator cars were built by Canadian Car & Foundry, General Motors Diesel Division, and National Steel Car. Steam generator cars created their own unique sound that was often louder than the diesel locomotive pulling them.



Rapido is booking reservations for another production run of steam heater cars. Rapido's HO scale model is accurately scaled from a General Motors Diesel

Division prototype. A unique feature is a factory installed speaker and sound decoder that works in both DC and DCC environments. The model has working backup lights controlled by a magnetic wand.



Two different decorating schemes are available for Canadian

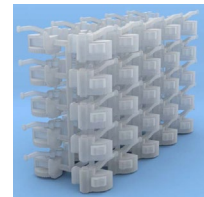
National, Milwaukee Road, Ontario Northland, and VIA Rail Canada. Additional road names include Santa Fe, Amtrak Phase II, Algoma Central, Canadian Pacific, Denver & Rio Grande Western, Great Northern, New York Central, Northern Pacific, Pennsylvania Railroad, and Union Pacific. An undecorated version will also be available.

For additional information contact a dealer or visit rapido-trains.com.



Resin Car Works has added new 3D-printed HO scale detail items to its product line. They include a well-

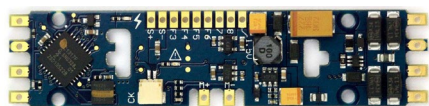
detailed group of six transformers suitable for flat car or gondola loads. Insulators, blocking and tie-down details are supplied by the modeler.



New freight car details include Klasing ratchet handbrake suitable for drop-end gondolas, and Preco fan plates.



For additional information, including a Shapeways purchase link, visit resincarworks.com.



SoundTraxx has released the TSU-PNP8, an 8-function PNP decoder board. Equipped with 2 more light functions than the

standard TSU-PNP board, this decoder replaces the mother-board or decoders found in many HO scale diesel locomotives. The TSU-PNP8, currently only available through dealers, comes in five different versions: EMD, EMD-2, GE, Alco, and Baldwin and others. For more information see your dealer or visit soundtraxx.com.



Tangent Scale Models has announced five new decorating schemes for its well-regarded PS-2CD 4750 covered hopper.

The HO scale models in this run are based on cars Pullman-Standard produced from 1972 to 1974. Spotting features of cars built during this period are the solid side posts.

Details on the PTLX-Farmers Grain Dealers Association of Iowa car shown above include a bare galvanized Morton running board, and truck mounted brakes.



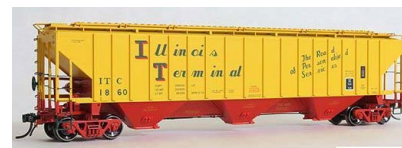
This PTLX- United Co-Op has a Morton running board, early Miner outlet gates, truck mounted brakes, and a distinctive

yellow brake wheel.



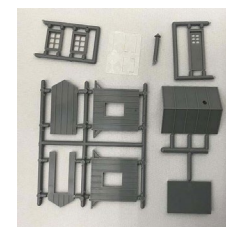
This plain-Jane car from the NAHX - North American Car lease fleet has an Apex running board, body mounted brake hardware and brake beams, and Brenco rotating caps on the Barber S-2

100-ton trucks. A similar gray NAHX Benson-Quinn car is included in this release.



A bright yellow and red Illinois Terminal scheme completes Tangent's latest release of PS-2CD covered hoppers. The attractive

paint scheme includes green grab irons and matching red truck side frames and rotating Timken bearing caps. For additional information visit tangentscalemodels.com.



Tichy Train Group has released a new HO scale kit for a Watchman's Shanty. The model is based on plans used by the Pennsylvania Railroad, however, the generic design

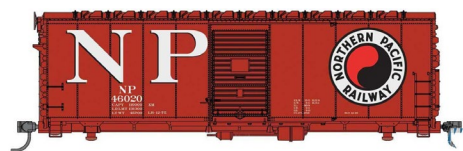
would be suitable on most layouts. For more information visit tichytraingroup.com.



R. Bale

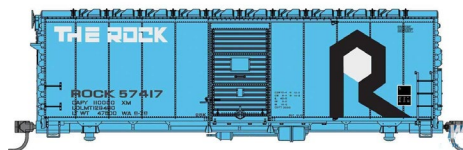
MODERNIZED 1948 AAR BOXCARS

Thousands of 40' boxcars built to AAR - Association of American Railroad standards after WWII were still in useful condition when new safety standards were adopted in the mid-1960s. Many railroads elected to bring the cars into compliance through relatively inexpensive modifications. The changes included eliminating running boards and installing short ladders on the A end, while retaining the longer ladder, high brake wheel, and a single roof-mounted grab iron on the B end.



Walthers has made another release of its HO scale 40' AAR modernized 1948 boxcars. The ready-to-run Mainline series

models feature Improved Dreadnaught 4-4 ends, a diagonal panel roof, 6' Youngstown sliding doors, riveted sides, an Ajax hand brake wheel, and Bettendorf solid-bearing trucks with 33" machined metal wheelsets.



The models are based on prototype cars that were modified to comply with post-1960 AAR standards including no running

board, a tall ladder at the B or brake wheel end, and a short ladder at the A end. Road names are Northern Pacific, Rock Island, Chicago & North Western, Erie Lackawanna, Illinois Central, Canadian Pacific, and NdeM - National Railways of Mexico.



New Walthers products scheduled for release next month include a group of rebuilt Thrall 40' well-cars. Road names will be BNSF, TTX-DTTX, and Santa Fe Leasing.

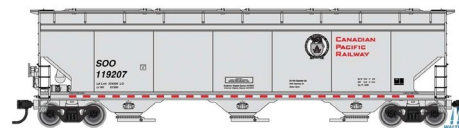


The HO scale models will be available singly and in 5-car sets.



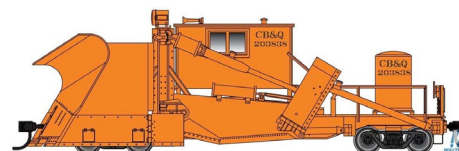
In addition to BNSF, in September Walthers plans to release this 60' NSC 5150 cu. ft. triple-bay covered hopper

decorated for Archer-Daniels-Midland, Illinois Cereal Mills, Santa Fe, Chicago Freight Car Leasing Corporation, Canadian Pacific/Soo Line, and Union Pacific.



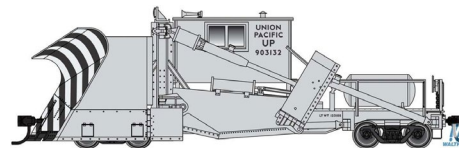
Features of the HO scale Mainline series model include raised body panels with welded seams, a thin-profile roofwalk,

trough-style roof hatches with handles, and 100-ton roller-bearing trucks with 36" machined metal wheelsets.



Walthers has posted an October 2020 date for the release of a Jordan Spreader. The HO scale Proto series model is based on Jordan's 2-200 Spreader-

Ditcher-Snowplow, a popular model that is used by numerous railroads. The wings and moldboards on the ready-to-run model will be positionable.



Additional details include factory-installed grab irons, full underbody detail including brake gear and piping, thin-

profile stirrup steps, window glazing, and a single-chime air horn. Road specific details include a horizontal or vertically mounted air reservoir, one of three headlight styles, and 70-ton roller-bearing or Bettendorf solid-bearing trucks with 33" metal wheelsets.

In addition to a generic Maintenance of Way version, road names for the Jordan Spreader will be Canadian National, Canadian Pacific,

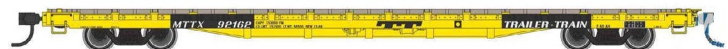
Green Bay & Western, Union Pacific, Chicago, Burlington & Quincy; Delaware & Hudson, and Chicago & North Western/Union Pacific. An undecorated kit will be available as well as unlettered RTR cars in silver or yellow.



Walthers has announced plans to rerun its HO scale 85' General American G85 flat car, with delivery planned for this November. The Mainline series model will have GATC hitches in both up and down position, or container pedestals as appropriate to the practice of the prototype road name, which will include Santa Fe, New Haven, Northern Pacific, Soo Line, TTX, VTTX and two GTTX schemes.



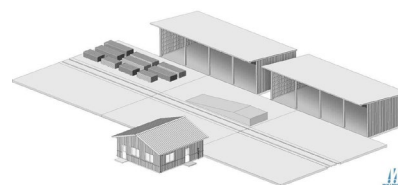
For reliable operation a minimum track radius of 24" is recommended.



A shorter flat car will also be available in November in the form of a 60' Pullman-Standard heavy-duty flat. The HO scale model will be available decorated for VTTX, Trailer-Train HTTX, Trailer-Train MTTX, and two Trailer-train OTTX schemes.



New Walthers Cornerstone structure kits available now include this Modern Section House. Details of the HO scale kit include electric and gas meters, inlet and outlet furnace pipes, shutters for the front windows, and two non-working porch lights. The assembled structure has a foot print of 6.9 x 3.3".



Also just released is a Walthers Cornerstone kit for a Modern Lumber Transload facility. Components in this trackside model include an office, two covered storage sheds with interior lumber racks,

side loading ramp, parts for 10 lumber stacks and concrete paving for the yard area. For additional information contact a dealer or visit walthers.com.

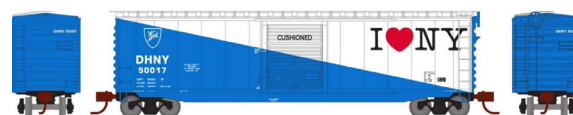
N SCALE PRODUCT NEWS



Athearn's April 2021 production schedule includes a group of N scale 53' JINDO containers.



In addition to the Canadian Pacific scheme shown, carrier names will include UPS, Estes, Ferromex, Florida East Coast, Pacer Stacktrain, Werner, Swift, and two Canadian National schemes. The containers will be offered in 3-packs with each container individually numbered.



An N scale 50' PS-1 boxcar with Youngstown sliding doors will also be in Athearn's April 2021 release. Road names will be Delaware & Hudson, Denver & Rio Grande Western, Boston & Maine, Tidewater Southern, Central of Georgia, and Gulf, Mobile & Ohio. Road specific details include roller-bearing or Bettendorf solid-bearing trucks with machined metal wheels and see-through

metal running boards. For additional information contact a dealer or visit athearn.com.



New 1:160 scale vehicles coming this month from **Classic Metal Works** include a 1957 Chevy tractor and tank trailer decorated for Phillips 66, Esso, and Millstone Township Fire Dept.



1974 Buick Estate Wagons will be available in green, gold, and Burgundy.



A White model WC22 tractor with a flatbed trailer fitted for bottled drinks will be available decorated for Peoples Beer and Coca-Cola.

For more information contact a dealer or visit walthers.com.



InterMountain Railway has released its N scale 10'6" 40' Modified 1937 AAR boxcars decorated in seven Santa Fe map schemes.



Paint schemes include Texas Chief, Scout, Grand Canyon, El Capitan, Chief, Super Chief, and San Francisco Chief. The models are equipped with

Bettendorf-type trucks with metal wheel sets. For additional information contact a dealer or visit intermountain-railway.com.



KatoUSA has announced plans to deliver a complete 13-car version of the

New York Central 20th Century Limited. Availability will begin in October 2020 with the release of a nine-car set consisting of a baggage/RPO, three 4-4-2 Pullman sleepers, a club-lounge car, a kitchen-dormitory car, a dining car, a Pullman 12 bedroom sleeper, and a 5-bedroom lounge observation car.



An add-on set of four-cars including two 12 bedroom and two 10-6 Pullman sleepers will also be available in October.



Both sets of cars will be available in November with factory installed

interior lighting.



EMD E7A diesel units decorated in New York Central's two-toned gray scheme will be available with factory installed Digitrax DCC or ESU

LokSound. For additional information contact a dealer or visit katousa.com.



New N scale models from **Micro-Trains** include this 40' refrigerator car. The model is based on a reefer AC&F built in 1911 with a wood body on

a steel underframe. The class RS reefer was owned by American Refrigerator Transit and leased to Walker's Austex Chili Company, of Austin, Texas.



This N scale Santa Fe 50' insulated class Bx-137 boxcar, available now from Micro-Trains, represents a group of cars built by AT&S&F in late 1969. Features

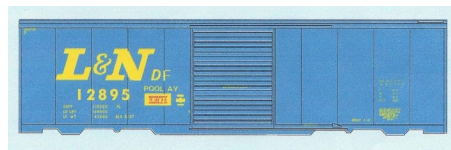
include exterior ribs, a Stanray X-panel roof, non-terminating box corrugated ends, and Youngstown plug doors.



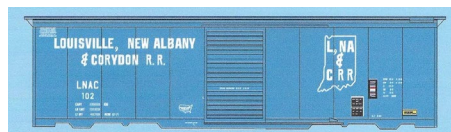
This 40' standard box car with double Youngstown sliding doors represents a standard boxcar produced by Canadian Car & Foundry. Canadian Pacific Railway rebuilt the car in

1975 in its Weston Shops. For additional information contact a Micro-Trains dealer.

NEW DECALS, SIGNS AND FINISHING PRODUCTS



New HO scale water-slide decals from **Mask Island** include 40' L&N appliance car pool boxcars, and Louisville, New Albany & Corydon Railroad 40' boxcars.



Also new are decals for a 50' Southern boxcar with a Super Cushion Service slogan, and two variations of a 60' Chicago & Eastern Illinois auto parts boxcar.



Additional new decals from Mask Island include a GACX Rock Island Airslide covered hopper, and Penn Central 50' X43B and X72A boxcars.



For additional information contact a dealer or visit maskislanddecals.com.



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! BRIEFLY NOTED AT PRESS TIME ...

Mask Island Decals has released new HO scale lettering sets for Penn Central and Norfolk Southern wood chip cars, a 50' DT&I boxcar, and a 40' Southern Pacific boxcar. Info at maskislanddecals.com ...

ScaleTrains.com has committed to a 2nd production run of its 42' Thrall-Trinity coil steel car. Delivery of the HO scale Rivet Counter model is planned for Winter 2020 with preorders due by June 22. Info at scaletrains.com ...

Sylvan Scale Models is booking reservations for a limited run of resin craftsman kits for a CPR 8-hatch tank hopper car. The HO scale kit will include etched metal end cages, and both a resin and optional etched stainless steel roofwalk. Send an email to Marc Simpson at mesagkits@gmail.com for details ...

Nick & Nora Designs has introduced new products in their line of O scale Peel & Stick Shingles. New designs include diamond pattern shingles, scalloped shingles, and half-cove shingles. Each style is available in five colors. For more information visit nickandnoradesigns.com.

The **Chesapeake & Ohio Historical Society** is now offering a limited-edition post-war George Washington 7-car set in N scale. A booklet on the train by the C&O Historical Society is included. The set does not include a locomotive. For more information visit the C&O Historical Society website at chessieshop.com.



SELECTED EVENTS



Model Railroad Hobbyist | June 2020

JUNE 2020

Due to the uncertainty surrounding the COVID-19 pandemic and its associated lockdowns, Selected Events will not be published this month. Please check back next month for future events. ■

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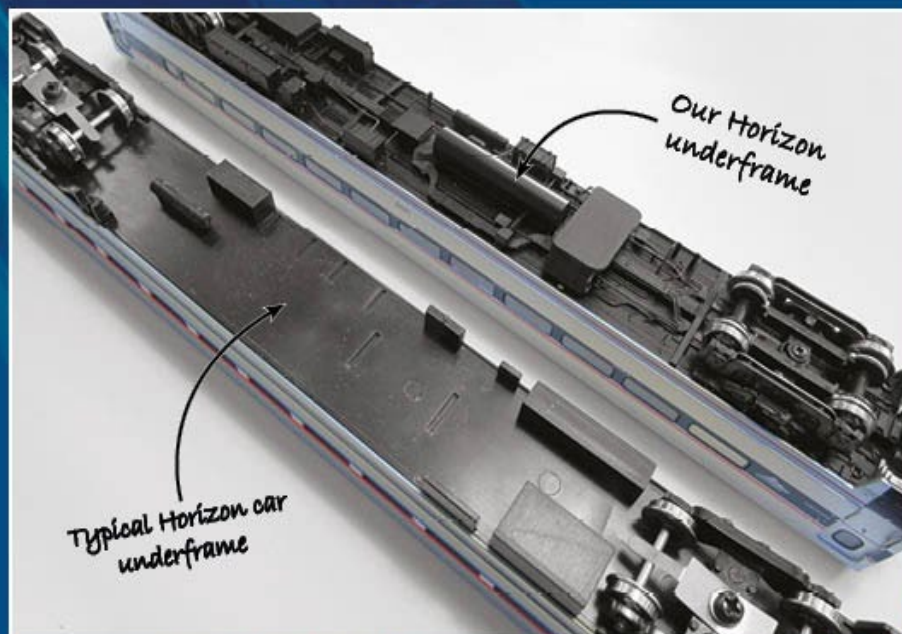
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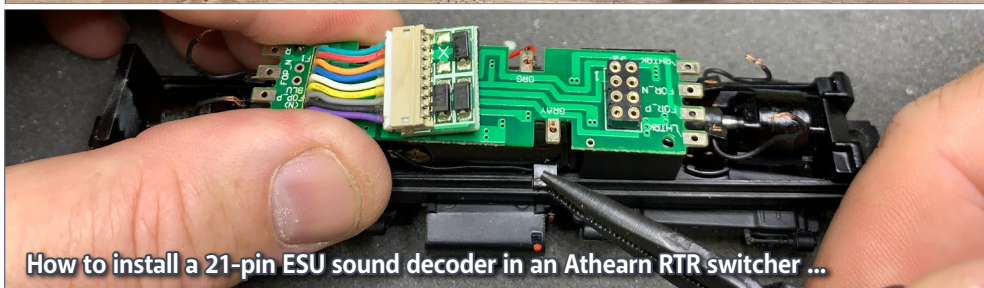
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