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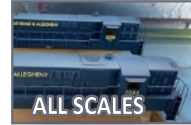
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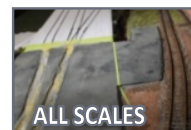
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PUBLISHER'S WELCOME

introduction



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JOE FUGATE DRILL BETTER LARGE HOLES WITH FORSTNER BITS ...

IF YOU NEED TO CUT SMOOTH AND PRECISE LARGE HOLES, what you need is a Forstner bit rather than a spade bit [1].

For cutting large holes, you can also use a hole cutting saw, but those won't let you cut flat-bottomed holes like a spade bit or a Forstner bit.

You can also cut through holes with a spade and Forstner bit, but you do need to use a backing board to minimize splintering when the drill exits the material.

Spade bits will cut holes in softwood like pine or fir, but they're practically useless on hardwood like maple or oak. This is where Forstner bits shine: they work equally well with softwoods *and* hardwoods.

However, because of the extra cutting teeth on a Forstner bit, you need to take it slow, using a drill-and-back-off, drill-and-back-off approach.

You can find budget Forstner bits with only one set of cutting teeth on the outer rim – those will do just slightly better than spade bits. I list a nice budget Forstner bit set in the shopping list link for about \$30.

For the highest quality precision large holes, get a quality Forstner bit set with teeth around 2/3rds of the rim [2]. I list a



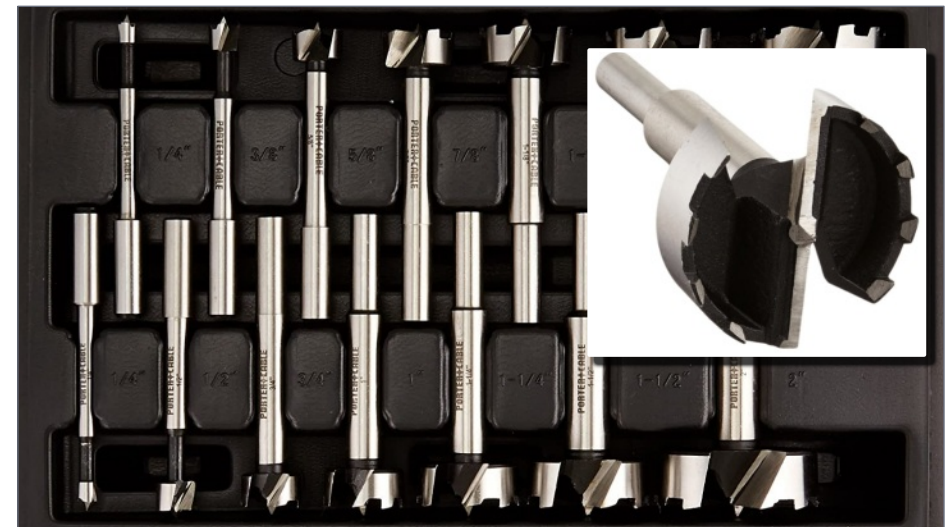
PUBLISHER'S WELCOME | 2

nice set in the shopping list link below for \$70.

Make sure to take it slow when drilling with Forstner bits. The reward will be craftsman-level holes in your benchwork or other layout projects where you need clean, precise large holes. ☑

To get a shopping list for this article, visit the *MRH* website at this link: mrhmag.com/magazine/running-extra/2022-03/publishers-welcome-shopping

1. On the left, a budget Forsner bit, and on the right, a standard spade bit. The budget Forstner bit only has one set of cutting teeth on the outer rim, yielding a slightly smoother hole than the spade bit. If you want very smooth precision large holes, then invest in a quality Forstner bit with teeth covering at least 2/3rds of the bit outer rim.



2. This quality Forstner bit set (1/4" to 2") has cutting teeth covering 2/3rds of the outer rim (see inset image), giving a precise, smooth cut.

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THE LIMITED MODELER

column

Images are from the author's collection, except as noted.

MRH Running Extra | March 2022



JIM SIX ON THE RICH MODELING
OPPORTUNITIES OF THE ONE TOWN
LAYOUT ...



BUILDING A ONE-TOWN LAYOUT DOES NOT MEAN IT IS the only town on your railroad. While my new layout models Monroeville, Ohio during the early 1900s, this does not mean I can ignore the surrounding towns – especially those east and west of Monroeville along the Lake Shore & Michigan Southern. I need to know where trains passing through Monroeville come from and to where they are going if my operations are to be realistic.

As a prototype modeler, knowing your railroad and the nearby communities it serves is crucial for realistic operation. If the only thing you know about your railroad is the layout in front of you, then passing trains will be meaningless.

When should they arrive? Where did they come from? Where are they going? Will they make setouts or pickups here? These are all things you should know as operator of other trains – particularly the local freight.

I see Monroeville as just one of several station-stops along the railroad. To the immediate east are Norwalk, Wakeman,



DOING MORE WITH LESS

THE LIMITED MODELER | 2

and other towns. To the west were Bellevue, Clyde, and still more towns.

Knowing these towns, their sequence along the line, and what was in those towns will make more realistic and meaningful layout operation. As conductor of the local freight I am operating, if the station agent tells me a train just left Norwalk westbound, I know that within the next 15 or 20 minutes it will be entering Monroeville and I had better be ready to meet it. This knowledge and resulting feelings make operation so much more interesting and fun.

While I have long known about the line I am modeling, it was just small part of the New York Central to me. I knew of Elyria, Norwalk and faintly remembered hearing of Fremont, but I knew nothing much about them. I certainly did not know of the other towns along this old railroad line. Worse yet, I knew



1. This map shows the central area of the Lake Shore & Michigan Southern Railway. Note there are two routes between Cleveland and Toledo. The lower route was part of the original mainline between New York City and Chicago. The upper route was not opened until 1892 and by about 1900 became the primary route for mainline through trains, relegating the lower route to secondary status. The red arrow points out the location of Monroeville.



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little of the history of the line. So, what brought me to choose Monroeville for my one-town layout?

Since I grew up in north-central Ohio and lived there much of my life, I put the area on my brief list of places to investigate for a location of my new layout. The New York Central Railroad was my first and longest-lasting railroad love. My first train set was a Lionel New York Central F3 set way back in the early 1950s, and so began my research of the New York Central in north central Ohio.

When I began considering the so-called Norwalk Branch for my final layout, I took a good look at every town along the line the railroad served in the early 1900s. I also learned the line was not really the New York Central Railroad until 1914. Before that it had been the Lake Shore & Michigan Southern Railway. I refer to my layout as the Lake Shore & Michigan Southern, a component railroad of the New York Central Lines.

As for the rail-served towns, beginning with Elyria where the line parted with the new “airline,” we have Oberlin, Kipton, Wakeman, Norwalk, Monroeville, Bellevue, Clyde, Fremont, Lindsey, Elmore, and Genoa. The line rejoined the airline at Millbury, which was simply a junction point.

All these communities offered switching, some more than others. Fremont, Bellevue, and Norwalk were too extensive to fit into my train room, and I quickly ruled them out.

I became attracted to Clyde and Monroeville as they appeared to be modellable and would fit into my new train room. I also considered Lindsey and Wakeman, but they were a little shy on switching. In the end I narrowed my selection to Clyde or Monroeville, finally settling on Monroeville because it had just the right amount of local business for my 22 x 5 train room.

Once the drawings of my new downstairs were finalized, I realized Clyde would need to be compressed more than I would like. I do not care for layouts with too much compression. So, my attention then turned to Monroeville.

What follows is a west-to-east tour of the Lake Shore & Michigan Southern mainline between Millbury (Toledo) and Elyria – a few miles west of Cleveland. This route in the New York Central years (sometime after 1914 when the NYC was created) became the Norwalk Branch of the NYC. This route is where Monroeville is located. See map [1].

MILLBURY JUNCTION, OHIO

Millbury Junction is where the new mainline through Sandusky broke away from the original Lake Shore & Michigan Southern mainline, which remained in service until Conrail abandoned it in 1976. The tower controlled the junction [1].



2. A C-liner and earlier Erie-Built team up with a Hudson on Mail Train 37 in September 1955 at Millbury Junction, Ohio. While this photo does little for me and my early-1900s-set layout, this is great inspiration for those interested in the transition era of American railroading.

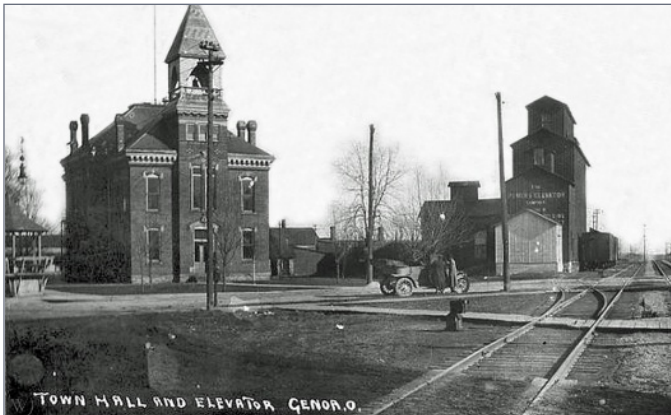


There was a depot and freight house in Millbury, but I have failed to find photos of them or any rail-served customers in this small community.



3. This is the same train in [2], only it is going away. You get a better look at the C-Liner and Erie-Built diesels leading Hudson 5273.

GENOA, OHIO



4. This circa-1918 photo shows the LS&MS line looking east. The only business the railroad served was the Powers Elevator Company. The LS&MS depot and freight house was behind the photographer.



5. This is a closeup of the elevator pictured in [4]. There is a small coal or lumber yard on the far side of the elevator. Most elevators at the time also sold coal and lumber along with other supplies. What is the color of the elevator – barn red? Looks like a police officer talking with the motorist at the lower left. The town hall is right across the street! See [4].





6. This is the Genoa, Ohio depot and freight house. We are looking west along the LS&MS mainline. The track at the lower-left is the main track. With sidings,

the railroad is four tracks wide here. This photo is circa-1910 or earlier.

ELMORE, OHIO



7. Here is the Elmore depot in 2009, restored and serving as home to the local railroad club. It is classic Lake Shore & Michigan Southern architecture. Compare with the Genoa depot in [6].

LINDSEY, OHIO



8. An LS&MS train rolls through Lindsey, Ohio out of the west in this circa-1910 photo.



9. This circa-1910 photo taken at Lindsey, Ohio shows the LS&MS served two elevators here. There is a large pile of lumber at the elevator in the center of the photo. The depot and both elevators were board-and-batten construction. The approaching train out of the west is a nice touch.



10. Lindsey, Ohio circa 1918, The depot is typical LS&MS architecture. In addition to lumber, the elevator sells coal, salt, and flour as well. The LS&MS

main track is at the left with a long passing siding and a spur for the elevator. I found no other photos of Lindsey to suggest there were other industries. The elevator was a dark color — barn red, maybe?

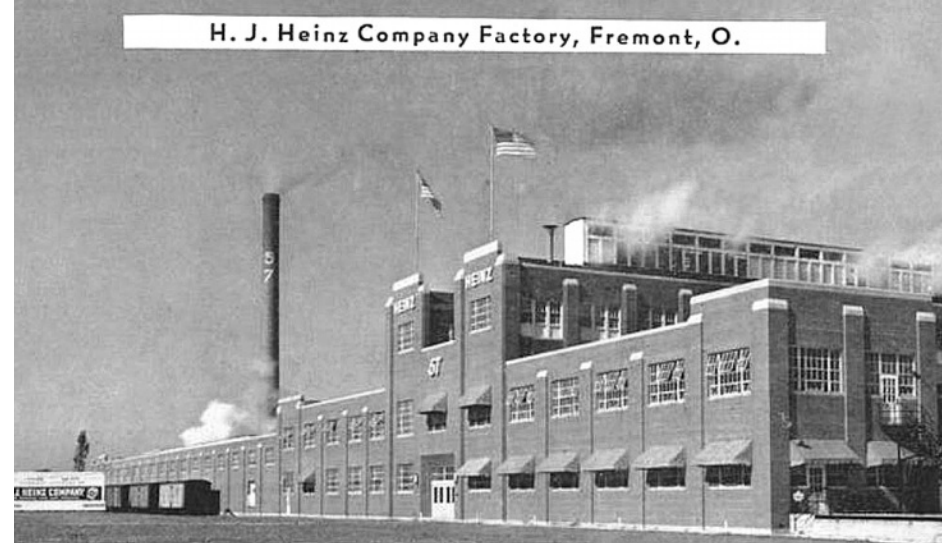
FREMONT, OHIO



11. This is the LS&MS depot in Fremont, Ohio circa 1910. As seen on photos of the other towns, the railroad did a brisk passenger business. Anyone wanting to model this line set in the early-1900s had better plan on passenger trains.



12. An E7A and B pause with their passenger train at the Fremont depot in 1948.



13. The H. J. Heinz Company plant circa 1945. Heinz has long been a big employer in Fremont.



CLYDE, OHIO



14. This is the Clyde LS&MS/CCC&StL depot. The LS&MS passes in front of the left half of the depot while the CCC&StL passes along the right. The CCC&StL accessed the elevator.



15. Looking east along the LS&MS through Clyde, Ohio in 1907. I almost settled on modeling Clyde. The problem was there was a bit more industry and downtown than I have the room for. The depot and CCC&StL crossing would have been behind the photographer on the right.

BELLEVUE, OHIO



16. These are the LS&MS tracks through Bellevue circa 1920. The LS&MS freight house is just out of sight to the left. Bellevue was always a hot spot for

railroad activity, as the LS&MS, NYC&StL, PRR, and W&LE all passed through town at W&LE Tower [18].



17. The W&LE mainline through Bellevue, Ohio circa 1950. The LS&MS is at the far right. That is the LS&MS Bellevue freight house at the right. Beyond is the roof of the passenger depot. The two railroads paralleled one another through Bellevue. The NYC&StL (NKP) and the PRR cross right/left in the distance.



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18. Northbound PENNSYLVANIA coal train is headed for Sandusky in this 1954 photo. The locomotive is crossing the LS&MS and the W&LE mainlines. The LS&MS main is under the third hopper car in this train. W&LE Tower is situated between the W&LE and the LS&MS tracks. The PRR utilized the NYC&StL mainline for about a mile through Bellevue before breaking off to the north toward Sandusky.

MONROEVILLE, OHIO

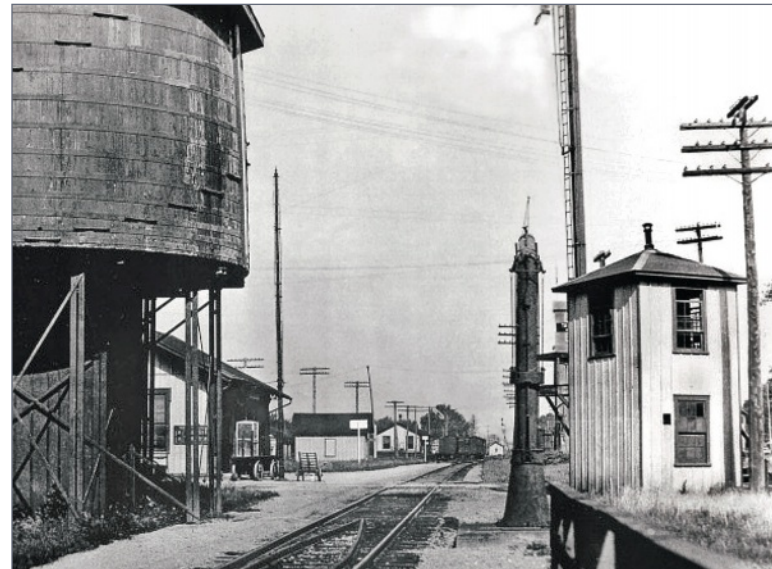
Monroeville is the town I am modeling with my new layout. There was more than enough to model there, but I cannot include it all.

I am including only the Lake Shore & Michigan Southern and a small section of the north/south B&O. There is no room to include the W&LE or the Lake Shore Electric Railway. If my 22 x 5 train room were 22 x 8, then I would include the W&LE, but it is not. Yep – I am a *limited modeler*!



19. This 1906 photo looks west along the LS&MS. The LS&MS depot is at the left and the B&O/W&LE depot is at the right. That is the W&LE mainline in the foreground crossing lower-left to upper-right. The bridges cross the Huron River. The

Lake Shore Electric Railway is just off the photo to the left. It had yet another bridge!



20. This circa-1930 photo looks west into the LS&MS yard in Monroeville. The tower is LS&MS. The B&O/Wheeling depot is just out of sight to the right.



NORWALK, OHIO

Bellevue and Norwalk were the two biggest towns along this part of the Lake shore & Michigan Southern. The LS&MS crossed the W&LE at Norwalk. The LS&MS maintained a substantial roundhouse there in the early years. Part of it still exists today.

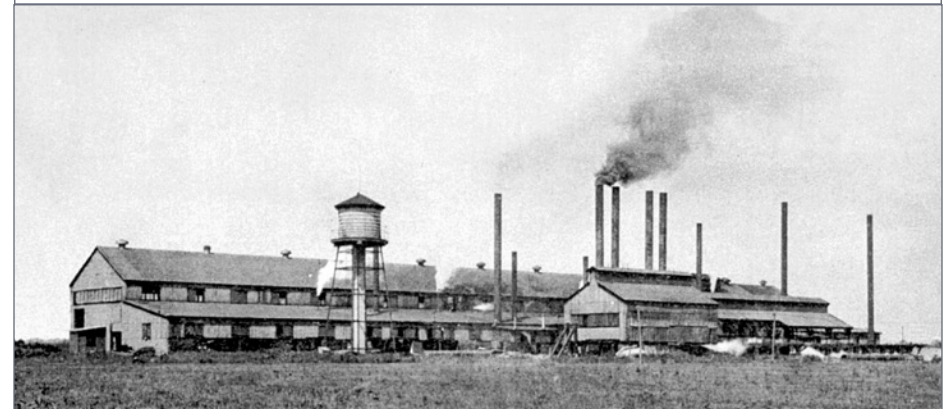


21. Photo circa 1910. Note the passengers awaiting the approaching eastbound passenger train. Most were Cleveland bound in this early-morning photo.



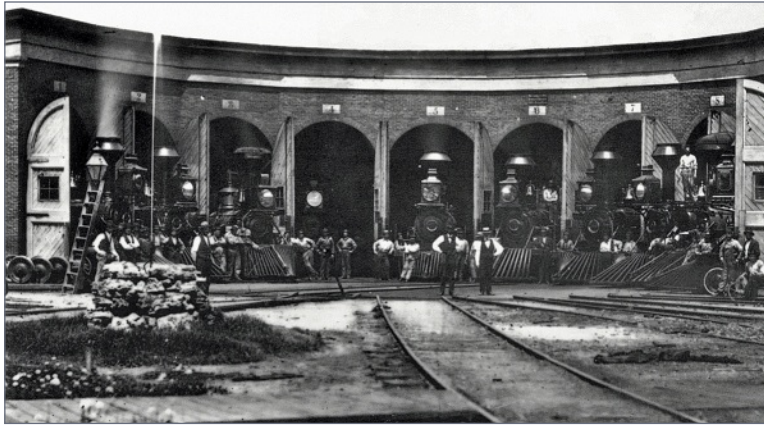
22. Looking east at Norwalk, Ohio circa 1920. The depot is busy and the train is long. There was a decent-size roundhouse out of sight to the left of this photo. The yard was a few hundred yards behind the photographer.

NORWALK STEEL & IRON COMPANY, Inc., MANUFACTURERS
 HAMMERED SOFT CENTER PLOW STEEL,
 Hammered Five Ply Jail, Safe and Vault Steel, Soft Center Die and Hammer Blocks,
HIGH GRADE TOOL STEEL,
 WHITMAN UNION CODE. Hammered Billets. NORWALK, OHIO.



23. Norwalk Steel & Iron Co. circa 1900. This was a major business in Norwalk employing more than 250 workers. The LS&MS serviced it.



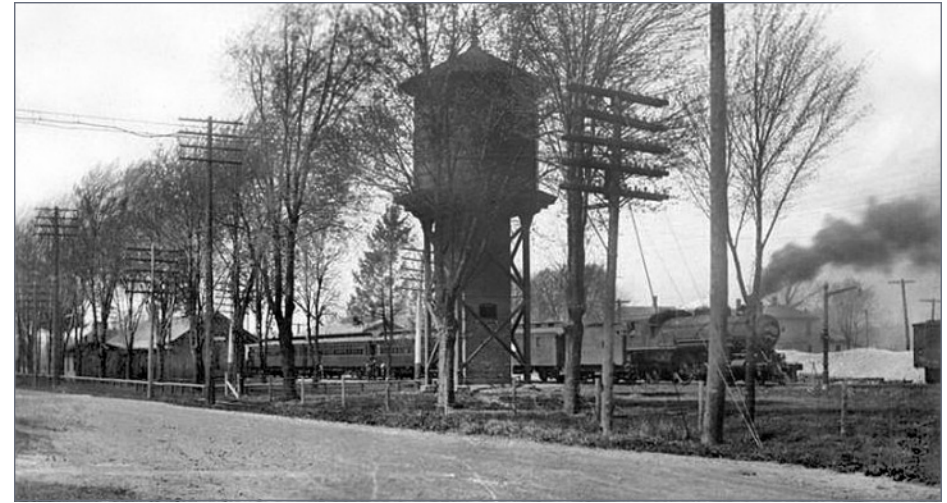


24. This is the Norwalk LS&MS roundhouse during the 1880s or earlier. In 1880 the LS&MS was the largest employer in Norwalk. Remember the LS&MS route we are touring was part of the mainline from New York to Chicago until after about 1900.

WAKEMAN, OHIO



25. Here is the LS&MS Wakeman, Ohio depot circa 1890. Several people are waiting for their train.



26. Photo circa 1910. The 4-4-2 makes a stop with its passenger train at Wakeman. The roof of the freight house is across from the depot. The road would later become U.S. 20.



27. This 1954 photo shows the Wakeman depot in its later years, though still in its early-1900s configuration. The tracks are overgrown with weeds as rail traffic has fallen to only a few trains per day. Wakeman is a small farming community about 40 miles west of Cleveland.



KIPTON, OHIO



28. This is a circa-1900 photo of the LS&MS depot in Kipton, which was built in 1872. Kipton had 50 or fewer residents at this time. It was a farm community with an elevator and a couple of stores.



29. This 1912 photo shows an early 4-6-2 stopping at Kipton with a short train of two or three cars. Note the fancy dress of the ladies waiting to board. The freight house is across the tracks.



30. This photo is circa 1930s during the Great Depression. The power on this train is one of the famous New York Central Hudson 4-6-4 locomotives. I find it interesting that by this time passenger trains were shorter and motive power larger! Part of the elevator pictured here is still standing today. However, the rail line is a paved bicycle trail – Rails-to-Trails.

OBERLIN, OHIO



31. There are banded crates all over the platform of the Oberlin depot in this 1908 photo. I have no idea what they were. There was a freight house across the

tracks, which makes this even more puzzling.





32. Passengers wait on the platform as the train approaches the Oberlin depot from the west sometime circa 1910. Rail-served businesses are at the right. The freight house is in the distance.



33. Oberlin, Ohio LS&MS freight house circa 1940. This is just another standard LS&MS/NYC freight house. In the distance between the buildings, you can see the Oberlin passenger depot.

ELYRIA, OHIO

At the east end of our tour is Elyria, Ohio. It was then and still is on the mainline between the New York City and Chicago. It is also where the new “airline” route began that ran to Elkhart, Indiana. The airline opened in 1892 and within a decade became the primary route from Cleveland to Elkhart.

This relegated the original, “southern route” we just toured to secondary status. However, the southern route remained busy until the Great Depression when business on the line began a steady decline until abandonment in 1976 with the creation of Conrail.

Elyria was a heavy industrial town with both the LS&MS/NYC and the B&O serving its industries. The two railroads maintained yards on the west side of town, where the old LS&MS southern route diverged from the airline. The LS&MS also had a small yard just east of the depot pictured in [30]. This was a busy part of the railroad, and remains so today as part of the Norfolk Southern.



34. About 20 miles west of Cleveland, Elyria is at the east end of our tour. The depot is but a block from downtown and was the typical LS&MS design. The date on this post card is September 1908.



The key role of passenger trains played in railroad operation on this line in the 1900–1920 period is striking, and any layout in this era really ought to include them. Multiple passenger trains will interact with my two-way freights. Every town had a depot, others a flag stop and others scheduled stops.

The prototype timetable tells me what trains were where and at what times. Most importantly, it tells me what trains were scheduled to be in Monroeville when my way freights were there. This is crucial for realistic operation.

Thanks to friend Ray Breyer who provided me with a LS&MS/ NYC 1915 Toledo Division timetable [35, 36], I was able to determine all prototype train operation in Monroeville. These two timetable pages tell me everything I need to know to formulate two different operating sessions. One will be for way freight #91 westbound during the 7:00 AM hour and the other for way freight #92 for the 11:00 AM hour. Of course, depending on circumstances, each of these can drag into the following hour!

MILLBURY TO ELYRIA											
EASTBOUND—FIRST-CLASS								FOURTH-CLASS			
Miles from Toledo	STATIONS	626	622	628	632			92	96	94	
		Norwalk Accommodation	Accommodation	Accommodation	New York Special			Way Freight	Freight	Way Freight	
		Daily Except Sunday	Daily Except Sunday	Sunday Only	Daily			Daily Except Sunday	Daily Except Sunday	Daily Except Sunday	
	LEAVE	A. M.	A. M.	A. M.	P. M.			A. M.	P. M.	A. M.	
7.49	Millbury.....		7.15	7.45	2.50			7.30	8.25		
12.40	Genoa.....		7.23	7.53	2.58			7.50	8.45		
17.11	Elmore.....		7.31	8.00	3.08			8.15	9.05		
22.38	Lindsey.....		7.40	8.10	3.16			8.27	9.25		
29.49	Fremont.....		7.53	8.23	3.30			8.35	9.55		
37.83	Clyde.....		8.05	8.37	3.44			10.00	10.25		
45.22	Bellevue.....		8.16	8.52	3.58			11.10	11.00		
52.76	Monroeville.....		8.30	9.04	4.12			11.45	11.30		
57.28	Norwalk.....	A. M. 5.35	8.42	9.14	4.23			12.38	12.01	A. M. 8.15	
63.90	Collins.....		8.56	9.26	4.35			P. M. 12.30	12.30	8.35	9.17
68.58	Waldman.....		9.07	9.31	4.43				12.50	10.10	
73.84	Kipton.....		9.17	9.38	4.51				1.15	11.00	
78.48	Oberlin.....		9.28	9.44	5.00				1.45	11.55	
86.47	Elyria Jct.....		9.40	9.56	5.12				2.15	1.30	
	ARRIVE	A. M.	A. M.	A. M.	P. M.			P. M.	A. M.	P. M.	

On single track, eastbound trains are superior to westbound trains of the same class, unless otherwise specified.
No. 626 will stop at East College Street, .06 miles east of Oberlin, on signal to receive passengers.

35. This timetable lists all eastbound trains on the railroad. This includes #92, the eastbound way freight. My layout operation is focused on the way freights. The note at the bottom of this timetable states eastbound trains on single track are superior to westbound trains of the same class. Since this is a single-track section of railroad, eastbound trains are superior.

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ELYRIA TO MILLBURY										
WESTBOUND—FIRST-CLASS						FOURTH-CLASS				
Miles from Cleveland	STATIONS	623	629	23	627	37	93	95	91	
		Accommodation	Accommodation	Western Express	Norwalk Accommodation	Pacific Express	Way Freight	Freight	Way Freight	
		Daily Except Sunday	Sunday Only	Daily	Daily Except Sunday	Daily	Daily Except Sunday	Daily Except Sunday	Daily Except Sunday	
	LEAVE	A. M.	A. M.	A. M.	P. M.	P. M.	A. M.	P. M.	A. M.	
25.99	Elyria Jct.....	6.52	7.40	11.44	5.20	8.07 ⁹⁶	10.00	8.07 ⁹⁷		
33.98	Oberlin.....	7.06	7.59	11.56 ⁹⁴	5.34	8.20	11.56 ⁹⁴	8.55		
38.62	Kipton.....	7.16	8.06	12.02	5.41	8.30	12.45	9.20		
43.88	Wakeman.....	7.26	8.14	12.08	5.49	8.40	1.30	9.32		
48.56	Collins.....	7.35	8.21	12.14	5.56	8.48	2.15	10.20		
56.18	Norwalk.....	7.49	8.32	12.28 ⁹²	6.10	9.01	2.50	11.00	A. M. 6.30	
59.70	Monroeville.....	8.02	8.40	12.30	P. M.	9.11	P. M.	11.30 ⁹⁶	7.10	
67.24	Bellevue.....	8.16 ⁹²	8.52 ⁹²	12.50		9.24		12.15	7.45 ⁹²	8.30 ⁹²
74.63	Clyde.....	8.30	9.06	1.04		9.39		1.02	10.00 ⁹²	
82.97	Fremont.....	8.44	9.22	1.20		9.56 ⁹⁶		1.55	11.30	
90.08	Lindsey.....	8.57 ⁹²	9.37	1.30		10.06		2.40	12.05	
95.35	Elmore.....	9.00	9.48	1.37		10.15		3.10	12.40	
100.06	Genoa.....	9.15	9.58	1.42		10.24		3.39	1.05	
104.97	Millbury.....	X 9.23	f 10.05	1.48		10.33		4.10	1.40	
	ARRIVE	A. M.	A. M.	P. M.	P. M.	P. M.	P. M.	A. M.	P. M.	

On single track, eastbound trains are superior to westbound trains of the same class, unless otherwise specified.
 No. 37 will stop at all stations Sunday nights.
 No. 627 will stop at East College St., .96 miles east of Oberlin, on signal to discharge passengers.

36. This is the westbound timetable. Way Freight #91 is the counterpart to #92 eastbound. Again, eastbound trains are superior to westbound trains. A quick look at the arrival times shows that passenger trains #623 and #629 will interfere with way freight #91.

WAY FREIGHT #91 OPERATION

Studying these two timetables shows there will be good train action for my one-town Monroeville layout. Since I am featuring way-freight operation, I will be running with either westbound #91 or eastbound #92. Train #91 works Monroeville during the 7 AM hour. It is due in Bellevue by 8:30 AM.

During this time, passenger train #623 will arrive (8:02 AM). This is about the time #91 will be preparing to leave

Monroeville for Bellevue, which will create interesting layout operation! If #91 is running late, then passenger trains #622 eastbound and #629 westbound will be arriving at 8:30 AM and 8:40 AM respectively.

Being a single-track line, these two passenger trains will have to pass in Monroeville, causing more chaos for train crews. All great fun for one-town layout operation.

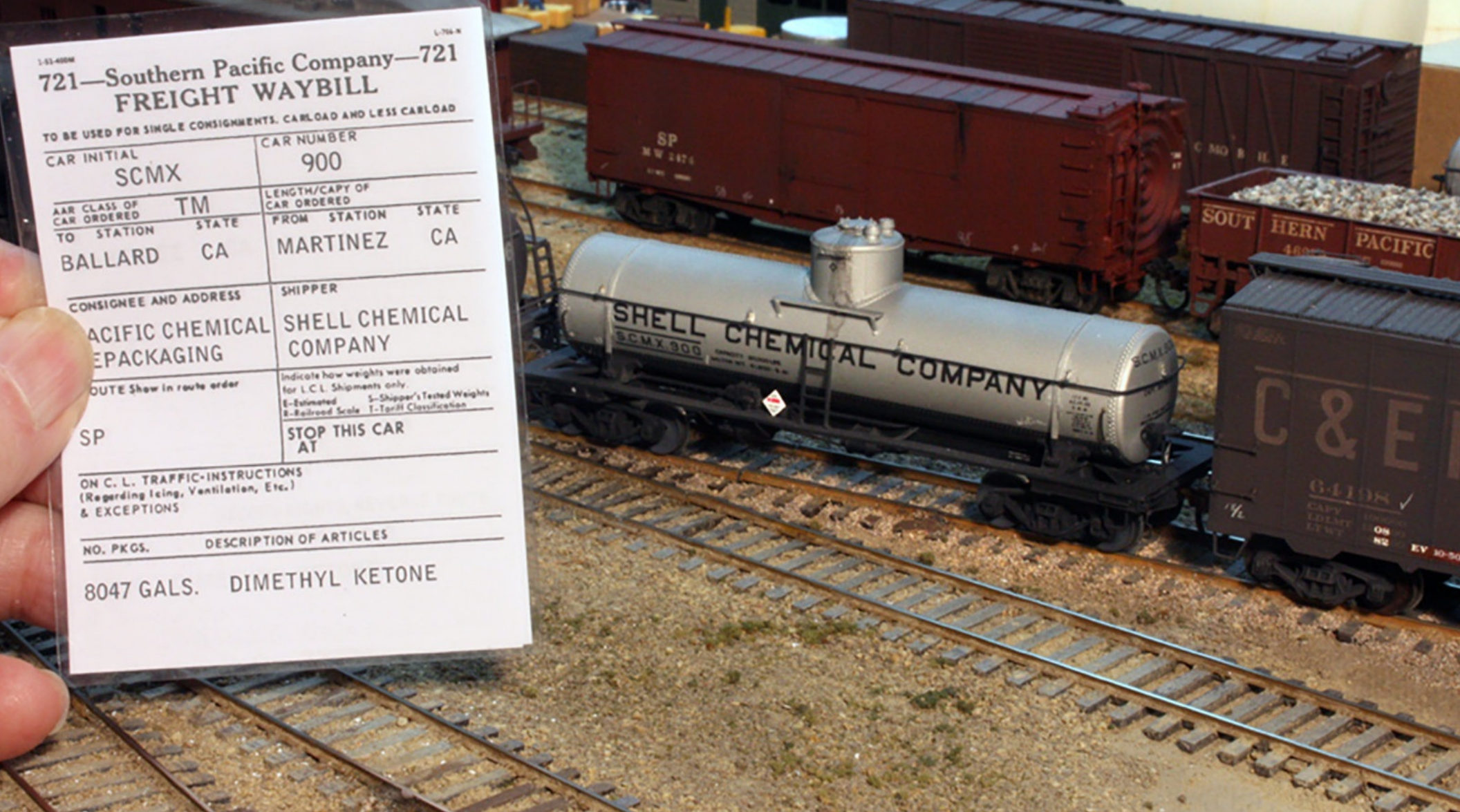
WAY FREIGHT #92 OPERATION

The other way freight that passes through Monroeville was eastbound #92. This train was scheduled to work Monroeville during the 11 AM hour. Through freight #95 westbound and #96 eastbound were both scheduled to pass in Monroeville at 11:30 AM.

Passenger train #23 westbound was scheduled to arrive at 12:36 PM. If any of the freights were running late – particularly #92 – then they had to give way to #23.

I find it very satisfying that so much rail activity took place at Monroeville when the two way freights were scheduled to work the town. This plays into why I selected Monroeville for my new layout. While the layout models only one town in a 22 x 5 train room, there is a substantial amount of operation for the layout. Best of all, this is all prototypical, based on the actual 1915 timetable. ✓





Crew communication

TONY THOMPSON DISCUSSES WAYBILLS,
CAR ORDERS, AND SWITCH LISTS ...



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GETTING REAL

column

MRH Running Extra | March 2022



RAILROAD TRAIN CREWS HAVE OPERATED OVER THE YEARS

IN THE presence of a variety of communications, and of course these varied widely by era. In this column, I discuss the pre-computer kinds of communications that were used, and ways one might adopt them for use on a model railroad layout.

The first kind of communication that likely comes to mind is train authority, for example train orders in a timetable and train order (T&TO) environment. I am not addressing authority communications in this column. For a solid introduction to that topic, I recommend Steve King's article (see Bibliography).

Instead, my focus is on kinds of communication that informed crews about work they might need to do, and various operating information, during their train's journey or work shift. There are several such.

First would be switch lists, almost universally used in yard switching and in some cases for road jobs. But road crews usually worked quite differently. What did they do?

The conductor carried waybills (or Empty Car Bills) for all the cars in the train, if for no other reason for transmission to the next yard office. Waybills could also provide the basis for planning the work en route. Though this column is not about waybills as such, I summarize below their role in this topic, emphasizing the jobs people did as part of the waybilling process.

What other communications might a crew have on the road? Local agents often needed to communicate tasks, such as cars



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that needed to be re-spotted, or to inform crews about requested car movements (for example, to identify the door at an industry for spotting).

Crews working for any length of time in a town might also receive a line-up from the dispatcher, so that they would be informed about extra trains, and perhaps about work equipment operating in their area.

All these are things that can be modeled as part of layout operating, if desired. I will show some examples of possible approaches.

WAYBILLS

Waybills are not the focus of this article, but I give an overview below, and I identify additional background information in the Bibliography.



1. This photo shows a Southern Pacific agent seated at his desk and speaking on the telephone, a major use of his time every day. Facing him is one of his clerks, with a billing typewriter just visible at the lower left edge of the photo. This is the agent at Brooklyn, Oregon, and may be H.E. Hinshaw, long-time agent there. *SP photo, Shasta Division Archives*



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Movement of freight began with the shipper preparing or dictating to an agent over the phone [1], a Bill of Lading. This provided the destination of the shipment and a description of the cargo, along with routing to destination, if the shipper chose to specify that [2].

[illegible]

2. A standard Bill of Lading form, taken from the important source, *Railway Accounting Rules* (see Bibliography). This form was usually filled out by the shipper, but sometimes the contents were dictated over the telephone to an agent or clerk.

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The Bill of Lading was important in that it was the legal contract between shipper and railroad, first, to move the cargo to the specified destination, and second, for the railroad to accept responsibility for the shipment while on its rails (and any subsequent interchange railroad rails). Moreover, this contract had to be signed by representatives of both the shipper and the railroad (usually the local agent).

For us as modelers, the Bill of Lading is important background because it contained the fundamental information needed for a Waybill. But it is rarely modeled because it did not itself direct freight movement.

With a completed Bill of Lading in hand, the agent would make out the Waybill [3] but could not add the car number of the empty to be loaded until it arrived (or he was notified of its imminent arrival).

At the same time as, or even before, submission of the Bill of Lading, the shipper would contact his local agent with a request for the empty car or cars [4]. The vital information was to identify what size and type of car was needed, as well as the destination of the cargo.

The agent would check to see if a car currently spotted in his area was about to be released empty, but this convenient circumstance was not common. Instead, the agent would contact his assigned Car Distributor at a larger yard in his region, often by telephone, and request the car(s).

That Car Distributor (see Bibliography) would choose a car, which in about two-thirds of cases would have obeyed the Car Service Rules, and list it for movement in the local freight which would serve the shipper's town. On most railroads, it would move on the authority of a document called an Empty Car Bill [5].

For more background on these procedures, John Armstrong's book (Bibliography) is illuminating.



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2000m. 4-55. PLACE SPECIAL SERVICE PASTERS HERE

WLC

50 THE BALTIMORE AND OHIO RAILROAD CO. 50
FREIGHT WAYBILL

Form 39 Rev. 2.

TO BE USED FOR SINGLE CONSIGNMENTS, CARLOAD AND LESS CARLOAD

CAR INITIALS AND NUMBER	KIND	WEIGHT IN TONS			LENGTH OF CAR		MARKED CAPACITY OF CAR	
		GROSS	TARE	NET	ORDERED	FURNISHED	ORDERED	FURNISHED

STOP THIS CAR

C. L. Transferred to or L. C. L. Loading No.

DATE 10/1/60

WAYBILL No. 1234

Consignee and Address at STOP

TO No. 1733 STATION CHICAGO ILLINOIS

FROM No. 121 CAMDEN STATION / BALTIMORE MD

Route (Show each Junction and Carrier in Route order to destination of waybill)

Route Code No.

FULL NAME OF SHIPPER, AND, FOR C. O. D. SHIPMENTS, STREET, POST OFFICE ADDRESS, AND INVOICE NUMBER

Code No.

AJAX LAMP SHADE CO

Show "A" if Agent's Routing or "S" if Shipper's Routing

RECONIGNED TO STATION STATE OR PROV.

ORIGIN AND DATE, ORIGINAL CAR, TRANSFER FREIGHT BILL AND PREVIOUS WAYBILL REFERENCE AND ROUTING WHEN REBILLED.

AUTHORITY

CONSIGNEE AND ADDRESS

CENTRAL STATES LAMP SHADE CO

CHICAGO ILLINOIS

FINAL DESTINATION AND ADDITIONAL ROUTING

B&O

ON C. L. TRAFFIC—INSTRUCTIONS (Regarding icing, Ventilation, Milling, Weighing, Etc. If iced, Specify to Whom Icing Should be Charged.)

AMOUNT

C. FEE

D. TOTAL

PICKUP SERVICE

YES NO

DELIVERY SERVICE REQUESTED

YES NO

When Shipper in the United States Executes the No-Recourse Clause of Section 7 of the Bill of Lading, Insert "Yes"

Indicate by symbol in Column provided * how weights were obtained for L. C. L. Shipments only. H—Railroad Scale, S—Shipper's Tested Weights, E—Estimated—Weigh and Correct, T—Tare Classification or Minimum.

No. Pgs.	Description of Articles, Special Marks and Exceptions	Commodity Code No.	*	WEIGHT	RATE	FREIGHT	ADVANCES	PREPAID
1	C/L LAMP SHADES NESTED IN BBLs BOXES OR CRATES		S	10500	3.57	372.85		372.85

FULLY PREPAID

DESTINATION AGENT'S FREIGHT BILL No.

Outbound Junction Agent Will Show Junction Stamps in Space and Order Provided. Additional Junction Stamps and all Yard Stamps to be Placed on Back Hereof.

FIRST JUNCTION SECOND JUNCTION THIRD JUNCTION FOURTH JUNCTION

DESTINATION AGENT WILL STAMP HEREIN STATION NAME AND DATE REPORTED

3. A specimen Baltimore & Ohio waybill, with railroad name and AAR code number (50) at the top. The vertical division between consignee information at the left of bill center, and shipper information on the right, is evident. Normally this was an 8.5 x 11-inch document. *From L.W. Sagle book (Bibliography)*

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The local freight's conductor, before his train left its origin point, would start organizing the waybills. These would already have been the basis for the yard crew to have blocked the cars in his train [6].

When the local freight arrived in a particular town, that might be the first opportunity the local agent would have to find out the car number of the empty that the shipper was going to receive. He could then complete the Waybill, though the loaded car might not depart until 24 to 48 hours later.

Incidentally, local freight work required conductors to keep track of times when cars were spotted, to identify the starting time for the free period before demurrage charges began. This

FORM 458 SM 7-39

THE SAN LUIS VALLEY SOUTHERN RAILWAY COMPANY

G. S. Bennett AGENT San Anacito, COLO. Aug. 21, 1944 19

San Anacito, Colo. STATION

PLEASE PLACE REFRIGERATOR CARS FOR (MY OUR) LOADING AS FOLLOWS:

PLACE	NO. WANTED	DATE WANTED	SERVICE WANTED	NO. AND INITIALS OF CARS FURNISHED
Hartners Shed No. 3	One	8/22/44		ART 19437

FURNISH 6 TONS BODY ICE

REMARKS:

THIS CONFIRMS TELEPHONE ORDER GIVEN TO MR. Bennett AT 5:00 P. M. 8/22/44

ORDER NO. 30 RECEIVED 1 P. M. 8/22/44 19

SHIPPER WILL SPECIFY KIND OF SERVICE DESIRED.

AGENTS WILL FILL IN ORDER NUMBER AND TIME RECEIVED.

SHIPPER

4. A confirming car order. Note that it confirms a telephone order to the agent and is for a car to be spotted the following day. Since this railroad supplied ART refrigerator cars only, there were no issues about Car Service Rules.



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FORM 1304 1-65-5008

EMPTY CAR BILL

No. _____ Date _____ 19__

Initial _____ No. _____

From _____

To _____

Class or Suitability _____

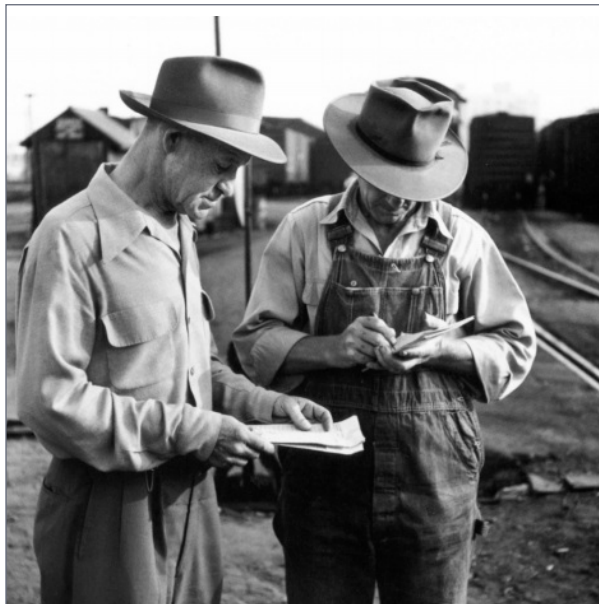
AUTHORITY FOR MOVEMENT _____

REMARKS _____

These bills to be used only for movement of empty cars without charges.
If car is ordered loaded while en route, Conductor will make notation under "Remarks" showing point at which empty car loaded, and forward Bill with Agent, who will change destination accordingly, and send Bill to Division Superintendent.

5. (Top) A Union Pacific Empty Car Bill. Like most such documents, it is half the width of a Waybill (size roughly 4 x 10 inches), thus fitting into a stack of Waybills traditionally folded in half the long way. This Bill was the authority to move the car to its loading point.

6. (Bottom) In this interesting 1952 photo at SP's Alameda Street Yard in Los Angeles, the switch foreman (left) and a switchman are deciding on the blocking of the *Coast Merchandise West* (the famous "Overnight" freight train), soon to depart. The foreman holds some waybills, folded the long way, and the switchman is writing something, likely a switch list. This same process might well precede the make-up of any freight train.
Richard Steinheimer, DeGolyer Library photo



tabulation by the conductor was often called a "Wheel Report," and is something that could be modeled if desired. It looks like a switch list (more on those in a moment), except for having a column for times when a car was spotted or picked up.

The local freight pulling into town might have several empties in the train, each with its Empty Car Bill in the hands of the conductor, as were all the Waybills [7]. But on most railroads, the Empty Car Bill only identified the town to which the empty was being moved. It would not identify the shipper, and indeed the Car Distributor may not have known the shipper's identity, only the town of the agent making the request.



7. This Southern Pacific caboose interior shows "Shorty" Wardle, conductor on today's Surf Turn out of Santa Barbara, California to Surf and return, working on his waybills. The wooden rack at his left contains an employee timetable along with some waybills. A large calendar is at upper-right, along with some steel clips attached to the wall. The large box at right is the coal supply for the stove. *SP photo*



Accordingly, when the local pulled into town, they would stop first at the depot and the conductor would head into the depot to talk to the agent. He would drop off the Waybills for the cars he was going to spot (and the agent could then begin the process of billing the shipper or consignee for the freight charges). He would also receive Waybills for loaded cars he would pick up.

In addition, the agent could simply tell him where the empties were going. Both people usually did this job every day, so the prototype depot conversation would be short and simple. In fact, the conductor likely knew where most or even all the empties in his train were going. If this town contained the only shipper on his route that loaded drop-bottom gondolas, for example, of course he knew who was getting empty cars like that.

In model form, however, we normally don't have space in layout rooms to accommodate agents at each town, nor do we usually have enough work to make such a job worthwhile. (Sometimes a job position can act as agent for several towns.) So how would we model that short conversation in the depot?

One answer is the "bill box," a locked box on the outside of the depot to accommodate crews when the agent was not on duty (many agents only worked a day shift). The box would be locked with a switch lock, to which all crews had keys [8].

On many railroads, there was a bill box outside the trackside depot door, the same door that would normally be used by a conductor to enter and meet the agent. Careful study of depot photos will reveal these boxes. Southern Pacific was no exception [9].

Such a bill box is quite easy to add to a model depot [10]. This is simply a small block of styrene, sized to match the prototype bill box I showed [8], painted Light Brown and glued to the structure.

The agent could put into the box all the paperwork for an arriving crew, and they could drop off all the paperwork they needed to leave with the agent. This would mostly be waybills but might include other paperwork, as I consider next.



8. This is an SP bill box I purchased at a Winterail event. Its bottom-opening feature is evident. The lock shown is a signal lock, not a switch lock, but it shows how the lock was applied. Gentle sanding showed that the previous color was silver. But in the transition era, it would have been the depot trim color. The box is 13 inches high, 9 inches wide, and 6 inches thick.

Before leaving the topic of waybills, I should mention that there are considerable published resources about creating realistic, prototype-based waybills for model operating use, both the design I use and those used by several other people. Several relevant articles are cited in the Bibliography. I won't go further into that topic, except to show an example of such a model bill, my own design, in use on my layout [11].

AGENT MESSAGES

The bill box, in addition to its role in the pickup and drop off of Waybills, could serve another purpose. The agent could also





9. The Southern Pacific depot at Goleta, California. The arrow indicates the bill box. The box was painted the same Light Brown as the trim color on SP buildings like this one. The structure is an example of SP's very numerous Common Standard No. 22 depot designs. *John R. Signor collection*



10. My model depot at Shumala, with the bill box next to the door, between the leftmost two people of the three grouped here. The scratchbuilding of this depot was described in an *MRH* article (Bibliography).



11. An example of a Waybill, reduced in size and complexity, to make it practical for use in layout operating sessions. For more on this and other model Waybill designs, see the Bibliography.

leave a message to the crew, telling them the information about work to be done that he would have conveyed orally if they met in person.

What might such messages look like? Former employees have told me that these messages ranged from the almost telegraphically brief, to a full description of work to be done and in what order. I show below a few examples of these.

Two extensive ones, almost amounting to a work list, were provided by Chet French [12, 13]. Both were written by the agent at Dixon, Illinois, during the 1960s and are quite specific about cars to be picked up or moved. Detailed messages like these might even be provided by an agent who is on duty, so that the complexity of all these moves can be documented for the crew.

Another example, possibly even more detailed, is a 1960 message from the agent at Hanna, Wyoming on the Union Pacific [14]. It goes beyond a mere listing of work to almost a



AT CEMENT PLANT ONE CEMENT C&NW 60547
GOES EAST & ONE MTY COAL HOP GOES WEST
10 cars inu coal 1 car empty

DIXON ILL JAN 29 1965
DIXON WAY FREIGHT WORK AT DIXON & NACHUSA ILL

ON WYE FROM IC RR

MILW	12878	BOX	STARLAC	GOES	EAST
OTI	16545	BOX	STARLAC	GOES	EAST
PRR	72760	BOX	STARLAC	GOES	EAST
IC	35507	BOX	WALLBOARD	GOES	EAST
IC	61321	FLAT	WALLBOARD	GOES	FRANKLIN GROVE
C&NW	44547	EMPTY	FLAT	GOES	EAST
IC	94539	SCP	IRON	GOES	TO STERLING

ON DIXON CO/OP TRACK PULL ONE CORN
C&NW 71470 CORN GOES EAST
RESPOT C&NW 85708 BEANS BACK AT CHUTE TO
FINISH LOADING

ON Y SIDE PULL 2 EMPTY BOX
C&NW 106168 MTY BOX PUT ON DIXON CO/OP TRACK
C&NW 142260 MTY BOX TAKE TO NACHUSA

AT DIXON CUT SOLE CO PULL ONE MTY BOX
WAG 5082 MTY BOX PUT ON DIXON CO/OP TRACK

ON READY MIX TRACK .. C&NW 3630 CO MTL
SPOT THIS CAR AT WEST END OF PLATFORM ON HOUSE
TRACK FOR SECTION MEN TO LOAD MOTOR CARS IN.

ON RHODES FEED BLUG TRACK PULL ONE EMPTY
UP 193063 MTY BOX TAKE TO NACHUSA

AT NACHUSA PULL 2 CORN
C&NW 9084 CORN GOES EAST
C&NW 7906 CORN GOES EAST

IF YOU HAVE CAR FEED FOR RHODES SPOT ON FRT
HOUSE PLATFORM FOR UNLOADING

IF YOU HAVE ANY
MTY BOX GIVE TO
CO/OP & NACHUSA

12. This message at Dixon, Illinois, dated January 29, 1965, contains a few interesting details, including the comment at lower-right, "If you have any MTY box give to Co/op Nachusa" (also Illinois). A few car movements are only identified as "goes east." C.E. French collection

C.E. FRENCH,
F.B.Y.M. (FRAME THIS)

DIXON, ILLINOIS
MAY 24TH 1967

MEDUSA:
16 XCH (14)
1 XB

BORDENS:
1 LOAD OUT, P&LE 23640 VIA THE
ICRR, A-O THAT IS ALL.

C.W.E.
7 EMPTY HOPPERS ON TRACK #4 TODAY.
LOADS GO IN ON TRACK #0 TODAY.

GET AT THE HENRY PRATT CO IC 62738, ~~XXXX~~ VALVES AND
LEAVE THIS CAR IN A POSITION SO THE CAR CAN BE PICKED
UP AFTER BILL EARLES MEN HAVE MADE A INSPECTION OF
THIS CAR. THE CAR GOES TO A-162.

GET AT THE DIXON PUBLISHING CO BAR 5206, BAR 9185 AND
MOP 82217 XB 50¹ CAR AND HOLD IN OUR YARD FOR PROSPECT-
IVE LOADING ANS SPOT SOU 40154, PAPER "NOW AT THE
DIXON PUBLISHING CO" AT THE SOUTH DOCK FOR UNLOADING.

GET AT SINOW AND WIENMAN B&O 352165, SCRAP IRON AND
TAKE TO MEDUSA FOR WEIGHING.

FIGURE ON GOING TO THE DIXON STATE SCHOOL TODAY AND
GET THE EMPTY COAL HOPPERS AND SPOT THE FOUR CARS OF
COAL THAT SHOULD ARRIVE ON THE NORTH SHORT LOCAL ON
THE PIT TRACK ON THE HOPPER FOR UNLOADING.

GET AT BEIER & CO MILW 29610, PAPER BAGS AND LINE UP
THIS CAR THRU SOUTH FOR A-162, AND SPOT UP 497366,
PAPER AT #1 SPOT "INSIDE THE BUILDING" AT BEIER & CO
FOR UNLOADING.

SOUTH:
EXTRA 9045 SOUTH (SHORT LOCAL) IS GONE.
#375 (ENGINE 9163) IS GONE.
WORK EXTRA RDC-2 (RAIL DETECTOR CAR) LEFT FORRESTON
8:00 A.M. WORKS BETWEEN FORRESTON AND DIXON.

NORTH:
EXTRA 9045 NORTH (SHORT LOCAL) SHOULD ARRIVE AT DIXON
ABOUT 3:50 P.M. SHOULD HAVE 11 LOADS & 1 EMPTY FOR A-35
#372 (ENGINE UNKNOWN) LISTED AT CLINTON AT 1:00 P.M.
SHOULD ARRIVE AT DIXON ABOUT 7:45 P.M.
WORK EXTRA RDC-2 (RAIL DETECTOR CAR) WORKING BETWEEN
FORRESTON AND DIXON.

MRA/LG
3:50 P.M.

M.R. ADKINS, AGENT

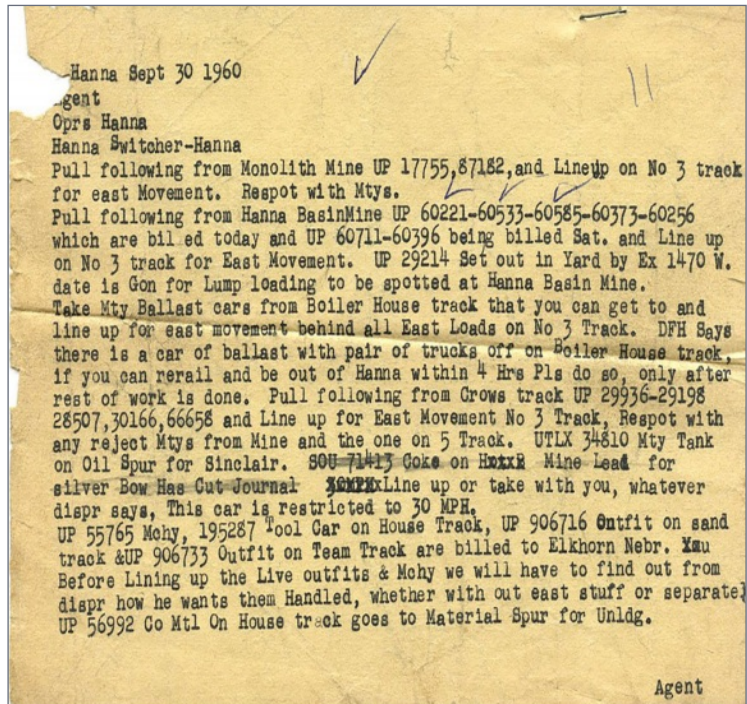
13. This Dixon message, dated May 24, 1967, is also quite detailed, and includes a line-up of trains that should reach Dixon while the way freight is working. C.E. French collection



prose description. But lest this appears normal, the following day's message [15] shows a quite different amount of detail.

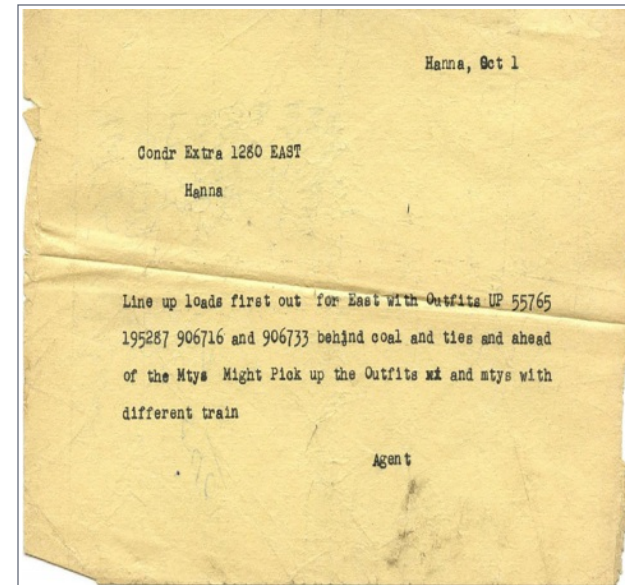
Messages like these are ideal ways for someone organizing a layout operating session to convey the kinds of conversations that on the prototype would usually be in person, as already mentioned. Obviously one can provide any level of detail desired, or suited to a particular crew, just as was done on the prototype.

(Some employees have told me, in the most tactful terms, that agents knew well which crews would figure out all the work correctly, and which ones might not, and wrote their messages accordingly.)



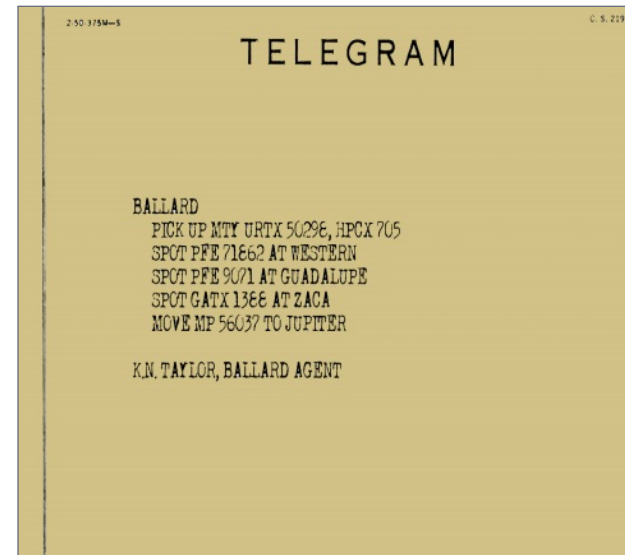
Hanna Sept 30 1960
Agent
Opra Hanna
Hanna Switcher-Hanna
Pull following from Monolith Mine UP 17755, 87182, and Lineup on No 3 track for east Movement. Respot with Mty.
Pull following from Hanna Basin Mine UP 60221-60533-60585-60373-60256 which are billed today and UP 60711-60396 being billed Sat. and Line up on No 3 track for East Movement. UP 29214 Set out in Yard by Ex 1470 W. date is Gon for Lump loading to be spotted at Hanna Basin Mine.
Take Mty Ballast cars from Boiler House track that you can get to and line up for east movement behind all East Loads on No 3 Track. DFH Says there is a car of ballast with pair of trucks off on Boiler House track, if you can rerail and be out of Hanna within 4 Hrs Pls do so, only after rest of work is done. Pull following from Crows track UP 29936-29198 28507, 30166, 66658 and Line up for East Movement No 3 Track, Respot with any reject Mty's from Mine and the one on 5 Track. UTLX 34810 Mty Tank on Oil Spur for Sinclair. 800-71413 Coke on ~~Hanna~~ Mine Lead for silver Bow Has Cut Journal. ~~36711~~ Line up or take with you, whatever dispr says. This car is restricted to 30 MPH.
UP 55765 Mohy, 195287 Tool Car on House Track, UP 906716 Outfit on sand track & UP 906733 Outfit on Team Track are billed to Elkhorn Nebr. Xau Before Lining up the Live outfits & Mohy we will have to find out from dispr how he wants them Handled, whether with out east stuff or separate
UP 56992 Co Mtl On House track goes to Material Spur for Unldg.
Agent

14. This agent message at Hanna, Wyoming, dated September 30, 1960, is almost a memorandum rather than a simple message, and gives quite detailed instructions for the Hanna Switcher. *Jeff Alley*



Hanna, Oct 1
Cond'r Extra 1280 EAST
Hanna
Line up loads first out for East with Outfits UP 55765 195287 906716 and 906733 behind coal and ties and ahead of the Mty's Might Pick up the Outfits xi and mty's with different train
Agent

15. The following day's message is much shorter, an example of a simpler message. *Jeff Aley*



250 375M-5 C. S. 2190
TELEGRAM
BALLARD
PICK UP MTY URTX 50296, HPCX 705
SPOT PFE 71662 AT WESTERN
SPOT PFE 9071 AT GUADALUPE
SPOT GATX 1368 AT ZACA
MOVE MP 56037 TO JUPITER
K.M. TAYLOR, BALLARD AGENT

16. An example of an agent message used in my operating sessions. Most of the cars identified are empties to be spotted. Industry names are shortened. By the 1950s, when I model, most SP agents had a surplus of pads of company telegram blanks in their desk and used them for messages like this.



An example of such a model operating session message is shown [16]. It does include a re-spot for MP 56037 from an off-spot location to the desired industry. The crew that received this message doubtless also had several loaded cars to spot, but they had waybills in hand to designate those destinations. A message like this [16] only supplements other documents that a local freight crew would have.

Additional documents that a crew might be using to organize their work could include switch lists. By the 1960s, various computer technologies were making it possible to print switch lists for a crew's entire work shift [17]. In the early 1950s, though, crews would have made out their own switch lists, from company-supplied blank forms, as they needed [18]. They naturally worked from the Waybills that the conductor would have in the caboose [7].

I should interject that my own recollection from riding in the caboose (by invitation) on SP's Burbank Local as a teenager about 1954, is that the conductor planned his work exclusively from the Waybills. He had made no switch list. His Waybills were grouped in cubbyholes over the desk (presumably by area to be switched), and he would consult them occasionally in directing the rear brakeman on what was to be done at each industrial spur track.

He did keep a wheel report, and when each car was spotted, he wrote it down on the report, with the time spotted. Watching him work was very interesting to a budding railfan and modeler [19].

The Burbank Local, which I rode that day from Sonora Street in west Glendale, out to the Burbank depot, was working entirely in yard limits (from Los Angeles Yard, usually called Taylor Yard). The local worked back and forth across the double-track main, accessing the long switch leads along both sides of the main tracks.

The rear brakeman was off and on the caboose repeatedly, throwing switches and passing signals to the engineer. Of

CHICAGO & NORTH WESTERN RAILWAY COMPANY
SWITCH LIST FORM 965 REV

TRAIN NO. WFRT ENG. _____
COND'R. _____ JAN 5 1965
DEP. ASHTON ARR. _____

INITIAL	NUMBER	CLASS	CONTENTS	FROM TO	TONS	REMARKS
1	EAST ELEV					
2	CNW 21238	CORN	CHGO TO GO			
3	CNW 83672	CORN	" "			1000
4	CNW 7712	BRNS	" "			(4)
5	CNW 23362	CATS	CHGO TO GO			
6	CNW 7301	LDC	LEAVE			
7	CNW 20714	XBX	SHOVE DOWN TO LOAD			
8						
9	WEST ELEV.					
10						
11	CNW 3549	CORN	CHGO TO GO			
12	CNW 24998	CORN	" "			(4)
13	CNW 71264	CORN	" "			1000
14	CNW 23326	CORN	" "			
15						
16						
17	NORTH SIDE					
18	CNW 68485	CH X	KEITHSBURG ILL			1000
19						
20						
21	BRING THE 4 OR BX IN YOUR TRAIN TO					
22	ASHTON AND SPOT INTO WEST ELEV ASHTON					
23						
24						
25	MILW 25285	MTY EX	SPOT TO LOAD GRAIN			
26	MSTL 56580	CORN	CHGO TO GO			
27	CNW 7415	CORN	CHGO TO GO			
28	CNW 107332	CORN	CHGO TO GO			5
29	CNW 86072	CORN	CHGO TO GO			1000
30	CNW 57046	CORN	CHGO TO GO			
31	CNW 21702	XBX	LEAVE			
32	CNW 85370	XBX	LEAVE			
33	ON STOCK TRACK FR GROVE					
34	WAB 60572	XBX	SPOT TO ELEV TO LOAD			
35						
36	(Spot the 2 foreign BX first to a point to load)					
37						
38						

17. A 1965 Chicago & North Western switch list, obviously printed for the use of a crew working a local freight. Note handwritten additions. C.E. French collection



course, most of this crew did this job essentially every day, so the signals were quite cursory. The conductor was kind enough to tell me, briefly, what they were doing. But in hindsight, I wish I had known enough to ask more and better questions.

When we reached the Burbank depot, the conductor picked up the Waybills for the cars that had just been spotted, and stepped off the caboose to go into the depot, I assume for exactly the conversation I described above. That was where I had to leave the train, and head home for dinner.

12-53 800M SOUTHERN PACIFIC COMPANY 8-1310A				
SWITCH LIST				
Train <i>SW 84V</i> M		10 June 1953		
Engine <i>1423</i> M		195		
INITIAL	NUMBER	CL.	CONTENTS	DESTINATION
1 PE	829	X	✓	JUPITER
2 LAN	968	X	✓	GUAD FRU
3 SP	245	X	✓	000 PEERLESS
4 PFE	183	R	✓	ZACA
5 UOCX	037	T	✓	UNION OIL
6				
7				
8 NKC	094	X	✓	B. HOUSE
9 GATX	961	T. PULL		PCR
10 PFE	144	R	✓	WGA
11 NYC	599	G PULL	✓	JUPITER
12				
13				
14 SP	840	X	—	TEAM
15				
16				
17				
18				
19				
20				

18. An example of a blank switch list, filled out by a crew working in a past session on my layout. The blank list was adapted from actual SP paperwork (though most SP forms like this omitted the company name at top). I have not shown the full length of this form, which extends to 40 lines.

I have used these recollections to plan the operating patterns on my own layout. A local freight crew has in hand my model Waybills and Empty Car Bills, and needs to consult with each town agent (via bill box) to know where the empties go, along with any other needs such as re-spots.



19. This photo really brings back memories of my ride in the Burbank Local's caboose. It shows a typical Southern Pacific caboose interior, though with a few additions by the conductor to whom the car was assigned (Venetian blinds, desk lamp). This is one of SP's very numerous wood-sheathed cupola cabooses. The traditional captain's chair, with glass insulators on the legs for smoother movement, was all but universal. The stove is at far right, with the coal box just to the conductor's right. Sunset Local, February 1951. Stan Kistler



It's an interesting option to consider building a layout bill box which mirrors the look of the prototype I showed [8]. One person who has done so is Dave Salamon. His article in *N-Scale Magazine* showed his construction method using hardboard. Though I haven't yet done something like this, I like the look he achieved [20]. This project, incidentally, has nothing to do with modeling scale, only with the size of the Waybills to be used.

LINE-UPS

Another message that can be quite important to a crew working at some locations would be a line-up. Of course, in CTC territory, signal indication can be sufficient information



20. This photo shows one of Dave Salamon's layout bill boxes. The layout is N scale, but of course that has nothing to do with the size of the bill box. This box is about 3 inches wide, 4 inches tall, and 1.5 inches deep, with a hinged top.

for safety, and even in T&TO territory, there would be timetable authority for scheduled trains. But it still might be useful for a crew to know whether scheduled trains were on time, along with estimated timing for any extra trains.

A line-up would also provide essential information to a track crew or work train in a particular territory.

On my layout, crews do switching work at a mainline junction, called Shumala, and copies of train orders would not normally be issued to switch crews. So even though they are in yard limits, it is useful to know what traffic they face, so they can clear the main track at the times of those arriving trains.

I have looked at several published examples of line-ups, and concluded that they are issued for a specific span of time, and list what is known at the time of issuance about on-time (or otherwise) status of scheduled trains, and of course any extra trains. I also liked the point that the dispatcher did not issue a timetable-like document for each part of a subdivision, but simply stated train times at specific points.

My own layout includes a portion of the SP Coast Division main line, specifically the Guadalupe Subdivision. As I have related in a previous MRH article (see Bibliography), I constructed a timetable to suit my layout, by simply cutting and pasting elements of a digital scan of a prototype SP 1953 timetable (the year I model). This gives crews the foundation information with which to interpret a line-up [21].

The second vital point is that the layout works from a "fast" clock, except it isn't fast at all; instead, it operates at 1:1 time. But it permits any session to take place within any railroad time span in the 24 hours, regardless of the actual time in the "real world" outside.

An example line-up from one of my operating sessions is shown here [22]. Note that times are given only at two points of the subdivision: Guadalupe and San Luis Obispo (SLO), which were train order stations. A crew working at my mainline junction town of Shumala, between those two points,

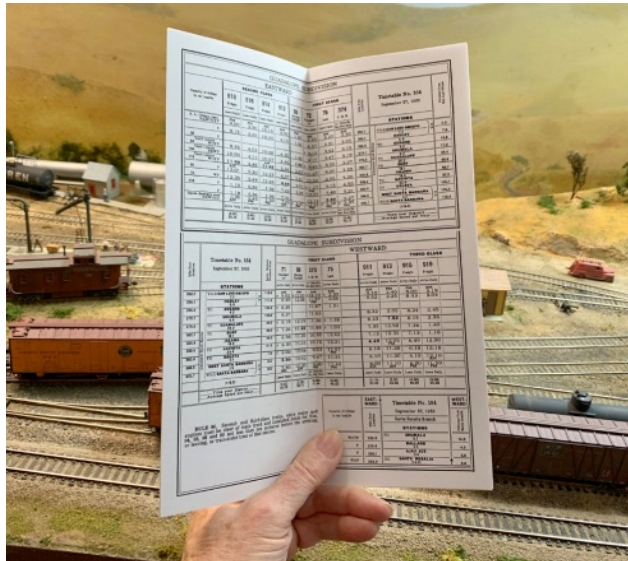


must look in the timetable to get the intervals between Surf or SLO, to interpret the line-up.

In the second example [23] you will observe some pencil notations. These were made by a crew from timetable information, to identify the estimated times of each train at Shumala.

Accordingly, arrival of, for example, the Guadalupe Local shown in [22, 23] is not a surprise to the switch crew at Shumala and they can clear the main [24] for the convenience of the Local on the main line.

You may note in the line-ups [22, 23] that there is a “ballast extra” train identified. This is a train that only is operated on the layout during some seasons, and is preceded (in the purview of Shumala crews) by a bulletin, issued at the beginning of their shift [25]. Modeled on prototype SP bulletins that I have seen, it alerts crews on the subdivision about the ballast work [26]. Sometimes there may also be



21. The center pages of the timetable provided for my operating crews, taken from the Guadalupe Subdivision section of the September 1953 SP Coast Division timetable, shows an abbreviated version of all actual eastward and westward train times. Making this document was the subject of an *MRH* article.

LINEUP NO. 2 FROM 101 PM TO 501 PM BETWEEN SAN LUIS OBISPO AND GUADALUPE, JUNE 27

EASTWARD

NO. 98 ON TIME

MAIL EXTRA 4352 DEP SAN LUIS OBISPO ABOUT 230 PM
GUADALUPE LOCAL, EXTRA 5301, DEP SLO ABOUT 300 PM
NO. 916 DEP SAN LUIS OBISPO 15 MIN LATE

WESTWARD

BALLAST EXTRA 2575 DEP GUADALUPE ABOUT 205 PM
NO. 913 DEP GUADALUPE 1 HOUR 30 MIN LATE
SURF TURN, EXTRA 2836, DEP GUADALUPE ABOUT 440 PM

22. An example of a model line-up, issued for the times 101 PM to 501 PM on the part of SP's Guadalupe Subdivision between San Luis Obispo and Guadalupe. Shumala, where the crew was working, is in between.

LINEUP NO. 2 FROM 101 PM TO 501 PM BETWEEN SAN LUIS OBISPO AND GUADALUPE, JUNE 27

EASTWARD

NO. 98 ON TIME

MAIL EXTRA 4352 DEP SAN LUIS OBISPO ABOUT 230 PM
GUADALUPE LOCAL, EXTRA 5301, DEP SLO ABOUT 300 PM
NO. 916 DEP SAN LUIS OBISPO 15 MIN LATE

WESTWARD

BALLAST EXTRA 2575 DEP GUADALUPE ABOUT 205 PM
NO. 913 DEP GUADALUPE 1 HOUR 30 MIN LATE
SURF TURN, EXTRA 2836, DEP GUADALUPE ABOUT 440 PM

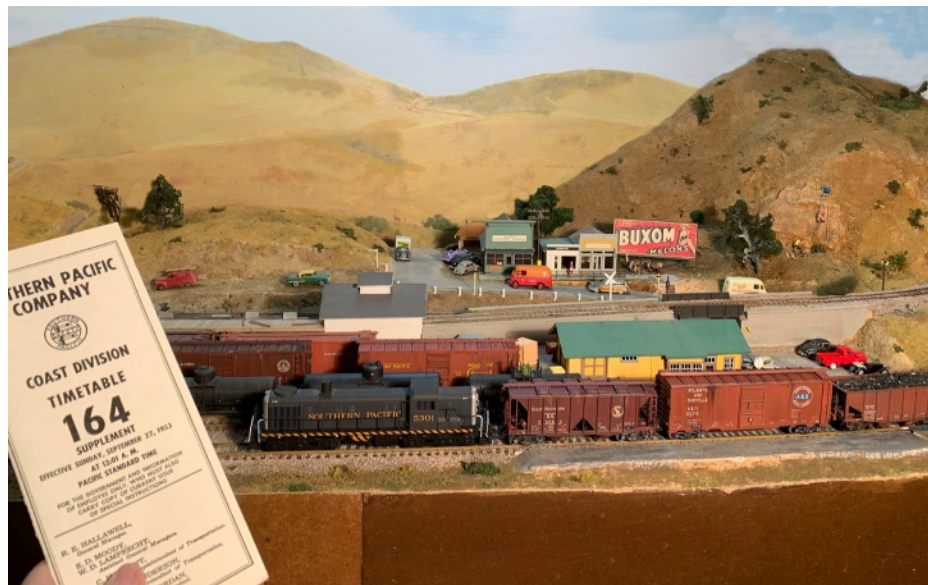
23. This “used” copy of a line-up [22] shows that the crew consulted the timetable, noted the transit times from both San Luis Obispo (SLO) and Guadalupe to Shumala, and made notations on the line-up so that they knew when trains were due at their location.



some empty ballast cars at Shumala, which this extra train will pick up.

My experience has been that these line-ups do provide crews working at Shumala the information they need to make sure the main line is clear in advance of the mainline traffic [23]. They are also realistic in that SP, like most railroads, did not particularly emphasize on-time performance of scheduled freights, and they often ran late by various amounts.

Finally, and perhaps most importantly, the line-up affords that crew some knowledge about extra trains, which of course are not in the timetable and would otherwise not be recognized until arrival.



24. In this photo, the eastward Guadalupe Local is arriving at Shumala on my layout. The local switch crew has consulted the timetable in force (Coast Division No. 164), along with the line-up they have [23], to make sure they were ready for its arrival.

SOUTHERN PACIFIC COMPANY
COAST DIVISION

BULLETIN NO. 31

SAN FRANCISCO -- January 9, 1953

TO: AGENTS, YARDMASTERS, CONDUCTORS, CLERICAL FORCES

All crews advised ballast renewal being conducted between Surf and San Luis Obispo. Ballast cars may be stored as needed on spurs in this territory and will only be moved on direct order. Local trains for pickup and delivery of ballast cars and equipment will be operated as needed. Crews are advised to be especially vigilant for track obstruction in areas of ballast work.

J. J. Jordan
Superintendent

25. This is an example of a division bulletin, issued to advise crews of ballast work between specific points. It is always issued to operating crews on my layout when the ballast extra will be operated.



26. Here is an example of that ballast train shown in the line-up [22], Extra 2575, arriving westward at Shumala. It contains a mix of empty and loaded cars, which it has been setting out and picking up from different track crews along the subdivision.



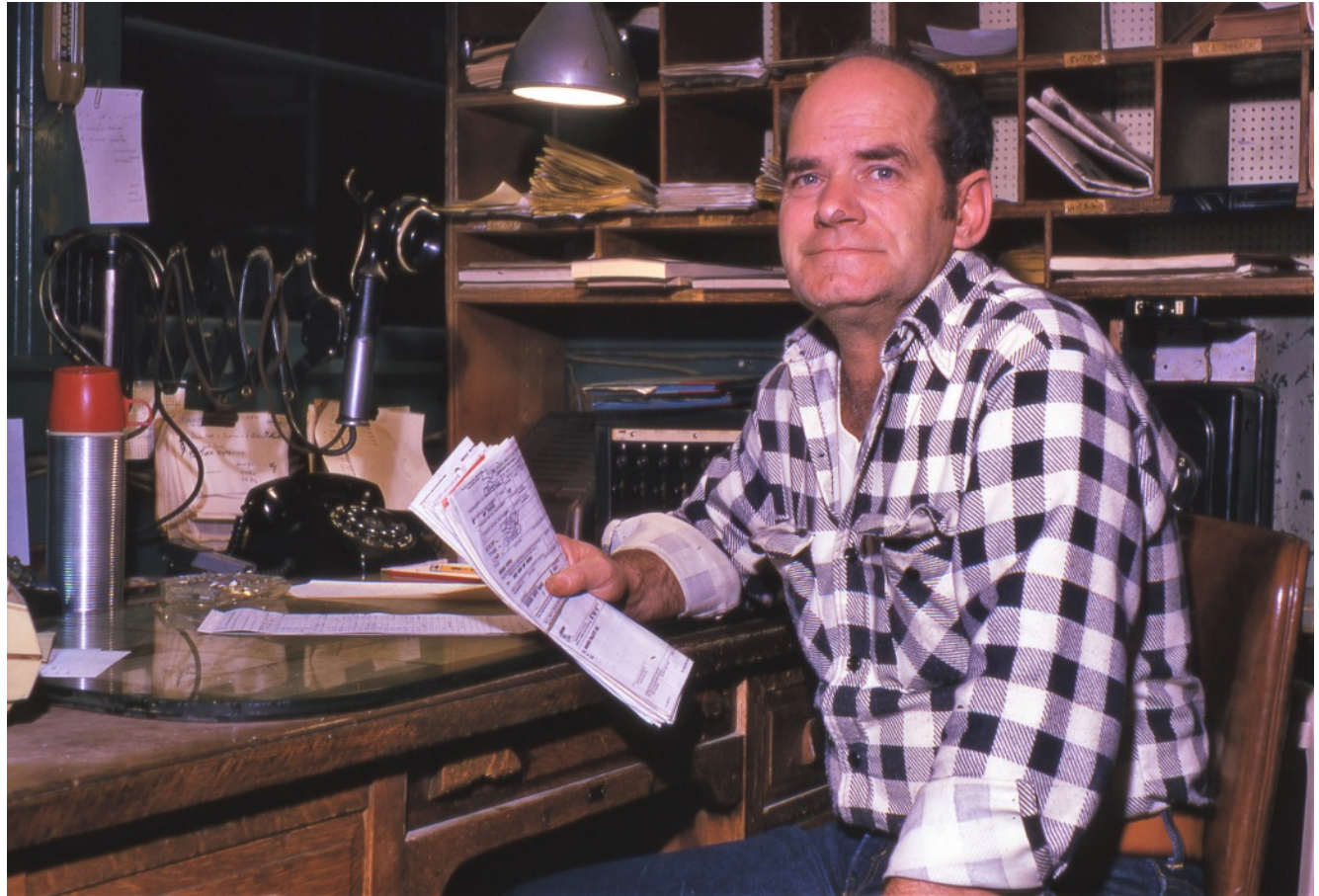
CONCLUDING REMARKS

An important goal of operating sessions on my layout is to reproduce, or at least simulate, the kinds of actual environments that prototype train crews would have encountered in 1953, including paperwork. Of course, there are limitations in being able to do so.

But central to my thinking is always to remember the agent in the depot, who provided a critical part of freight operations on the prototype [27]. Even if it isn't possible to create an actual job in a layout operating session for such a role to be played, there are ways to provide paperwork and other information to my train crews that are comparable to what an agent, or agent-operator, would have done.

Those are the reasons for not only model Waybills and Empty Car Bills, but agent messages, line-ups, bulletins, and other prototype-derived paperwork. I showed examples of each. All these in model form are designed to approximate, to the best extent that I can, several parts of the role of an agent. I believe this makes an operating session closer to the prototype experience of a train crew.

Some might respond with Al Kalmbach's remark about model layout timetables, saying they constitute "typographic scenery." But to me these paperwork items are much more because they provide some of the environment in which prototype train crews worked. Reproducing at least some of that environment has been, and remains, the principal goal of my layout. ■



27. This is Bob Knowland, night agent-operator at Keddle, California on the Western Pacific. In his hand is a bunch of waybills, neatly folded the long way, as was traditional. Note also on the desk his thermos, possibly with a hot drink, the scissors extension for the phone, and numerous cubbyholes with paperwork. The long, narrow form on the desk in front of Bob may be a switchlist based on the waybills. The date is February 1974. *Jerry Dziedzic photo*



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Camas Prairie First Subdivision

Part 3



MRH Running Extra | March 2022

TIMOTHY DUDLEY SHOWS US HIS
GREER TO KAMIAH, ID MODULE ...



IN THE PREVIOUS ARTICLE THE FIRST TWO

MODULES OF THE Greer, ID layout design elements were formed, landscaped, and detailed (see articles in November 2021/January 2022 *MRH Running Extra*). For the third module of my Camas Prairie First Subdivision, I wanted to model the Kooskia Bridge over the Clearwater River near Kamiah, ID.

Using a photo of an Overland Models brass model of this bridge and prototype photos from the web for reference, I gathered styrene materials to scratchbuild a selectively compressed version of the bridge.

CAMAS PRAIRIE FIRST SUBDIVISION | 2



1. With the price of materials skyrocketing, I chose to build this seven-foot module using 3/8-inch OSB with a scenery base of two-inch beadboard foam. I used Google Earth images for reference, and a jigsaw to cut the shape of the river.



2. This is the transition scene between the Greer, Idaho modules and the river scene. I will eventually add a sky backdrop to this corner as well.



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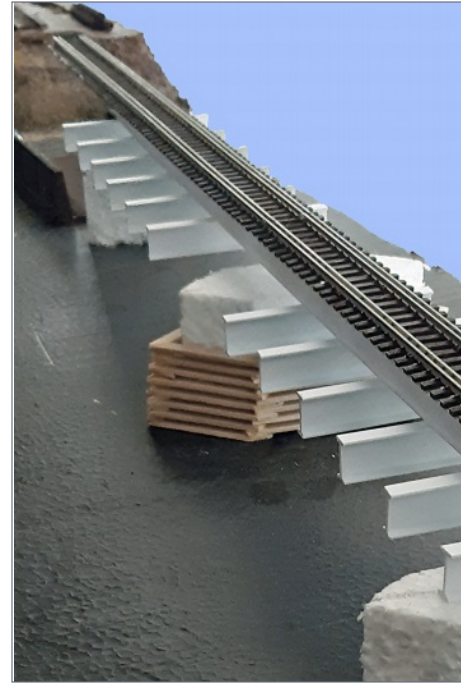
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3. I carved the river's edge with a Surform tool, and painted the river bed flat black. I added additional dirt, sifted rock, and ground foam to finish the river's edge.



4. I used beadboard Styrofoam as a base shape for the bridge piers.



5. I surrounded the base shape with Go Create Skinny Sticks glued in a pattern to represent the actual piers. I made three piers with this odd diamond shape.



6. For the girder sections, I used Atlas girders left over from a previous layout. I cut, painted, and weathered them to fit the space.





7. The main span of the bridge is selectively compressed. I chose 20 inches so it looked realistic in the compressed scene. I laid out the 3/8-inch beams with the

center pier in the middle and equally spaced the beams over the 20-inch span.

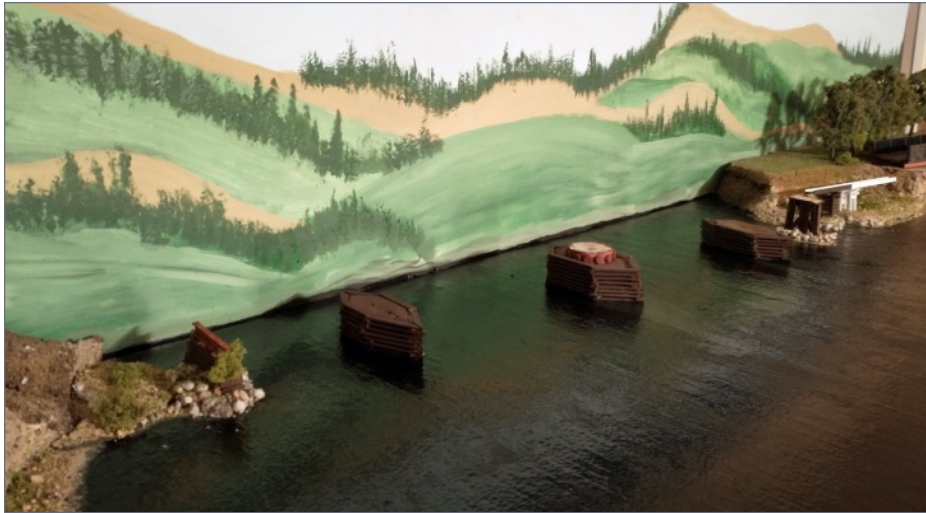


8. I added 1/2-inch beams to the bridge, one inch apart and on center.

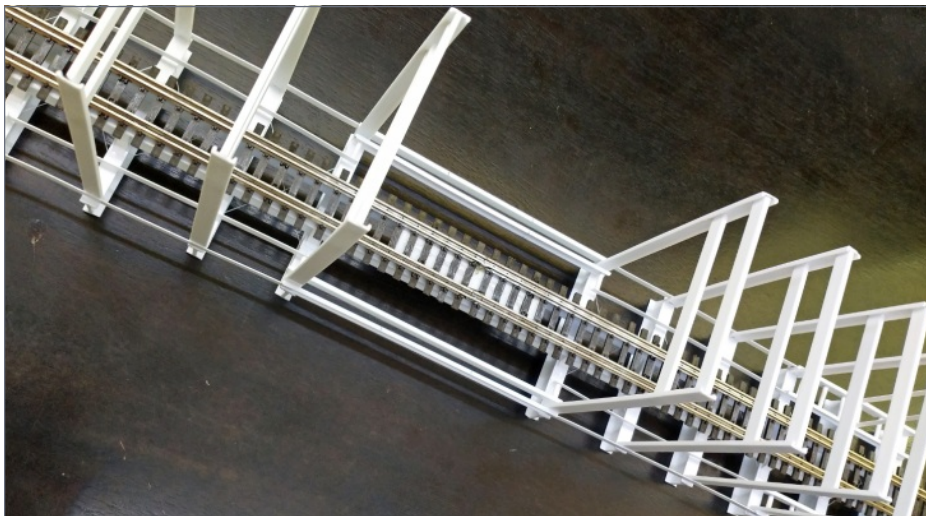


9. The bridge foundation is taking shape. A plastic lid covered in manhole covers simulates the pivot on the center pier.





10. The river with its first coating of Mod Podge Super gloss and the three main bridge piers painted and in position.



11. The bridge upper bracing is almost finished. I used the ¼-inch channel for the braces.



12. I made the side braces from scrap tubing cut into short lengths, with strips of styrene glued to them.





13. I placed side bracing and tension wires on the right side of the bridge using Evergreen #210 0.030" rod. The center superstructure is made from Central Valley bridge girder scrap.



14. Side bracing completed on the left side.



15. I used 2.4mm angle for the span braces across the top of the bridge for extra strength. I added cross wires to the center portion of the superstructure.



16. Secondary bracing supports the span wires across the top, spaced just like the photos I was working from.





17. I added tension wires to the support braces.



TIMOTHY DUDLEY



When Timothy was a little boy, his dad hid an AHM train set so Timothy wouldn't find it until Christmas morning. That set started his love affair with the hobby.

He and his brother built a 4x4-foot oval layout on a piece of plywood that barely fit under their bunk beds. Since then Timothy has built a dozen or so layouts in N and HO scales.

Timothy served in the US Navy from 1984-1990 and is now a licensed Assemblies of God pastor (www.newlife-cc.com), co-pastoring a church with his wife Cindy in Hurricane, Utah. He also enjoys playing bass on the worship team, train watching, and writing. ■

Next time I'll cover the layout design elements for the Kamiah, Id scene of my Camas Prairie First Subdivision. ☑

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18. The completed bridge, with paint, weathering, and flex track in place. Kevin at Roundhouse Trains in Louisville, KY supplied me with all the styrene and the bridge sections I used to complete this bridge.



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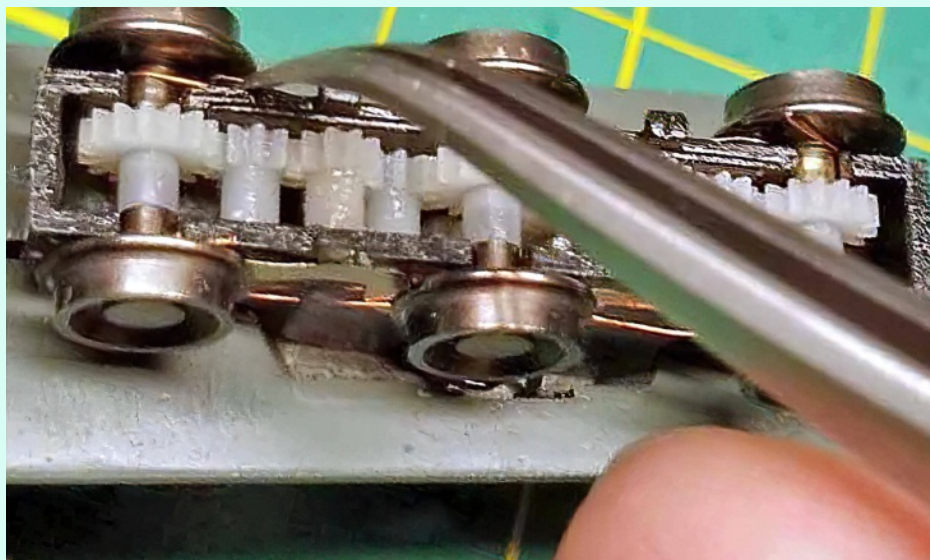
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New loco tuning



MRH Running Extra | March 2022

ANTHONY KOCHVAR SHARES
HOW HE MAKES ALL HIS NEW
LOCOS RUN FLAWLESSLY ...

LOCOMOTIVE MANUFACTURERS HAVE IMPROVED THEIR PRODUCTS OVER THE YEARS, but I still find issues with new locos out-of-the-box.

When I get a new loco, I take it to the programming track, then give it a test run around the layout. Some new locos stall intermittently on the insulated turnout frogs. I also find some new locos often fail to run at all at slow speeds.

No manufacturer seems immune to these issues, and almost all new locos seem to need some amount of work. Here's what I do and how I've taken poor-running engines and turned them into excellent, flawless runners.



NEW LOCO TUNING | 2

BEFORE WE START

First, a disclaimer. Getting a loco to run like a dream still requires clean track/wheels and good trackwork for it to run on. Locomotive tuning will only go so far and is only a part of a smooth-running layout.

Another requirement is that all the wheels are well-insulated. Each side needs to be completely isolated so no current runs through a metal axle. More on why this is important later, and how we can take advantage of wheels and axles built this way.

For this article, I'm using two Bachmann N scale locomotives: a Dash 8-40CW and GP40, both DCC- and sound-equipped. I have used these same methods for other manufacturers with success, and they should work for DC locomotives, and other scales.

TUNING THE TRUCKS

Take the shell off the loco per the manufacturer's diagrams and set it aside. Examine the trucks and learn how the manufacturer has wired them in.

On the Dash 8, I found they were hard-wired with soldered connections to the frame, and could not be removed completely. Copper wipers touched the backs of the outer wheels on each truck, but the center wheel lacked wipers, so it did not have electrical pickup. Fortunately, the center wheels themselves were the same as the others, so I could modify them for power pickup.



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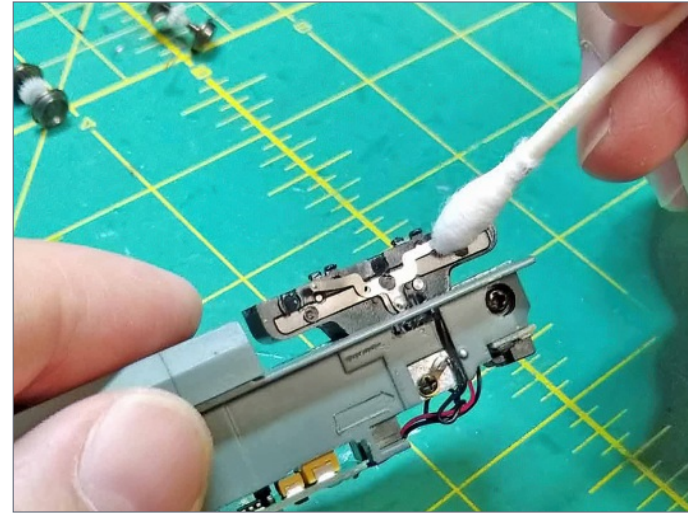
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1. After dismantling the trucks, I cleaned the wheels with a soft wire brush in my rotary tool.



2. I used cotton swabs and makeup sponges dipped in alcohol to clean the wheels to remove dirt and excess oil.



3. I cleaned the metal wiper contacts on the trucks to remove excess oil, again using a swab dipped in alcohol.



4. I bent out the wipers so that they were guaranteed to rub on the backs of the wheels when reassembled.



ADDING WHEEL WIPERS

Over several years of taking engines apart and testing, I've found the most common failure point is transferring track power from the wheels to the trucks. While the wipers do a good job, they are not perfect and represent a single failure point.

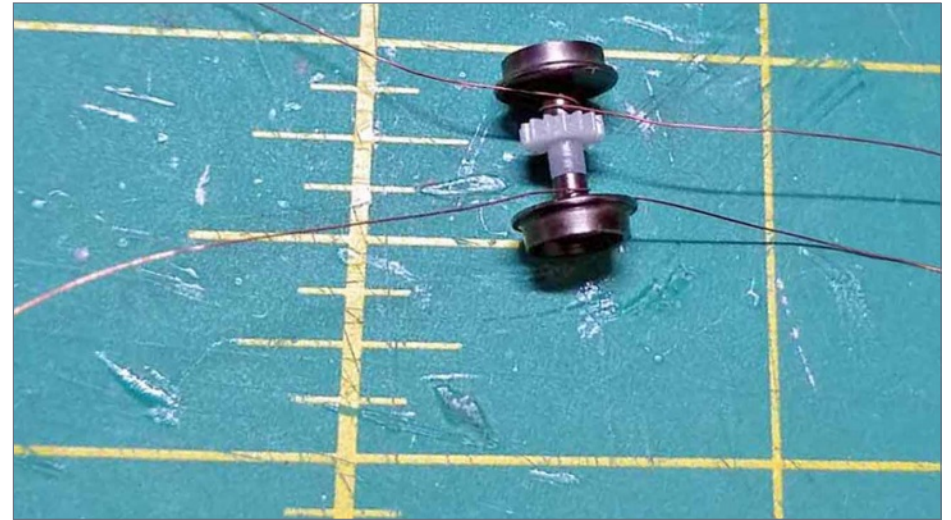
Wouldn't it be great if the electricity had a second path it could travel from the wheels to the truck contacts? That way if one wiper had an issue, the others could compensate.

After thinking this over and studying the wheels, I realized I could wrap a small bare wire around the axles of all the wheels and touch the backs of the wheels. The bare wire becomes an additional set of wipers, providing a second path to from the track to the motor. I could have soldered the wire to the truck, but I decided not to so they could be removed or replaced if needed.

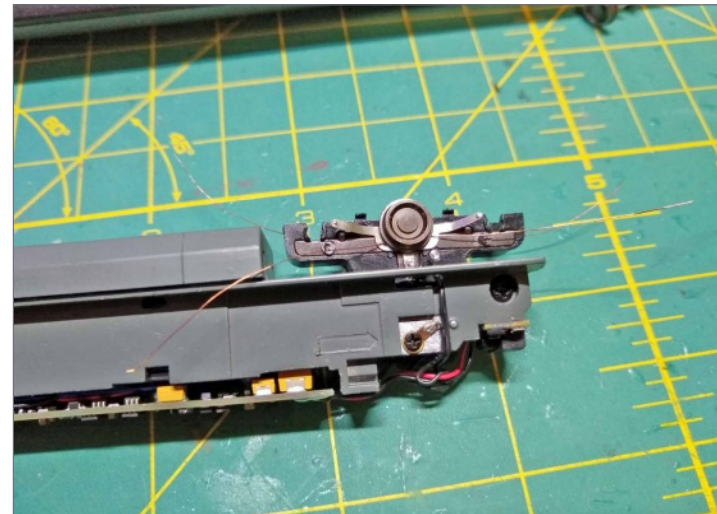
This trick may not work for every locomotive. Always make sure that each side of the locomotive's axle is isolated,



5. I used 35AWG copper wire I found in old phone and coaxial cables I'd collected over the years.



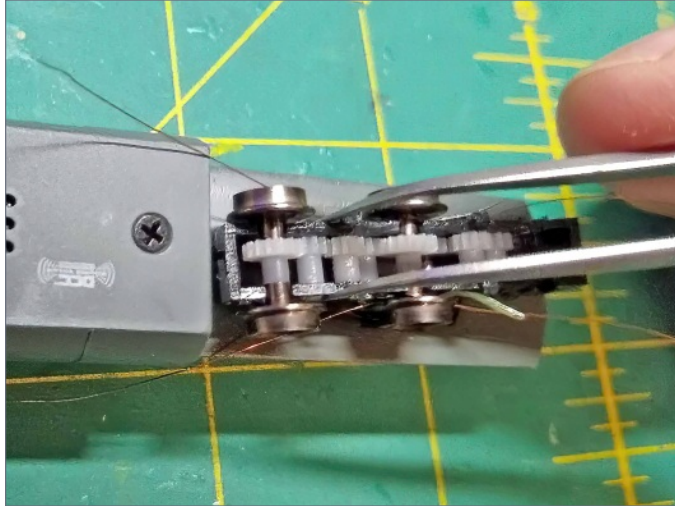
6. I looped the wires around the of center axles of the Dash 8's trucks, just behind the wheels.



7. I popped the wheels back into position on the trucks, taking care not to pinch the wires. I pulled the wires tight for a good connection around the axle, but made sure the wire and wheel were still free to move.



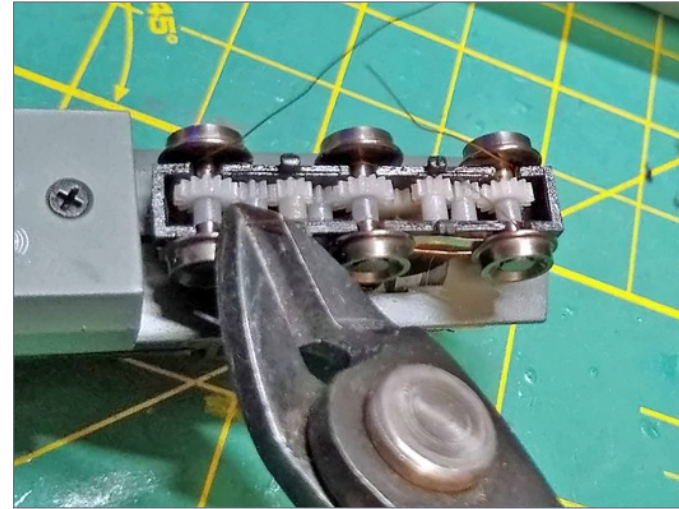
especially when using the wire. I've had a few older locomotives where this trick caused a short, so I had to be content with just a good cleaning for these locomotives.



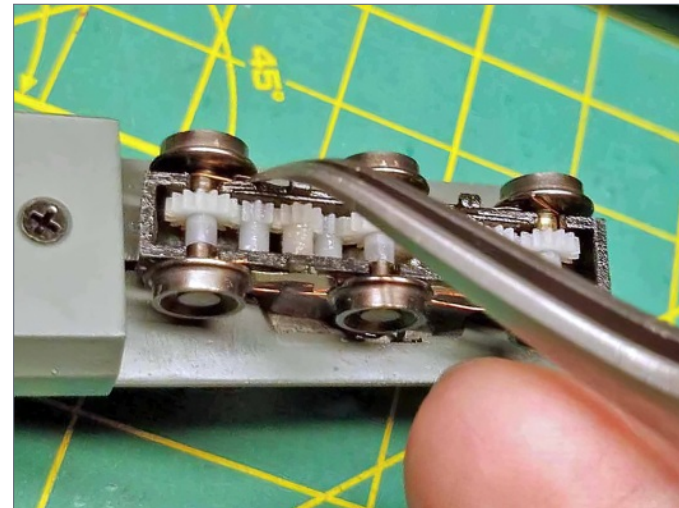
8. I snapped the other wheels into place using tweezers to hold the built-in wipers against the truck sides.



9. I carefully wrapped the wires around the backs of the trucks' outer wheels, keeping it tight against the axles.

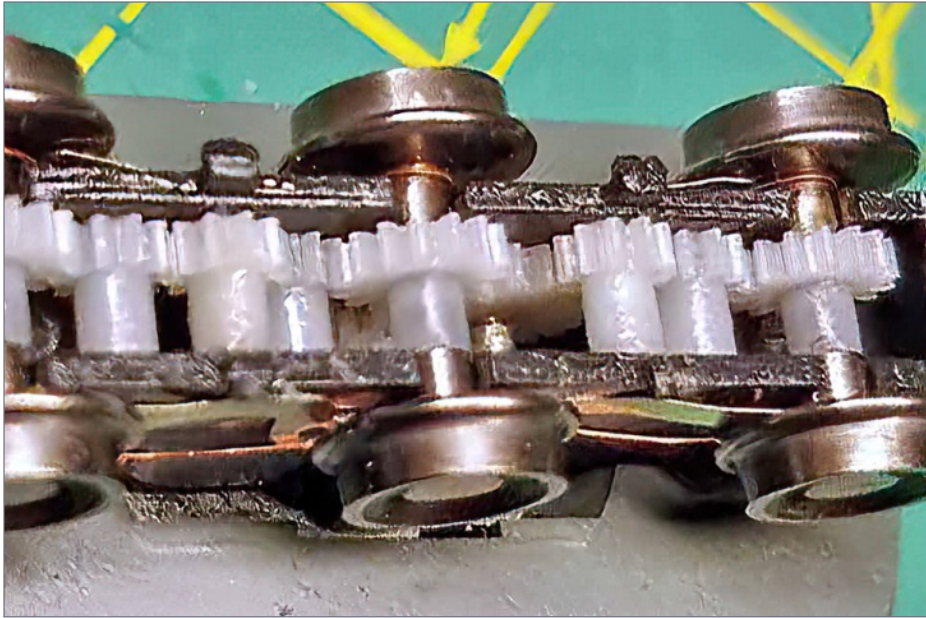


10. I trimmed off the excess wire with rail nippers.



11. I used tweezers to wrap any wire remnants around the axle and the back of the wheel. I made sure the wire coils did not touch the built-in wiper or interfere with the wheels' movement.





12. The completed truck with the wire wrapped around the axles. The wire touches the built-in metal wipers, creating another path for current.

THE GP40

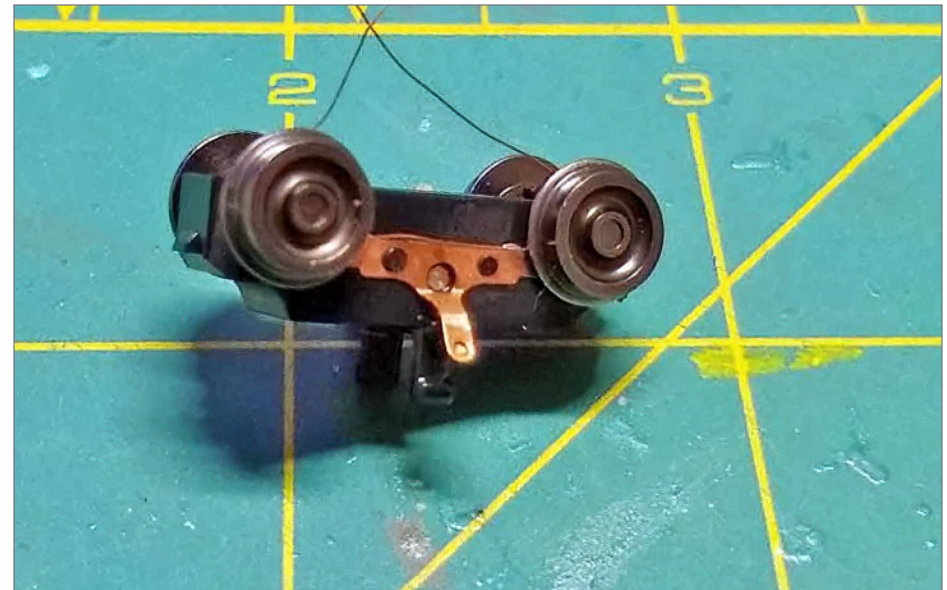
The GP40 only has two axles per truck, with wipers on the trucks touching the backs of each wheel. Unlike the Dash 8, power is not hard-wired from the trucks to the frame. Instead, the GP40 trucks have contacts that wipe the frame.

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13. I dismantled the truck and cleaned all the parts. I also polished the frame where the truck wipers make contact.



14. I put the cleaned wheelsets back in place and wrapped the wire around the axles behind the wheels with the wheelsets in place. The wires touch the built-in truck wiper metal.



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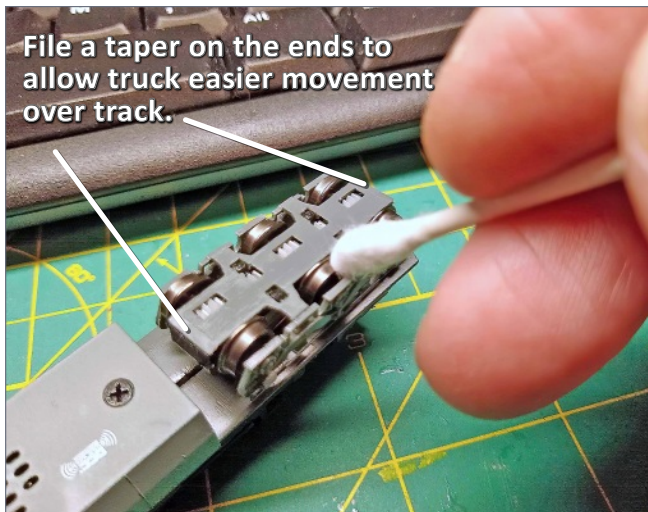
FINISHING STEPS

The final step involves truck reassembly and inspection. I usually don't lubricate new engines after I just spent the time cleaning up the excess oil from the factory. If I lubricate, I do so sparingly, and only with plastic-compatible oil.

The last step is to file or sand the decorative truck bottoms on the ends to have a taper to help with movement over the track [16].



15. I used my NMRA gauge to check and adjust the wheel spacing as needed.



16. I filed the ends of the gearbox bottoms to help the locomotive move over track better without catching on turnout points. Finally, I cleaned the wheels one last time with a swab and alcohol.

FINAL THOUGHTS

Testing the locomotives after all the work tuning them up is always fun. I have insulated frogs on my turnouts, and it is amazing how much better the locomotives can crawl over them without stalling after the tune-up. I can even stop them with wheels on the frog, then start them again without trouble.

In the case of the Dash 8, all 12 wheels, including the center-axle wheels are fully able to pick up track power. Once I've run the loco a while without issue, I consider the project a success.

I hope this article helps you to get a few of your locos running better. Watching a good or poor runner turn into a great runner is very satisfying, and gives more enjoyment to the hobby as you run your trains. ✓



ANTHONY KOCHVAR



Anthony has been into model railroading since his first HO set he got for his 8th birthday. He moved to N scale in his adult years. Since his layout is small, (36"x2" inches) as a modeling outlet, he creates 3D printable N scale details, and posts them to Thingiverse for others to enjoy. In addition he also builds 1:700 model ships. ■

THE AH-HAH MOMENT

column



MRH Running Extra | March 2022

JOE FUGATE DOES OUT-OF-THE-BOX
THINKING ABOUT MICROBRUSHES ...

MOST OF US HAVE HEARD OF MICROBRUSHES – HERE’S HOW TO GET THEM FOR JUST 1.7 CENTS EACH. And let’s also think outside the box as to using microbrushes: they’re amazingly versatile, like toothpicks on steroids.

I started exploring how to find very inexpensive microbrushes, and discovered I could get them in a nice container, too!

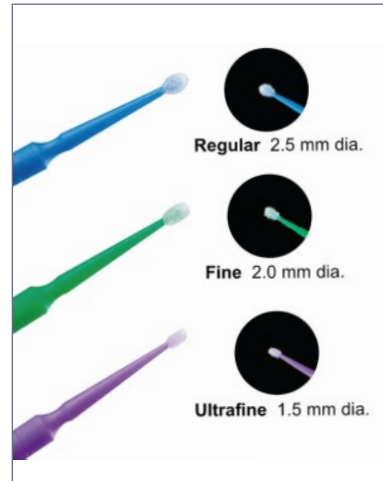
The secret: search for makeup microbrushes. That’s a huge market, which means they’re priced low and often conveniently packaged. *Ah-hah!*

Besides the obvious use of painting tiny details with these brushes, I keep discovering great new uses for these handy little guys. I wonder how I ever got along without them. Here’s a list to get you started:

- Pinpoint Pan Pastel application
- Pinpoint graphite application on couplers
- Pinpoint solder flux application
- Pinpoint superglue application
- Pinpoint decal set application

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1. Microbrushes come in various sizes. I find the ultrafine ones to be the most versatile.

THE AH-HAH MOMENT | 2

2. Shop around in the makeup section and you’ll find conveniently packaged microbrushes at great prices. The makeup market is huge, so the sales volumes means you can get these as low as 1.7 cents each.



3. These microbrushes come with the ultrafine 1.5mm tip and they have dozens of uses when modeling. They’re like toothpicks on steroids, and more!



- Pinpoint lubrication application
- Precision cleaning of an airbrush tip
- Precision dust removal on equipment and structures

I also find these microbrushes to be invaluable when working on turnouts. I apply full-strength white glue around turnout points with a microbrush, then just sprinkle ballast onto the glue. No more stuck points!

I also like to use these microbrushes with my favorite non-polar track cleaner to precision-clean points, frogs, and guard rails.

Keep these little guys on hand and you too will keep discovering more uses for them. I find I prefer the ultrafine ones most. ☑

To get a shopping list for this article, visit the MRH website at this link: mrhmag.com/magazine/running-extra/2022-03/ah-hah-moment-shopping



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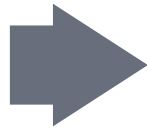
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Bonus section!

Here are all the pages from
the March issue of
*Model Railroad
Hobbyist* magazine
as well!



ALSO:

- Building a new layout with LCC
- Blend turnback curves into a scene
- Andrew Bobis' ATSF modular layout
- More modeler's survey of glues
- ... and more inside!



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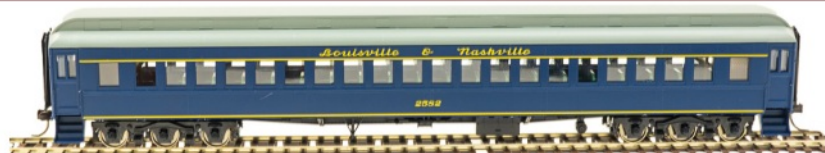
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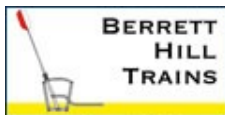
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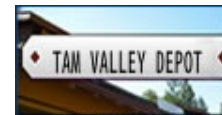
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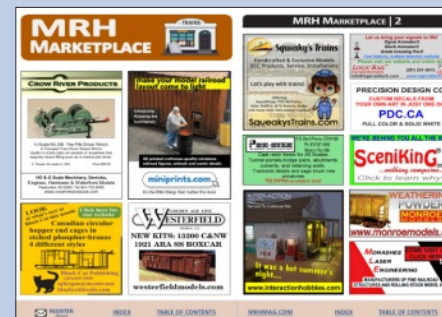


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PUBLISHER'S MUSINGS



Model Railroad Hobbyist | March 2022

**JOE FUGATE: WE'RE SELLING A STEAM
LOCO WEATHERED BY JIM SIX ...**



JIM SIX DID A WRITE UP FOR US ON A BLI 4-8-4 STEAM LOCO in *MRH Running Extra* last October. The 4-8-4 is an NP/SP&S prototype and not a locomotive Jim can use on his NYC layout. We're selling it on eBay and pricing it to sell.

The loco MSRP is \$799 (it is a brass loco with a die-cast chassis, so it's essentially a brass model), but we're listing it with a buy now price of \$699, even though it is essentially a brand new locomotive with zero miles on it. If you want a steam locomotive weathered by Jim Six, this is your chance.

The eBay listing doesn't start until March 16th at 6 pm Pacific and lasts for seven days.



1. We're selling this loco weathered by Jim Six on eBay. Jim weathered it to look like a well-maintained locomotive that's in the middle of its service life.



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PUBLISHER'S MUSINGS | 2

What Jim Six said about this model

I'm looking at the Broadway Limited Imports (BLI) Northern Pacific/Spokane, Portland & Seattle 4-8-4 Northern. The model is beautiful with perfect paint and fantastic detail [1]! The locomotive runs as well as it looks, and with a cast metal chassis and brass construction, it pulls like a beast.

BLI's model features its Paragon3 Sound & Operation System for DC and DCC operation, which links to BLI's proprietary Rolling Thunder sub-woofer system for extra bass sound. The locomotive sounds great! The locomotive includes a smoke unit with synchronized chuff and variable intensity and timing.

It can operate on a minimum radius of 22 inches, and code 70 rail.

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The locomotive features an excellent, smooth running mechanism at any speed, and I found its slow-speed running to be particularly impressive.

The locomotive is highly detailed, as one would expect for hybrid brass, with flawless paint. It even features a factory-installed crew. Good running, good detail, and good sound are all mandatory for me, and *this model has it all*.



2. Another view of the Jim Six weathered BLI 4-8-4 we're selling on eBay.



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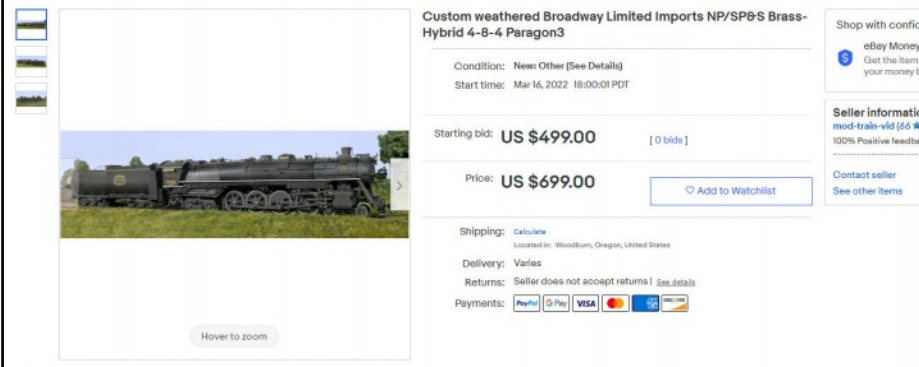
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Jim Six's weathering comments

Taking an \$800 model and applying weathering can put a huge lump in your throat! I recommend starting with smaller, less-expensive models to build confidence. I have weathered hundreds of locomotives over the years, so I did not hesitate to apply weathering to this model.



Custom weathered Broadway Limited Imports NP/SP8S Brass-Hybrid 4-8-4 Paragon3

Condition: New: Other (See Details)
Start time: Mar 16, 2022 18:00:01 PDT

Starting bid: US \$499.00 [0 bids]
Price: US \$699.00 [Add to Watchlist]

Shipping: Calculate
Located in: Woodburn, Oregon, United States
Delivery: Varies
Returns: Seller does not accept returns | See details
Payments: PayPal, Gift, VISA, Mastercard, American Express

Item specifics

Condition:	New: Other (See Details): An item in excellent, new condition with no wear. The item may be missing the original packaging or ... Read more	Power Type:	DC
Color:	Black	Replica of:	Class E-1
Wheel Configuration:	4-8-4	Material:	Brass, Diecast
Scale:	1:87	Year Manufactured:	2021
Grade:	C-8 Like New	Control System:	Digital
Gauge:	HO	Vintage:	No
Brand:	Broadway Limited Imports	Type:	Steam Locomotive
Rail System:	Two-Rail System	Corporate Roadname:	Northern Pacific / SP8S
Features:	Custom weathered by Jim Six, Painted, Sound Function		

Custom weathered Broadway Limited Imports NP/SP8S Brass-Hybrid 4-8-4 Paragon3, MSRP \$799.

This new locomotive model has excellent paint and very fine detail. The locomotive runs as well as it looks -- with a cast metal chassis and brass construction, it pulls Jim Six took the brand new locomotive from its box, test ran it enough to write up an article for Model Railroad Hobbyist (see Oct 2021 MRH Running Extra magazine), weathered it to look like a well maintained working locomotive. It has maybe 30 minutes of running time total, so it's almost brand new.

BLI's model features its Paragon3 Sound & Operation System for DC and DCC operation, which links to BLI's proprietary Rolling Thunder sub-woofer system for extra. The locomotive sounds quite good and includes a smoke unit with synchronized chuff and variable intensity and timing.

The locomotive features a brass body with die cast chassis and traction tires, so it is a solid puller. It can operate on a minimum radius of 22 inches, and code 70 rail. It runs smooth at any speed, and its slow-speed running is particularly impressive.

Jim Six adds:
"The SP8S E1 was primarily a passenger locomotive before WWII. Railroads took pride in keeping their passenger equipment clean for the traveling public. I wanted it to appear used but well taken care of.

I concentrated my weathering on the trucks and undercarriage, which would constantly collect road grime. I also lightly weathered the top of the boiler, the cab roof, the tender. The result is a locomotive that doesn't look brand new, but well-maintained."

3. The eBay listing for this new locomotive (MSRP, \$799) will open on March 16th at 6 pm Pacific Time. Jim Six applied an expert weathering job to the loco to make it look like a well-maintained in service loco. See text for details.



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THE SHAY



The Shay locomotive was the most widely used geared steam locomotive. The locomotives were built to the patents of Ephraim Shay, who has been credited with the popularization of the concept of a geared steam locomotive. Although the design of Ephraim Shay's early locomotives differed from later ones, there is a clear line of development that joins all Shays. In 1884, they delivered the first 3-cylinder (Class B) Shay.

Class B, Lima-built 50-ton 2-truck Shay

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I used Polly Scale Railroad Tie Brown as a base for weathering. Poly Scale is an acrylic that has been discontinued, but I stocked up on key colors while they were still available. I applied the weathering using my trusty Paasche Model-H airbrush, taking care to use a light touch.

In my opinion, model railroaders frequently over-weather their railroad equipment. Too many models appear as though they are near end of "life" and/or have never been washed or repainted since being delivered. This is not actually a good representation of the prototype – at least not before modern times.

In the case of passenger locomotives such as this model, and particularly for steam locomotives, the model needs to be cleaner and appear better maintained than a freight locomotive.

The SP&S used the E-1 featured here primarily as a passenger locomotive before WWII. Railroads took pride



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in keeping their passenger equipment clean for the traveling public. I weathered this model to appear used but well taken care of.

I concentrated my weathering on the trucks and undercarriage, which would constantly collect road grime. I also lightly weathered the top of the boiler, the cab roof, and the top of the tender. The result is a locomotive that looks a slightly weathered, but well-maintained.

So if you'd like a honey of a brand new steam loco with a professional weathering job by Jim Six, keep an eye out for this eBay auction, starting March 16th at 6 pm Pacific:

WEB: www.ebay.com/itm/203865115385



3. Fireman's side view of the Jim Six weathered BLI 4-8-4 we're selling on eBay at this link: www.ebay.com/itm/203865115385 ... do note, the listing doesn't go live until 6 pm Pacific on March 16th.

More in-person conventions coming soon!

Now that public in-person conventions seem to be making a come-back again, the rest of the year is shaping up nicely for MRH. We're looking forward to seeing some of you at a real live convention again!

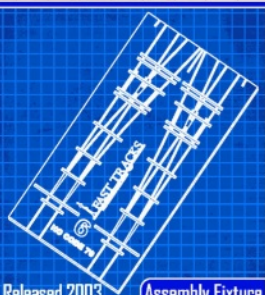
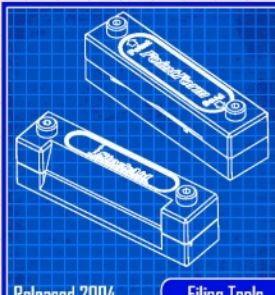
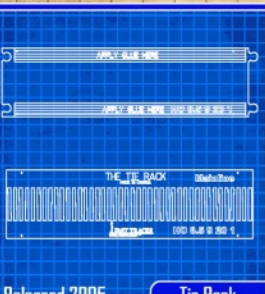
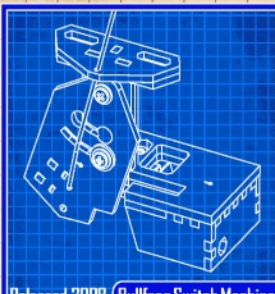
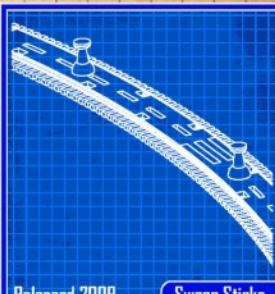
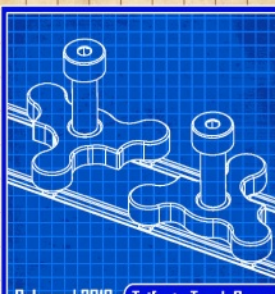
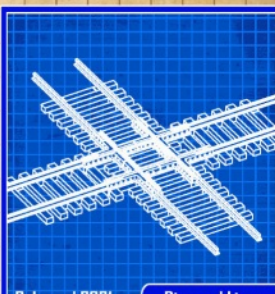
We will be attending the Pacific Northwest Regional Convention in Eugene, Oregon from May 11-14th. I will be giving four clinics (phew) and we will have a vendor table out in the general gathering area for the convention.

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As for the clinic titles I will be giving, they are:

- Make it run like a Dream
- Painting models in a post-Floquil era
- Update on the Siskiyou Line 2
- Track Cleaning

The track cleaning clinic is a new clinic for me, the others I have given before. For the new track cleaning clinic, I gave it this description:

Find out what causes the black gunk on our rails and how to reduce it. Get at least a year of flawless running between track cleanings!

We also plan to attend the St. Louis NMRA National Train Show in August. The train show runs from Friday, August 12, 2022 thru Sunday, August 14, 2022. I also plan to be giving three clinics on Wednesday and Thursday of that week, and I plan to have some new TOMA modules on display in our booth.

We're also attending the National Narrow Gauge convention in Tacoma, WA from September 1 - 4th. I will also have the new TOMA modules on display at our tables.

If you're attending any of these shows, please stop by and say hello. I sometimes get a lot of folks around me asking questions, but I always appreciate a quick hello, regardless. ☑

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Website **MRH** mrhmag.com
THIS MONTH

Model Railroad Hobbyist | March 2022

Compiled by **JOE FUGATE**



Flexible adhesion promoter for handrails

MRH forum new member **crazyivan** (Matthew K.) asked for advice on how to paint delrin loco handrails and avoid paint chipping.

Forum members provided a couple of useful methods and then Matthew tested them and reported back. If you've ever wondered how to avoid handrail paint chipping, be sure to check out this thread!



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

► **MRH'S MONTHLY GREAT MODELER POSTS**



1. New MRH forum member **anteaum2666** has some fun posting stories as if he was able to visit places on his layout if they were real places.

Fast times in Nicholas county

MRH forum member **anteaum2666** (MRH author, Michael Anteam) recently wanted to have some fun by posting photo essays of him visiting locations on his layout as if they were real.

"Not too long ago I took a trip to Nicholas County, WV. The scenery was so pretty and the weather so nice I decided to stop at the local diner for a cup of coffee. Turns out, the people are super friendly too. I struck up a conversation with some of the local railroaders, and they shared some mighty fine stories of their adventures running trains in the local hills and hollers."

So kick back, grab your favorite beverage, and read through the experiences Michel had when he visited locations on his layout and spoke with the people who live there.

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

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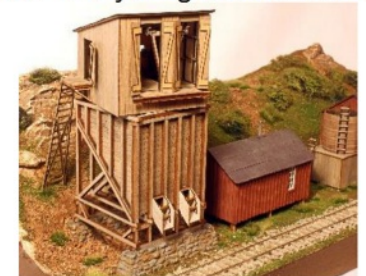
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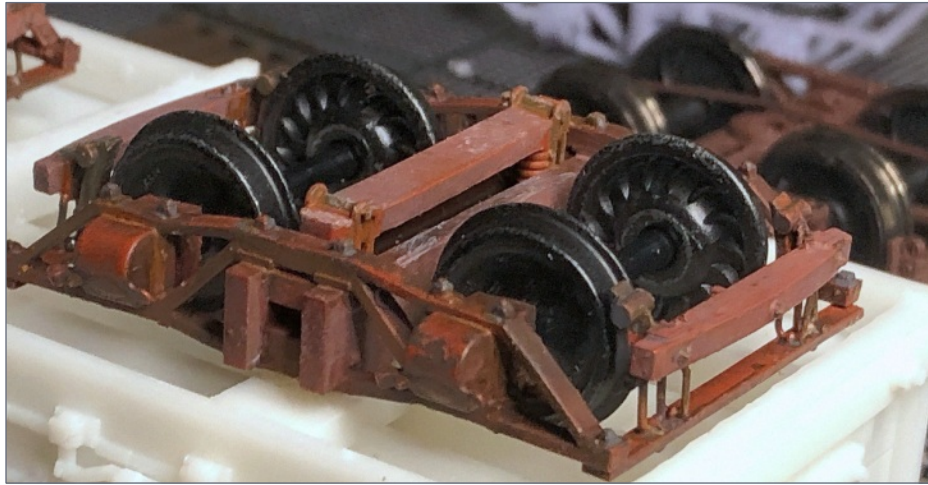


Berkshire Valley Models
#2020 The King Mine – HO



Based on the mine just south of
Silverton, CO. Accurately laser cut
wood. Everything but the scenery.





2. MRH forum member **david_d** recently kicked off a forum thread for modelers with 3D printers to share their learnings and insights.

3D printing advice

MRH forum new member **david_d** kicked off a new topic to for those using 3D printing to share their experiences.

"I've been doing a fair amount of 3D resin printing recently with very good results and thought I'd start a new topic to discuss. I've been printing trucks and car bodies in On3/30 for a project I've been working on – but interested in anybody else who has been using this tech."

For those of us interested in this technology, but who still have questions, it's very helpful to read the banter from modelers *actually using* 3D printing.

Not only are those who already do 3D printing picking up useful tips, but the rest of us can get an insider's view of what's involved if we were to get a 3D printer of our own.

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

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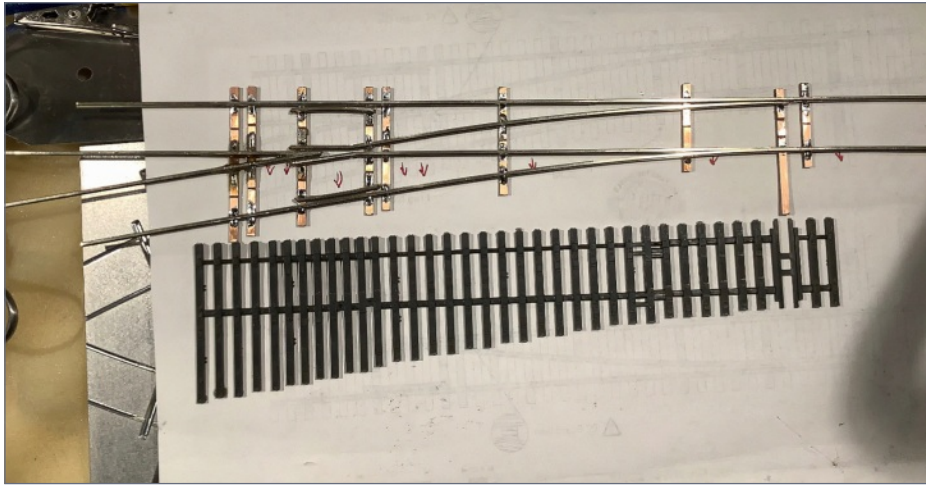
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3. MRH forum member **MikeHughes** wanted to explore if it's possible to put Central Valley turnout ties underneath a Fast Tracks jig-built turnout. Read on to learn the results.

Use CVT ties under Fast Tracks turnouts

MRH forum member **MikeHughes** recently began wondering if he could get Central Valley turnout ties to fit under a Fast Track jig-built turnout. This gives you nice tie plate and spikehead detail for your Fast Tracks turnout, as opposed to "QuickSticks" ties from Fast Tracks, which have no tie plate or spikehead detail.

"After some careful work with a magnifying glass, I was convinced this [fitting the CVT ties under a Fast Tracks turnout] could be done. I marked the edge of each tie to be removed with a red sharpie and then carefully cut the ones away that needed removal. Below are the sections that are left to be glued to the rails."

Read the full thread to see the results. Spoiler: it sort of works, but it's rather fiddly with a lot of test, cut, and fit.

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

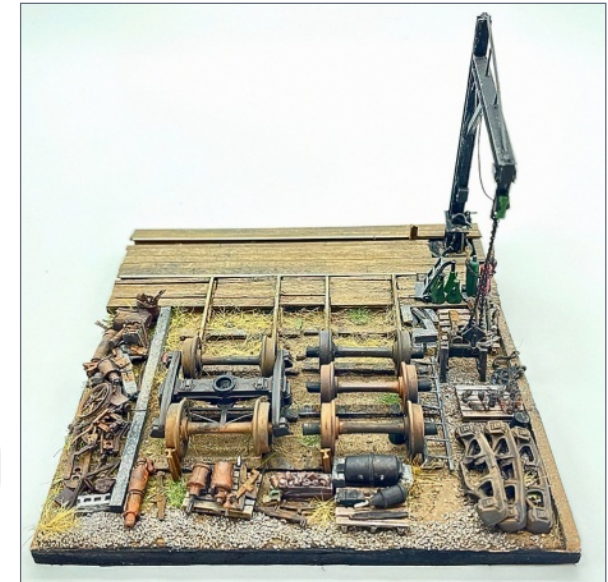
Latest Weekly Photo fun modeling photos

The Weekly Photo fun thread always has fascinating model photos. This most recent thread is no exception ...

[View the full post on the MRH website](#)

4. MRH forum member **Mountaingoatgreg** (MRH author and TMTV video modeler, Greg Baker) posted these nice photos of his latest modeling project: a 4" x 4" diorama of the RIP track crane at Wishram, Washington.

Greg said, "I lost count of the parts when I hit 100! I will be adding this to a larger diorama in the future." Greg is working on a new TOMA project layout series for TrainMasters TV – maybe we'll get to see this neat RIP track area on that layout?



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WHAT'S NEAT

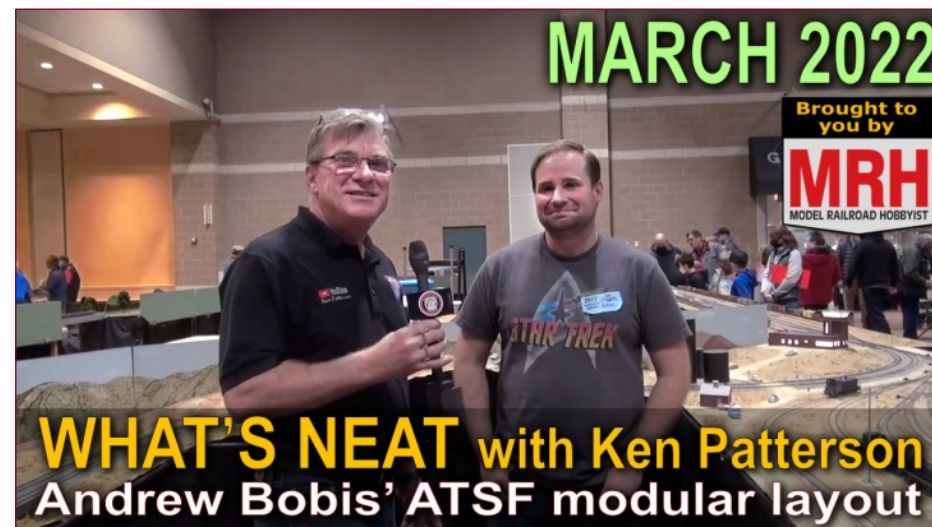
column



Model Railroad Hobbyist | March 2022

KEN PATTERSON COVERS ANDREW BOBIS' ATSF MODULAR LAYOUT, MODELING FROM ABOVE - RAIL FERRY CHEROKEE, AND THE BACHMANN 2022 CATALOG COVER PHOTO SHOOT ...

THIS MONTH KEN INTERVIEWS ANDREW BOBIS, who brought a Santa Fe modular layout to a train show in the St. Louis area, the Modeling from Above segment features



WHAT'S NEAT with Ken Patterson
Andrew Bobis' ATSF modular layout

click to play video

PHOTOS AND VIDEO OF SUPERB MODELS

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drone footage from Jeff Nelson of the rail ferry Cherokee, and Ken Patterson describes how he built and photographed a diorama for the 2022 Bachmann catalog cover.



Andrew Bobis' Santa Fe All the Way modular layout



1. Ken interviews Andrew Bobis, owner of the Santa Fe All the Way modular layout.

in the **MARCH 2021 MRH RUNNING EXTRA!**

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2. The layout, depicting the Santa Fe in 1959, features the Topeka, KS station. The layout is inspired by the O scale layout that was at the Chicago Museum of Science and Industry.



3. The layout height is 38 inches, making it easily viewable by children. The scenery depicts the Santa Fe between Chicago and California.



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4. Andrew has hand-painted hardboard backdrops for the layout, except for the yard, which is open to both sides for accessibility.



5. Santa Fe's Barstow shops are also depicted on the layout, with basic interiors and LED lighting.



6. The full layout is 20½ feet by 44 feet.

Modeling from above – the rail ferry Cherokee in Mobile, Alabama



7. Jeff Nelson shot drone footage of the arrival of the M/V Cherokee in Mobile, AL, as well as showing it loaded with cars on 10 tracks on each of two decks.



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8. The Cherokee, seen here departing for Coatzacoalcos, Mexico, can carry up to 135 railcars, and will be joined in March 2022 by identical sister ship Mayan. A round trip between the two ports is scheduled to take between 10 and 12 days.

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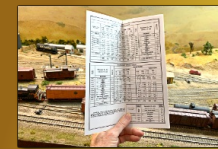
Creating the photography for the Bachmann 2022 catalog



9. Bachmann wanted the cover to feature their new concrete-tie EZ-Track, and provided Ken with a sketch of what they were looking for.

in the **MARCH 2021 MRH RUNNING EXTRA!**

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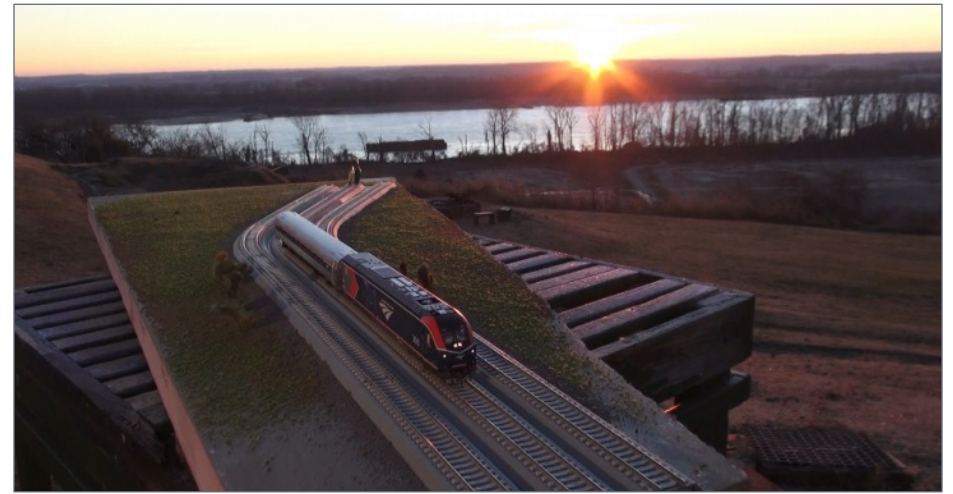
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10. Ken painted the foam base for the diorama with an earth-tone latex paint, glued down the EZ-Track, laid down some dirt and ground foam, and then feathered ballast between the track and the ground foam.



11. Ken sprayed Woodland Scenics Scenic Cement liberally over the diorama to lock down the ballast, ground foam and dirt.



12. Ken took advantage of the good weather to take a dawn photo of the diorama and the Charger locomotive. He took a 45-second exposure at f/22, using a side light for 1½ seconds to brighten up the engineer's side of the locomotive.



13. The result was this photo, which Bachmann will be able to use for publicity purposes. This photo was taken about 18 minutes prior to the sunrise for the best color effects.



14. Since Ken was already up, he also took this photo of the locomotive as the sun rose over the horizon. This shot, using the side light and f/22, was a less than a 1½-second exposure.



15. Two days later, after a snowstorm, Ken was able to take the diorama, now with bushes and trees added, outside for the cover shot.



16. For the bushes, Ken uses the armatures from the Bachmann wire foliage branches.



17. Ken wraps the armatures in polyfiber and then glues ground foam on them.





18. Using this method, he created whole sheets of trees at the same time.



19. Using various shades of ground foam, they make great looking bushes that will fit in many locations.

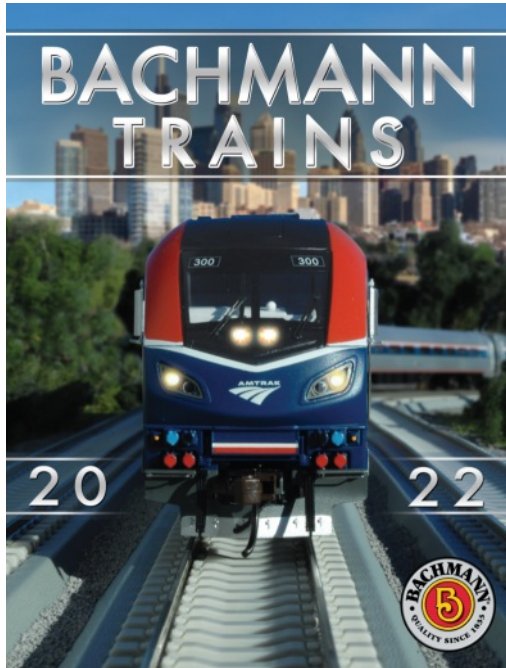


20. Ken also uses wire-armature trees, which can be used without flocking to make a dead tree or winter scene.



21. The wire-armature trees can be made in a variety of sizes and types.





22. Bachmann took Ken's photograph and photo-edited it to add a city backdrop for the final catalog cover.

For the full video showing the entire Santa Fe All the Way modular layout, the Cherokee and its loading facility in Mobile, Alabama, and everything Ken did to create and photograph the diorama for the 2022 Bachmann catalog cover shot, click the video link at the beginning of this article. ☑

in the **MARCH 2021 MRH RUNNING EXTRA!**

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What we learned building a new layout with LCC



Electrical
Impulses

Model Railroad Hobbyist | March 2022

A Southern Pacific freight crosses the Colorado River in Yuma, entering the state of Arizona. This is one of the few areas where we have completed scenery.



JESSE POOLE AND DAN KUBARYCH DISCUSS THEIR EXPERIENCES WITH LAYOUT COMMAND CONTROL ...

IN OUR OPINION, LCC is the future of model railroading! LCC works well, is reliable, adaptable, and opens the possibility for all types of new innovations.

The Arizona Railroad Historical Society (ARHS) has the good fortune of building a new 1,000-square-foot HO layout in the Arizona Capitol Museum. Our layout is to represent all major cities in Arizona and depict the Five Cs of the state's economy: cotton, copper, cattle, citrus, and climate. That is a lot to pack in a small space [1].

BUILDING A LAYOUT WITH LCC | 2

When we started the layout just over two years ago, we decided to use the new Layout Command Control (LCC) system pioneered by the NMRA. We were the first to attempt to design and build a large public layout from the ground up with LCC, so we were concerned about the availability of technical support.

None of our members had significant electronic, computer, or IT skills. Because we were among the first to try LCC on a major layout, there was not much of an experience base we could draw on. RR-CirKits LCC was the only major supplier at the time, so we were concerned about their motivation to provide the support we'd need.

Two years into the project, we can report that the system designers have provided support when requested, the manufacturer provides an outstanding product, and the



1. After 18 months of construction, the ARHS layout was running in December 2019. The trackwork on the benchtop level, representing the Southern Pacific from Phoenix to Tucson and Yuma, is mostly complete. The upper level representing the ATSF from Phoenix to Flagstaff is still in work. Yes, there is one place on the layout that is four levels high!

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2. The ARHS layout is still under construction, but the LCC system is almost all installed and working well just below the layout surface.

experience base is expanding with many others now using LCC. Our lack of experience has not proven to be an issue.

Today, the ARHS exhibit layout has a system comprised of 70 Signal Cards, 63 BOD4-CP cards (Block Occupancy Detection-Control Point), and an assortment of Tower, SMD8 (stall-motor Driver), and RB4 (Relay Board) cards, all housed in purpose-built troughs under the layout [2].

A central computer running JMRI connects to the LCC via a CAT-5 cable and to the NCE command station via a serial line. All operator interfaces are wireless; tablets command the LCC, wireless throttles operate the trains and cell phone applications can interface with both LCC and DCC.

Although we struggled over six months discussing whether to adopt LCC, it turned out to be our single best decision. We learned a lot installing this system, and felt that it was important to share those experiences with the rest of the model railroading community. If the ARHS can successfully install LCC, you can too!



J. Poole

AN LCC DEMONSTRATOR MODULE IS A VALUABLE TOOL

The best way to learn about LCC is to try it out. RR-CirKits offers a Starter Kit that includes a Buffer-USB to connect the LCC system directly to your computer, two LCC Terminators to give you terminal readouts, an LCC Power-Point to power and monitor the system, and a cable for less than the cost of a new locomotive.

This Starter Kit, combined with a Signal LCC card and a BOD4-CP card (Block Occupancy Detection for four Control Points), is enough to set up a demonstrator module with four detectable blocks and controls for two Tortoises and four signals. This system went together easily and convinced us to incorporate LCC in ARHS's exhibit layout [3].

Not only was the LCC demonstrator module a great tool to get us started with LCC, but it remains useful for testing new features before incorporating them in the layout.



3. ARHS members Dan Kubarych and Jack Wade with the LCC Demonstrator Module.

UNDERSTANDING THE BUILDING BLOCKS OF LCC

Planning is the most important step in setting up LCC. We discovered that designing an LCC system is a matter of adding “building blocks” – electronic cards – for each desired feature. You need to understand what each electronic card does, how to hook it up, where to place the card on the layout, and how it works with the rest of the system.

The first and most important component is the LCC Buffer-USB. Your system needs one to provide an interface with your computer and JMRI. Once set up, you can run LCC without a computer connected, but you need a computer for that initial setup [4].

Signal and Tower boards provide the logic or “brains” for the LCC system, both capable of internally processing up to 32 conditional statements. These cards receive input and provide



4. Every LCC system needs a LCC Buffer-USB module to interface with a computer. RR-CirKits photo

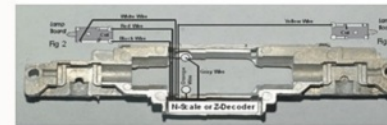


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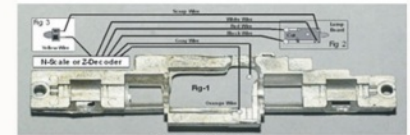
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BUILDING A LAYOUT WITH LCC | 6

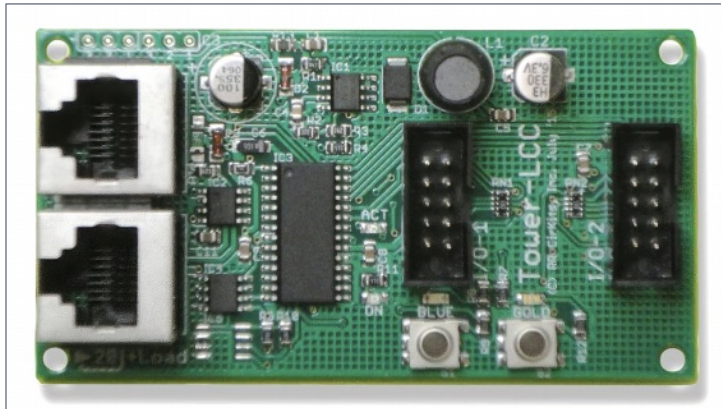
output to function boards in the system. They also communicate with each other and the central computer on the LCC communications bus; all communications pass through these two types of cards.

Tower-LCC cards have 16 lines of input/output and logic. Each can support two “daughter” input/output boards that provide actual layout functions. If your layout does not have any trackside signals, then you only need the Tower-LCC cards [5].

Signal-LCC cards have eight lines of input/output and will support only one daughter board. The Signal-LCC card provides logic for controlling up to four signal masts with four different LED aspects each.

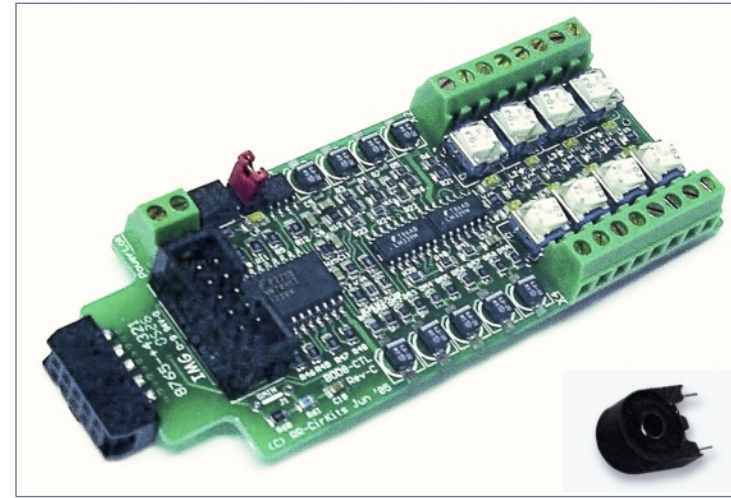
The process of selecting Tower vs. Signal cards will become more obvious when we discuss the system installation. All Tower and Signal cards daisychain together with CAT-5 cables that should be a minimum of 12 inches long.

Input/output “daughter” boards connect to the Tower-LCC or Signal-LCC cards via 10-wire ribbon to accomplish the layout functions. The letters and numbers associated with each board spell out their function.



5. Tower-LCC cards provide logic to your LCC system. RR-CirKits photo

BUILDING A LAYOUT WITH LCC | 7



7. BOD8 boards provide block occupancy detection for up to eight blocks using CTs (Inset). RR-CirKits photo

BOD8 boards provide block occupancy detection for up to eight blocks using current transformers (CT) that you can connect. The CTs are coils that go over one bus wire somewhere between a circuit breaker and the first track feeder. The coil detects to current flowing through a passing train, and the BOD sends the signal that the block is occupied [7].



J. Poole

CTs CAN BE LOCATED ANYWHERE

We set up a test using four blocks with lengths from 10 to 35 feet. Each block had two CTs: one at the circuit breaker and the other close to the first track feeder in the bus. We wired the two CTs for each circuit to a BOD8 card in positions directly opposite each other so we could watch when the occupancy lights came on.

Although the distance from the power source meant we had to adjust the BOD card's sensitivity potentiometer slightly, we found both CTs detected a train simultaneously once calibrated. From this, we concluded that we could locate CTs anywhere on the track bus. This means they can be grouped near the BOD card.



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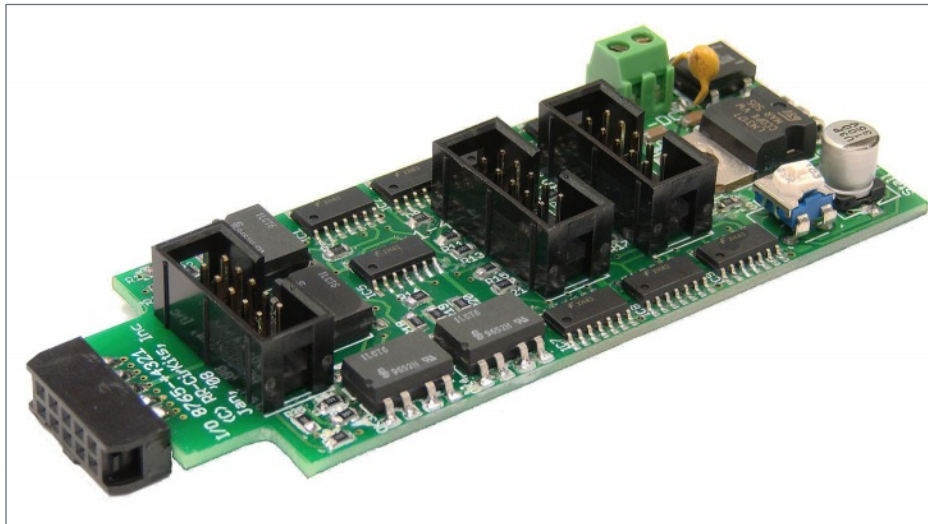
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BUILDING A LAYOUT WITH LCC | 8

BOD cards have a PowerLok feature that holds the last block occupancy status if track power is cut, rather than revert to a false “clear” signal because current is no longer flowing to an occupying train. When the track power is restored, the BOD card resumes reading the occupancy state.

Because of the Power-Lok feature, all blocks on a single BOD card must be from the same circuit breaker for proper reading. If blocks from two or more circuit breakers share a BOD and power is cut to one, the PowerLok feature will activate for both. The BOD will not respond to changes in occupancy for the blocks still receiving power.

SMD8 boards are function modules with stall-motor drivers for up to eight turnouts each [8]. SCSD8 boards are similar in function, though they provide single-coil solenoid drivers for up to eight solenoids to control four turnouts.



8. SMD8 boards can control eight tortoise-type stall-motor turnouts. *RR-CirKits photo*

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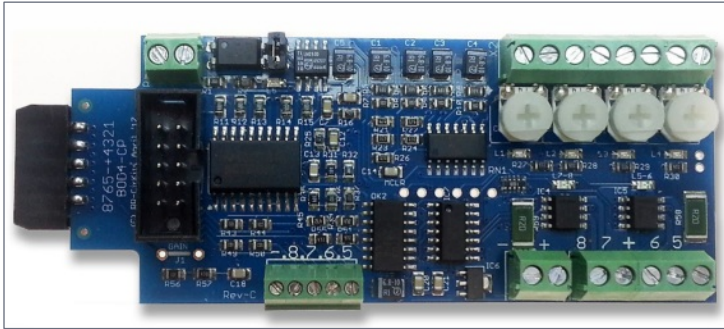
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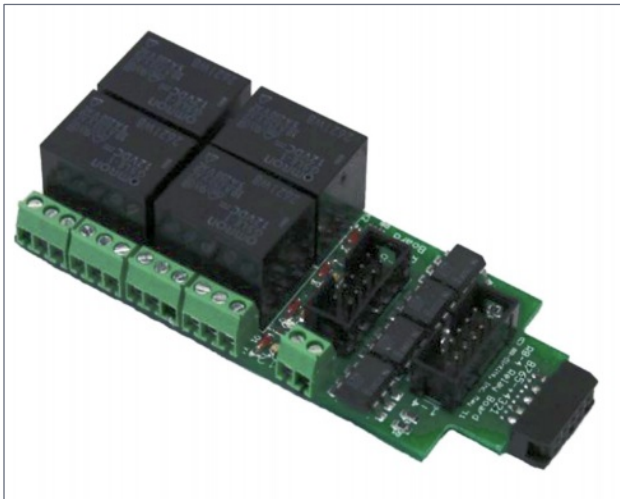
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BOD4-CP boards provide occupancy detection for up to four blocks with a control point function that operates everything necessary for a single-siding control point. It has dual turnout drivers for two turnouts. When connected to the Tower-LCC or Signal-LCC boards, it can receive discrete input and output from four pins [9].

The RB4 is a relay board with four independently controlled SPDT 10-amp relays. Each relay has its own LED indicator. The board is useful for switching high-current items including track busses or major lighting circuits [10].



9. BOD4-CP board. RR-CirKits photo



10. RB4 boards have four SPDT relays. RR-CirKits photo

The RR-CirKits website (www.rr-cirkits.com) describes these and many other components and provides manuals for each. In addition to the “cards.” described above, there are a few others worth noting.

- **Power-Points:** These inject 15 VDC for operation of the cards. (Not to be confused with the Microsoft program PowerPoint which will be referenced later in this article).
- **TYCO Mounting tracks:** These are used to mount the cards. We used part number 3TK2-4W, which is a four-position, wide-spaced mounting track.

LCC COMMUNICATIONS IN BRIEF

LCC is a messaging protocol that sends messages (EventIDs) to LCC cards (nodes) on a network about things (events) occurring on the network. The nodes can send or receive EventIDs, and in some cases both.

For example, a block detector sends an EventID in response to a train's position. Another node receives the same EventID as an instruction to throw a turnout. This, in turn, may trigger the node controlling the turnout to send another EventID into the network that other nodes respond to.

The key difference between LCC and DCC is in how each sends information to the layout. While DCC sends a direct command to a specific address, LCC transmits all EventIDs to all nodes on the layout. The nodes respond to messages based on their configuration.

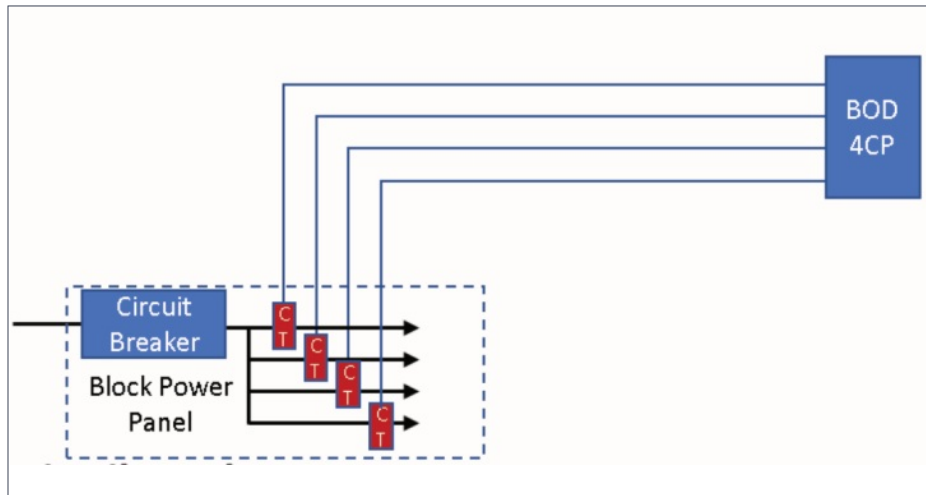
Think of DCC as a cell phone call to one person in a crowded room. While others might hear the phone ring, only the person with the phone knows what the call is about. In a DCC setting, you send a set of commands to a specific locomotive or consist address to turn the turn on the headlight or proceed down the track.



BUILDING A LAYOUT WITH LCC | 11

If DCC is a cell phone call, LCC is a public address system that lets everyone in the room know that a blue chevy sedan in the parking lot has its headlights on. Those with blue Chevy sedans will respond. In a layout LCC setting, a node detecting a train occupying a block sends an EventID into the system that might trigger multiple responses from multiple nodes:

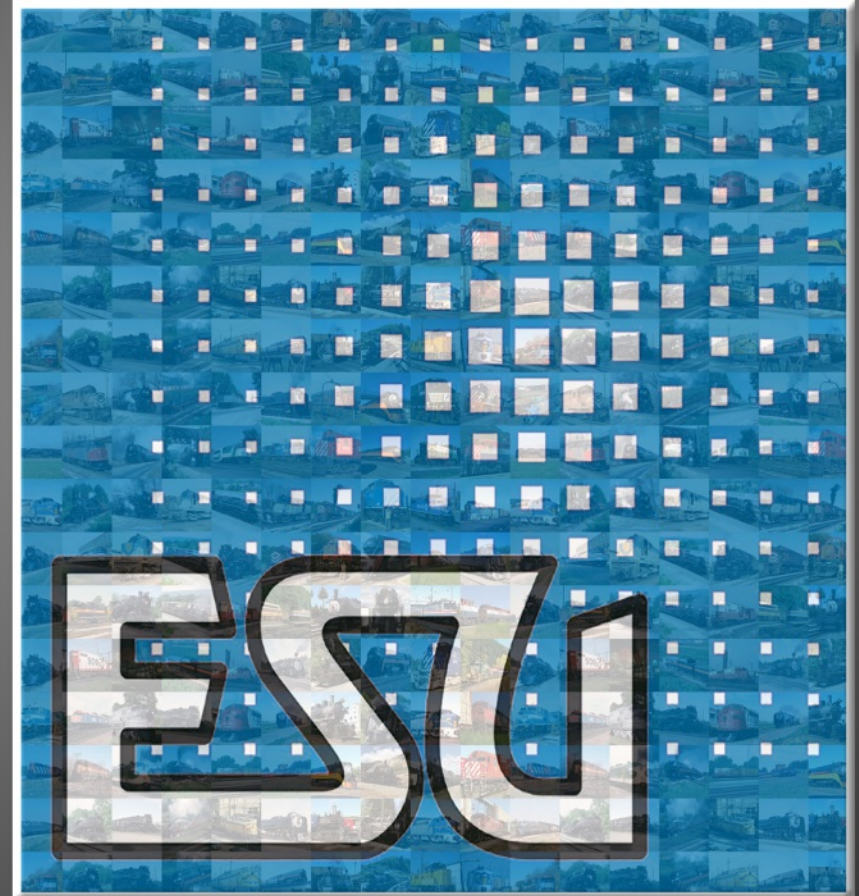
- JMRI Panel Pro registers the movement and changes the color of the rail on the dispatcher panel to indicate occupancy.
- The signals in the occupied block change to red.
- Surrounding block signals also change to indicate the next block is occupied.
- Perhaps a turnout or other device will also activate if so directed, and the turnout will report its actual position.
- Nodes not affected by the information in the EventID will not respond.



11. In the Associative approach, all block wires emanate from a single panel and CTs are centrally located.

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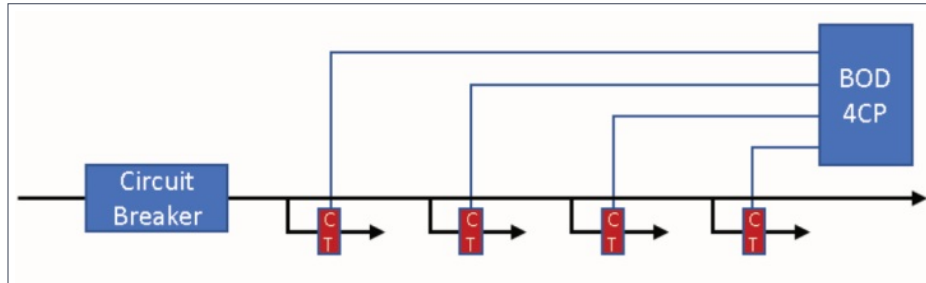
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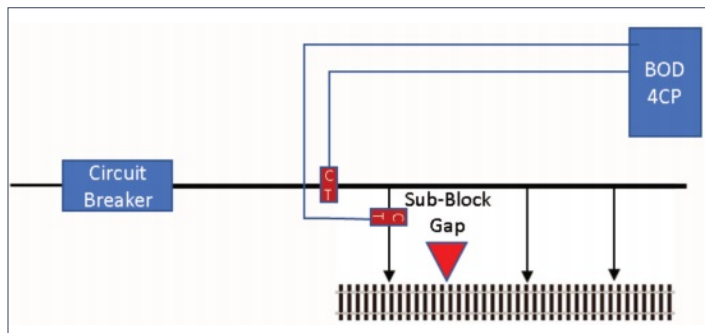
The availability of all information to all devices on a layout makes LCC a powerful system. Once you have the concept of sending/receiving data down, you will be well on the way to being an LCC expert.

TRACK BUS APPROACHES

Planning the track power block wiring with LCC presents the same choices and dilemmas as with DC or DCC wiring, with the additional consideration of the CT locations. The basic approaches for track busses are Associative, Distributed and Sub-Block [11, 12, 13].



12. In the Distributed approach, each block “splits” off from a central bus wire. CTs are located around the layout.



turnout, or other animation.

13. The Sub-Block approach is used within a block to trigger another function such as a grade crossing,

The ARHS used the Associative approach for most of the track power wiring because it keeps all the wire junctions and the CTs for detection on the power panel in one easily identifiable location.

We used WAGO lever-action reusable connectors for the bus mains, which allows us to easily disconnect individual bus wires from a circuit. If there was a short during construction, we could easily fault isolate to a block rather than an entire circuit breaker.

We used the Distributed approach in a few cases, such as where we needed an additional block for trackside signaling.

The Sub-Block wiring approach allows a subsection of a block to be sensed separately from the rest of the block. This was important for automatically throwing a turnout. If the train is approaching from a long block, it is desirable to throw the turnout only as the train approaches it.

NAMING BLOCKS AND TURNOUTS

Planning the names and numbers for the turnouts and blocks is important because LCC requires each to have a unique identifier. The names are easy, as they identify the train location. The numbers are where a process is helpful.

For the ARHS, we assigned powered turnouts on the mainlines two-digit numbers from 01 to 99, and assigned track power blocks numbers in series from 100 to 800.

The first place of the three-digit track block numbers refers to each of the eight independent loops on the exhibit, i.e., Southern Pacific Loop 1 is SP1 and uses the 100 series, SP2 uses the 200 series and so on. The second digit refers the circuit breaker (or auto- reverse card) in that loop and the third digit to the actual block number used on the exhibit.

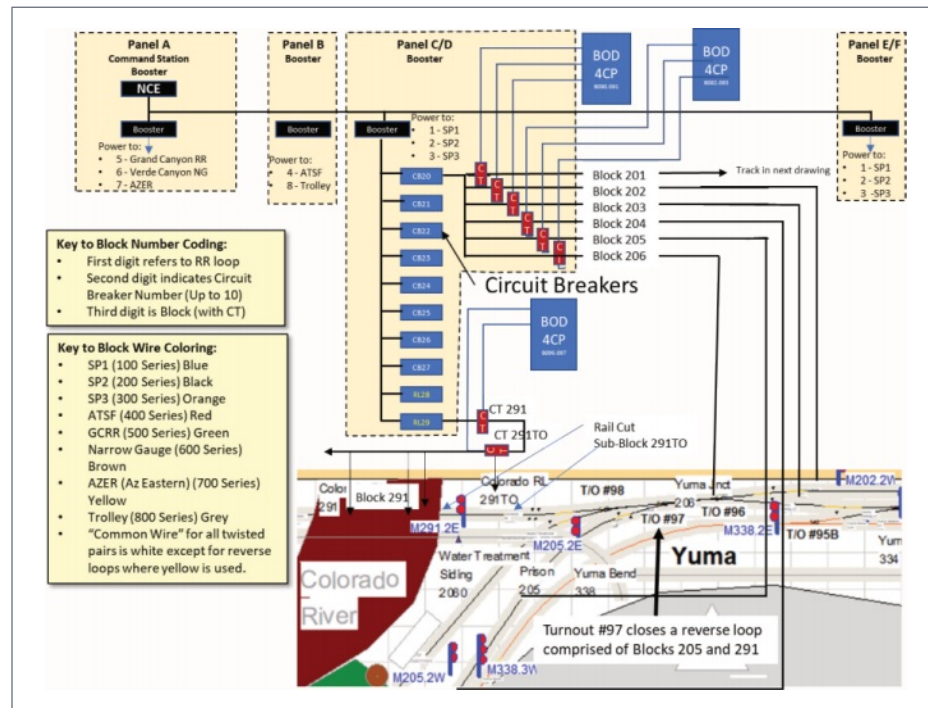
Figure [14] shows a high-level (single line drawing) track power distribution schematic with details for Circuit Breaker 20 and Reverse Loop 29. Circuit Breaker 20 has six blocks numbered

BUILDING A LAYOUT WITH LCC | 14

201 through 206 each with its own CT. The CTs are mounted on the power distribution panel and report to BOD4-CPs number B090.091 and B092.093.

Block 291 in [14] is a reverse loop, but it has two CTs associated with it. The first is CT291, which detects occupancy in the entirety of Block 291.

The second is CT291TO which is a Sub-Block and used to automatically throw Turnout 97 (thus the TO postscript). We cut a rail about three feet (or one flex track length) from Turnout 97 and added CT291TO to the drop only (not the main bus wire) in this one section of track.



14. Track Plan of SP2 and SP3 on the 25-inch level in Yuma, AZ showing the Track Power assignment from Circuit Breaker 20 to Blocks 201 thru 206, Reverse Loop 291 with the associated CTs, and BOD4-CP cards detecting block occupancy.

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A train anywhere in Block 291 will show occupancy on the JMRI panel. When a train is in the last three feet of the block, it will trigger Block291TO, which will position turnout 97 to the “closed” position.

If the train is entering the reverse loop through Block 291TO, then the command from 291TO to “Close” simply commands the turnout to the position it is already in. If the train is exiting the reverse loop through Block 291TO, then Block 291 is already showing occupancy, and when the engine reaches Block 291TO, the turnout reacts to the signal from Block 291TO, aligning the turnout to the proper position. Block 291, 291TO and Turnout 97 will be used as an example of configuring an LCC card later in this article.

THE RULE OF TWOS DRIVES LCC DESIGN

We found the “Rule of Twos” worked best when designing for LCC. The cards all have even numbers of inputs/outputs, and we found it easiest to design with an even number of features.

For example, using the SMD8 card for a staging or switching yard with up to eight tracks makes logical sense. A nine-track staging yard may be a delight to have, but it would complicate the LCC card layout. If you have choices in your design, keep things in multiples of two.

A corollary to the Rule of Twos is that you should group four Signal-LCC or Tower-LCC cards around a single Power-Point. Each Power-Point can theoretically drive up to eight LCC/BOD cards, but the precise number of cards varies based on the functions they drive. Distance from the Power-Point is also a factor, as the 24 or 28 AWG wires in the CAT-5 cable produce significant internal resistance that drops available voltage.

The “cluster of four,” with one device on each side of the Power-Point is a simple solution to guarantee plenty of voltage for all boards and functions. Power-Points are relatively inexpensive, so this assurance is well worth the cost.

PLAN “OTHER THAN LCC” FEATURES IN ADVANCE

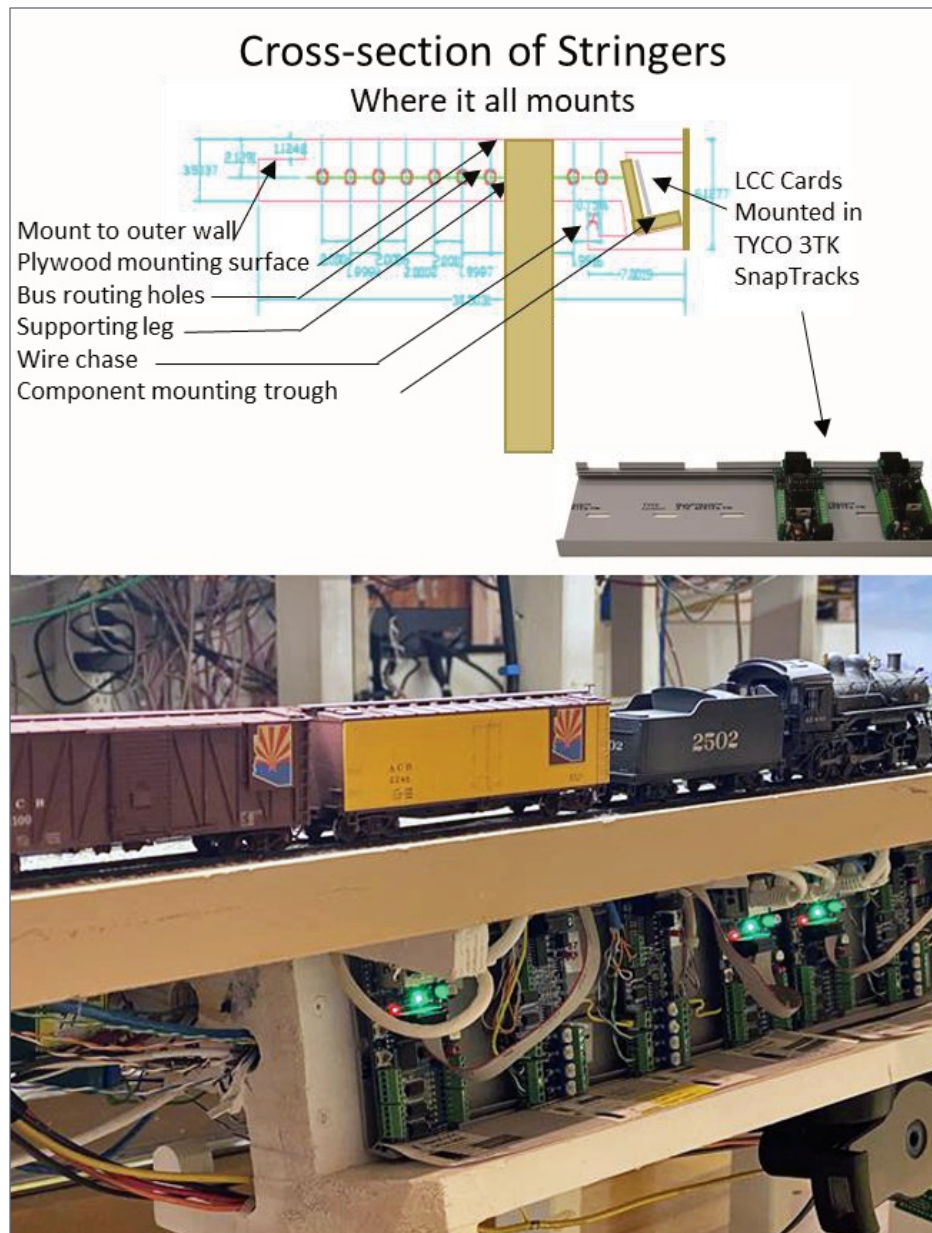
While planning for LCC, make sure you consider other features around the layout. The use of Wi-Fi-equipped touchscreen tablets was a design decision that made wiring the ARHS exhibit much simpler and took maximum advantage of LCC capabilities.

The tablets are mounted around the exhibit and interface with JMRI Panel Pro to display panels showing the entire exhibit or any local section desired [15]. The panels use track color to indicate block occupancy and provide full turnout control with a screen tap.



15. This operator throws a turnout ahead of a train approaching Tempe on the layout. Turnouts can be thrown by touchscreens located trackside or on the dispatcher computer screen.

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16. Construction details of the LCC circuit board “troughs” on the ARHS layout, making mounting of the boards easy.

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Because of the tablets, the layout has no use for toggle or pushbutton switches on the fascia or the complicated wiring that goes with them. The tablets only need power cables to keep them charged. The tablets made wiring easy and provide a clean looking fascia on the exhibit.

We knew that lying on our backs was no way to hook up the large number of electronic components the exhibit would require. We machined the horizontal layout support beams from plywood as part of the original design. These beams had provisions for a trough and wire chase behind the trough for mounting the LCC or any other electronic components [16].

This allowed for easy mounting of the LCC cards and simplified the wiring. All control wires come in over the top of the card, and the wires run in a chase behind the card and in front of the layout leg. An unplanned benefit of this approach is that the design moved the support legs about a foot back from the front edge, giving the illusion that the exhibit is suspended in midair!

LOCATE THE SIGNAL-LCC AND THEN BOD CARDS

The next step is planning the physical location of the required LCC cards on the layout. This really involves two steps; first, where should the card be located to be near the function it controls, and second, is there a space in that area of the layout to mount it? Referring to the “Rule of Twos” and the “Clustering” of four LCC cards is an important consideration.

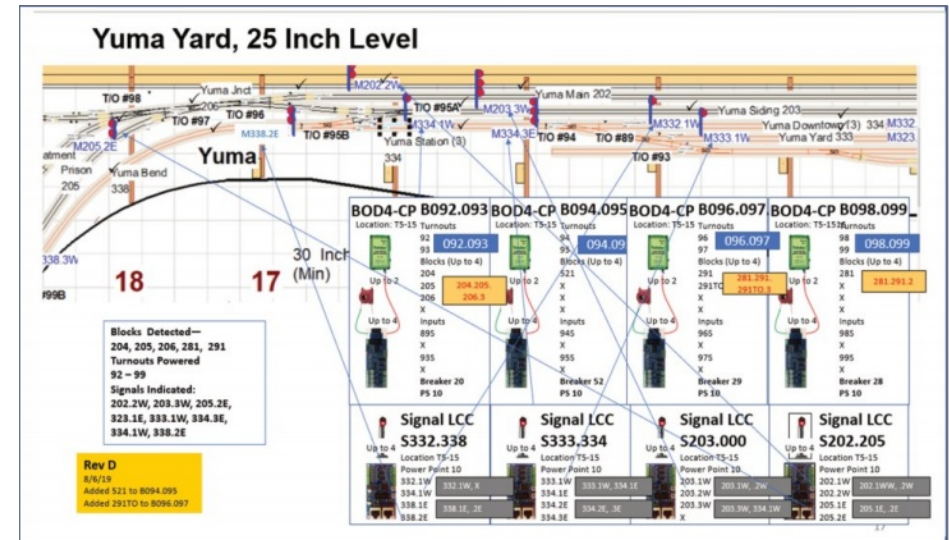
Most of the ARHS layout has trackside signals, and we found that the Signal-LCC card was the most critical. We located these cards as near as possible to the trackside signals they would control. We added a BOD4-CP card to most Signal LCC cards based on the number of nearby turnouts, and assigned blocks from a single circuit breaker to each BOD4-CP card.

In areas that ran dark (i.e., no signals), we used almost the opposite approach. First, we assigned either a BOD4-CP or

combinations of SMD8 and BOD8 cards based on the number of turnouts, and added sufficient Tower-LCC cards to support these function boards.

An example of the ARHS approach is shown in [17], which is a segment on the lower level of the layout at Yuma, Arizona. A graphical representation of the Masts (Signals), Turnouts, and Blocks was extracted from 3rd PlanIt and templates of individual LCC cards were superimposed in Microsoft PowerPoint. Each signal mast could have up to three “targets” where a target is defined as a possible track route.

In [17] the masts are shown as vertical blue lines and the targets are round red circles attached to the mast. Three factors identify the mast: the block number it controls, the number of aspects and whether it is at the East (E) or West (W) end of the block. Thus,



17. This is an actual page from the ARHS design file showing the allocation of Turnouts, Blocks and Signal Masts to BOD4-CP and Signal cards around Yuma, AZ. Each BOD4-CP card is shown with its associated Signal LCC card.

most number M334.3E is located on the East end of Block 334 and has three aspects. This one mast requires three of the four outputs of Signal Card S333.334. The number assigned to the Signal Card is derived from number of the Masts the yard controls.

In this case, Mast M333.1W occupies the first position and M334.3E occupies the other three positions so the card number uses an S to identify it as a Signal Card and then the two Mast numbers resulting in S333.334.

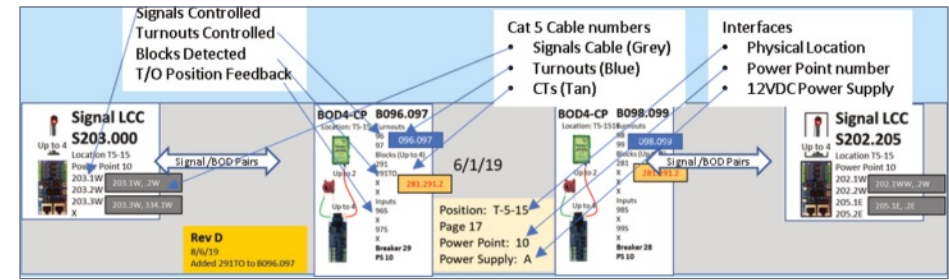
In the (rare) case that all four positions on the Signal LCC card are not populated, the digits 000 are used for the unoccupied position. So, the next card to the right in [12] has mast 203.3W in three positions, but there wasn't another single mast in the area, so this card is S203.000.

A single BOD4-CP is shown above each Signal Card and the two are connected by a 10-wire ribbon cable (not shown). Each BOD4-CP is assigned a maximum of two turnouts and four CT detection circuits.

The identification convention used for the BOD card is simply a B indicating that it is a BOD card and the numbers of the two turnouts that it controls. B096.097 is a BOD card that controls turnouts 96 and 97. The CTs providing input to this board are entered on the graphic (on this case blocks 291 and 291T0) as well as the position feedback from each Tortoise (numbers 96 and 97).

There are three other items noted as information on the graphical representation of the BOD4-CP card: location, breaker, and power supply. The location is simply a description of where to find the card on the exhibit (which in this case is T5-15, or Trough 5 at the 15th frame).

One of the advantages of LCC is locating the cards near the point of use, so it is good to have "map coordinates" for finding them when troubleshooting is required. The breaker is the breaker number that will activate the PowerLok feature (in this case



18. As an installation aid, we rearranged the drawings of the cards in [17], and placed them on strips representing their arrangement on the layout in the TYCO 3TK mounting strips to assure fit. We installed the components and wires as shown on the strip.

number 29 which are the first two digits of the blocks which can be assigned to the card), and finally, the power supply is the number identifier (in this case number 10) of the LCC Power-Point supplying up to 15V to the card.

The final planning step is assuring there is a physical space to mount each LCC card. For this step we took each of the local LCC Layouts as shown in [17] and rearranged the Signal and BOD4-CP cards into the positions they would occupy in the mounting troughs.

The Signal LCC and BOD4-CP were laid out in pairs to fit in TYCO 3TK mounting strips (which are separately supplied by RR-CirKits and hold up to four cards of any type) [18]. Notice that the associated pairs of cards (such as S203.000 and B096.097) were kept together. This strip was then printed, and all the strips were arranged in the troughs to determine where each card would be located.

When the strip locations were satisfactorily spaced (and Power-Point adequately arranged), the actual card installation could begin. After we installed the cards, we used the "strip" as a wiring guide. Every wire and cable is shown on this strip, simplifying the

wiring installation. We found it was easier to configure the Signal- and Tower-LCC cards on a separate computer prior to installation.

CONCLUSION

The obvious question at the end of all of this is “Would you choose LCC if you had it to do all over again?” The answer is a resounding YES! For a large layout and/or a club layout, LCC is clearly the way of the future.

A second question might be “Is it right for my layout? Only you can answer that question. Using an analogy to DCC, installing a decoder in a poorly functioning engine will not make it a stellar performer. However, if you have a good-running engine that simply needs modernization, then upgrading is certainly the way to go. The larger and more complex the layout, the more you will appreciate LCC and the capabilities it provides.

Hopefully, this article has lowered any angst you may feel about jumping into something new and provided the confidence to try LCC. Fear not, others have now been before you, and more and more modelers are succeeding!

If you are in the Phoenix area, come and visit our layout. You will have a visible demonstration of LCC in action with some incredibly happy LCC users! ☑

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JESSE POOLE



Jesse Poole is native to Washington DC, and grew up in the Maryland suburbs within earshot of the B&O tracks.

He built his first layout while in fourth grade and ran it for many years. In college he earned a degree in aerospace engineering, and is currently retired in Arizona.

He was in a train club that lost its modeling space, and the Arizona Capitol Museum offered an opportunity. The design phase and, the management of the project is well underway, until COVID intervened.

He has raised three daughters, and has had the chance to introduce his grandchildren to the wonders of the hobby. ■

DAN KUBARYCH



Dan has been addicted to modeling since the age of six, with American Flyer trains. He earned a degree in anthropology, and worked toward a career building museum exhibits.

Now he is working in a museum with the Arizona Railroad Historical Society building a train layout. He has been heavily involved in getting LCC to control lighting, sound and automation effects. He is scratchbuilding a model of a Blaisdell Slow Sand Filtering machine used by the Yuma Water utility to filter Colorado River water. ■



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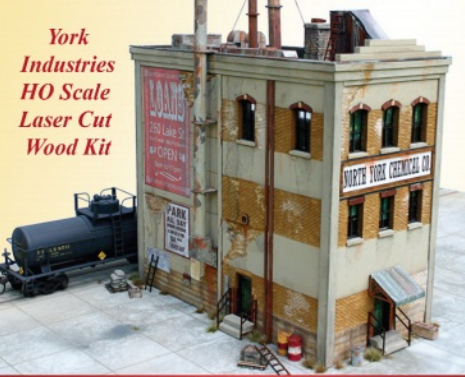
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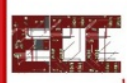
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THE Model Railroad Hobbyist's
Guide to acrylic painting
... in a post-Floquil world



By Joe Fugate PDF LANDSCAPE EDITION

MRH's Floquil / PollyScale Paint Equivalents Conversion Chart - 1

Floquil / PollyScale Color Name	Model Master	Floquil	PollyScale	MRH Color	Notes
Primer Grey	MR 4924	MSA P1020	10-12		
Engine Black	MR 4884	MSA P1021	10-01		
Black Primer	MR 4925	MSA P1027	10-08		
Grey Black	MR 4926	MSA P1022	10-07		
Weathered (Charcoal) Black	MR 4928	MS 29022	MSA P1024	10-05	
Builder Grey	MR 4887	MSA P1025	10-04		
Builder White	MR 4871	MS 29024	MSA P1026	10-02	
Grey Black	MR 4881	MS 29020	MSA P1028	10-03	
Coal Black	MR 4887	MS 29021	MSA P1029	10-06	
Black	MR 4875	MS 29023	MSA P1027	10-02	
Concrete	MR 4876	MS 29025	MSA P1030	10-07	
Light Concrete	MR 4875	MS 29027	MSA P1032	10-08	

*Indicates a color that was not measured. MRH Model Master gives a complete listing of colors. MRH Model Master gives a complete

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**Bob Rivard talks about how he alters a
Scale Trains gondola to be more like
the prototype ...**

Model Railroad Hobbyist | March 2022



I NOTICED THE ADVERTISEMENT FOR THE NEW SCALE TRAINS HAVELOCK Shops gondolas last year. Prototype accuracy is very important to me, and after studying the information in the Scale Trains ad, I decided to order three cars.

Before I placed my order, I searched some prototype freight car websites for photos of these cars with the same numbers offered by Scale Trains. I found many photos of these unique cars and, yes, even the same numbers offered by Scale Trains.

Knowing the locations of the ACI and lube plate data is important to me. Photos taken around my 1977 modeling era also allowed me to capture the weathering patterns. When my gondolas arrived from Scale Trains, I was eager to start weathering them.



1. I removed the 16 cast-on grabs with a no. 17 blade.

While I could live with the molded-on details on the ends of the car, I was not satisfied with the molded-on grab irons. I replaced them with pre-formed 18-inch drop-style wire grab irons from Tichy Trains (number 3015). I used a new sharp no. 17 X-Acto blade to carefully remove the 16 cast-on grabs on each of the three models [1].

I used the “shadows” from the cast-on grabs to position the new Tichy wire grab irons. I used a safety pin to center-punch mounting holes and drilled them with a no. 76 bit. My Mini-Craft motorized drill made the task easy, which was important because I had 32 holes to drill on each of three cars [2].



2. I put the grabs in place with needle-nose pliers. The “shadows” from the cast-on grab irons made it easy to place the mounting holes.





3. The newly installed wire grab irons look good.



4. Although I found all three cars on the Rail Pictures Archive website, I decided that the photo for 83417 – not among my models – was more inspiring because it was still wearing the ACI label. I scraped off the final digit on my 83416 with a no. 11 blade and replaced it with a “7” from a MicroScale CB&Q boxcar set.



5. The model wearing the correct matching road number. The ACI plate and correct-style lube plates still need to be applied.



6. Although I have bent hundreds of coupler cut levers from 0.012” brass wire, I found Tangent makes the appropriate cut lever (TSM 204). This was much more convenient, especially since I was doing three cars!



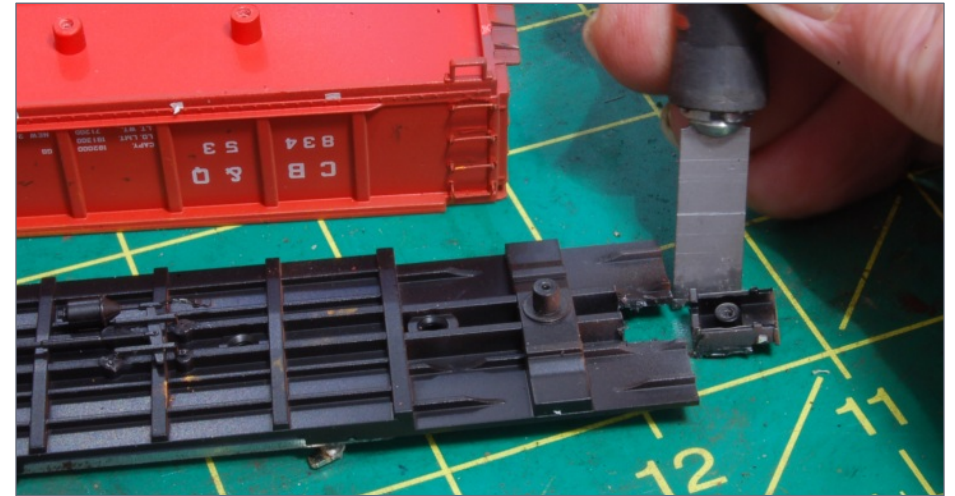
7. I airbrushed the wire grab irons with ScaleCoat II Santa Fe Red paint, which was a good match. Applying the paint with a brush also would have worked.



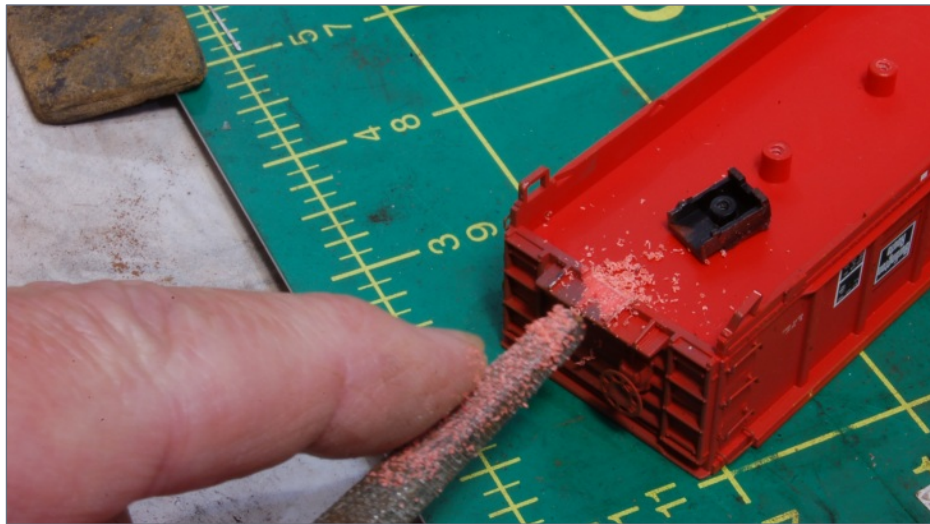
8. Next I cut out and applied the small white rectangles from MicroScale white trim film.



9. I studied the prototype photos and applied the ACI and lube plates. When dry, I applied Testors Dullcote to give a dead-flat finish.



10. Looking at the prototype photos, I realized the coupler pockets should extend to the ends of the foot platforms on the ends of the car. I needed to modify the model to match. I cut out the stock coupler pocket from the underframe using a no. 17 blade.



11. I used a file to remove enough material from the bottom of the car ends to allow the coupler pocket's extended location.



12. That's more like it!



13. I began the weathering with the inside of the gondolas. Because I was using oil paints, I started by applying Turpenoid paint thinner with a brush. Turpenoid is an odorless product available from many art supply stores.



14. I studied a photo of the inside of a prototype gondola, and chose Cadmium Orange for a rusty-orange base color.

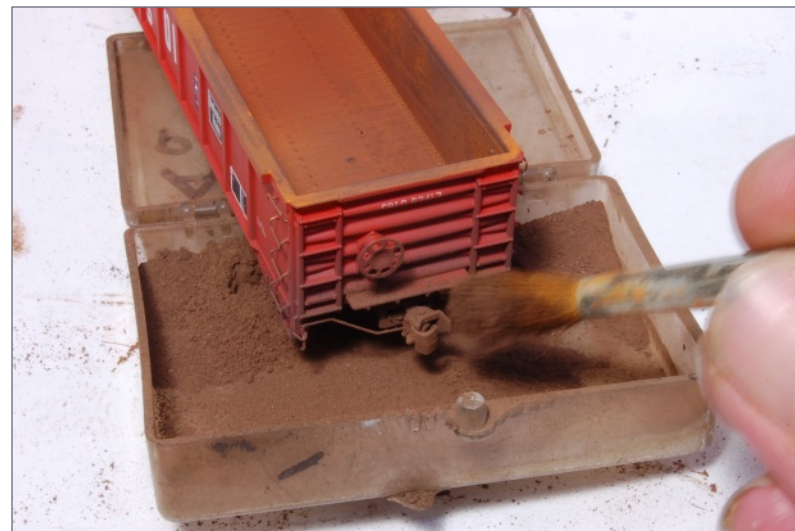




15. When the paint was dry, I applied dark weathering powders.



16. I next applied ScaleCoat II Flat Grimy Black with my airbrush.



17. I applied appropriate weathering powders to the ends and couplers.



18. I weathered the trucks by airbrushing Flat Grimy Black onto the wheels and side frames. Next I applied rust-colored weathering powders to the sides of the wheels. Using the powders does a nice job to capture the gritty, dirty look of a prototypical truck.



19. My favorite air hose is Detail Associates number 6206. A true scale air hose model for sure.



20. Weathering is complete!



21. After years of service transporting loads of scrap, even an empty gondola will have a junky floor. I scraped scraps of real rust from the bottom of my barbecue grill, and added them to the floors of

my models. I used Testors Dulcote to fasten them in place. Someday I will have prototypical loads for my gondolas.



22. Prototype photos (background) were helpful for modeling the inside of the gondolas. This step was important because we often view our models from above.





24. An overhead view of the gondolas in service at Cardigan Junction. ☑

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23. In service on the layout, CB&Q gondola 83400 takes on a load at Greenburg Scrap in St. Paul.

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BOB RIVARD



Bob Rivard has been fascinated with trains since the age of 5 when he received his first train set, the proverbial Lionel.

He really enjoyed his job at KARE TV, working there for 43 years as a broadcast technician. He recently retired. He ran the robotic cameras during the 10 p.m. news. ■



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Blending turnback curves into a scene



1. The hillside gives this train the appearance of working its way through rough terrain and a reason for the curve.

Model Railroad Hobbyist | March 2022



RICK BALASSAITIS SHOWS METHODS TO GIVE LAYOUT CURVES A REASON TO EXIST ...

TWO THINGS CAN RUIN THE REALISM OF A MODEL RAILROAD: turnback curves and running tracks parallel to the edge of the layout.

The tracks parallel to the edges of the layout can be simple to fix, so let's look at the more complex issue of turnback curves.

Unless the curves fit into the more photogenic John Armstrong-like scenic curves, any large turnback curve has the potential to turn an otherwise attractive model railroad into a "train set" layout. The target is to cleverly *hide* them.

90-DEGREE CURVES

The best way to obscure a 90-degree curve is to give it a realistic reason for being there. Railroads do not veer from a straight run of track unless there is a reason, such as an impediment that is too expensive to get through or over.

Impediments include large rocks, mountains, water obstacles, and buildings or land that the railroad does not own.

Sometimes tiny hills could be plowed through with digging equipment, gullies can be filled, and bridges can keep you going straight over water. At other times you just must curve off [1, 2].

Rivers offer a valid reason for track deviations and some scenic opportunities [3, 4].

City buildings also mandate curves. At about 54 inches, my layout is close to eye level, which gives N scale trains a more



2. An overpass helps obscure the curve as the tracks go through the backdrop to staging. *Randall Gustafson*



3. The tracks follow the rivers on Lee Weldon's old Western Maryland/Laurel Valley RR Thomas Sub.



4. Lee Weldon's LRV Maryland Junction. The rivers determine where the tracks go.

BLENDING TURNBACKS INTO THE SCENE | 4

realistic look. As such, the city buildings do a good job of providing an avoidance reason AND hiding the trains [5].

Whatever your choice, make sure there is a reason for the curve, an obstacle that cannot be easily broached.

Having something to draw your eyes away from the curve helps, like a yard with lots of freight cars [6] or city scenes: a kid's corner basketball game [7], an ice cream truck with a crowd, a corner store, animated signs, etc.

Chris Schmuck does a great job on both curves on his door layout [8]. The layout has a scenic divider down the middle. The far end tracks curve to avoid the large imposing buildings.

His near-end curve utilizes a road underpass to break up the curve. He effectively uses the square platform end for detailed stores which immediately become the most interesting part of the near scene, effectively drawing your eyes to them.



5. WY841 leaving the Camden urban jungle for Deepwater.

BLENDING TURNBACKS INTO THE SCENE | 5



6. Pavonia yard draws your eyes away from the end curve.



7. Kids playing basketball, the ice cream truck, the corner store, animated signs all help draw your attention away from the curve.



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Whatever your choice, make sure there is a reason for the curve, something that demands that the tracks can no longer go straight.

360-DEGREE CURVES

360-degree curves are the next easiest to deal with. The obvious “go to” here is a mountain with the track either invisible inside the mountain or running along the outside. A portion popping out of a tunnel and spanning a spindly trestle before slinking back into another tunnel can be a stunning scene with the side benefit of hiding the curve.

If the track is outside the mountain, try to place it so the lower track is out of sight behind the mountain. It helps if something else diverts the viewer’s attention.

I placed a farm on the side of a hill [9] to draw viewers away from the circular track and the S-curve coming off the end has a



8. Chris Schmuck’s Door Layout. *Photo by Chris*



9. The Haines-Falcone dairy farm helps hide the 360-degree curve.

pleasing attention-drawing effect [10]. In this situation, an adjoining station scene with two crossings and a couple of switches also draws attention away.

The interior of the 360-degree curve usually requires an access hatch to reach derailments that inevitably occur in hard-to-reach places. My Glassboro Loop started off with a pop-out hatch [11].

I wanted better stability for the farm scene, so I converted it to a

half-hatch with arm access for derailments. This room corner was near a staging yard and too dark, so I put a short pole lamp in to provide some light. The hill/mountain hides most of it from view [12].

180- TO 270-DEGREE CURVES

180- to 270-degree turns are among the most difficult turnbacks to work into a layout. Because they are usually located at the end of a platform or peninsula, urban scenes do not offer much help unless they are massive and can obscure most of the curve.

Lowering the track into an “urban cavern” may help somewhat, but typically, a mountain or a hill offers the most convincing help. Or you can just surrender and build the scenic divider all the way to the end of the peninsula.



10. Sweeping S-curves are always attention grabbers.



11. The Glassboro Loop access hatch in its original configuration.



12. The access hatch (in the distance) is now hidden more effectively.

BLENDING TURNBACKS INTO THE SCENE | 10

On one of my previous layouts (4'x8'), I hid the curved tracks in tunnels [13, 14] on both ends. Problem solved.

On another old layout, the tracks went behind a large hill while the eyes were drawn to a scenic S-curve in the foreground [15].

On my current layout, I split the hill in half. My prototype had a lake at the north end of town surrounded with tree-covered, sloping hills. I merged that into the adjoining hillside, which



13. On my old 4x8 layout, I hid all the curve ends in mountains and concentrated on the side scenes.

BLENDING TURNBACKS INTO THE SCENE | 11



14. The trains on my old layout looked like they were passing through scenic valleys, rather than traveling in a loop.

included an ascending road with houses in an area that had a lot of trees [16-18].

Road overpasses also serve well in dividing the curve. Here is the view going around the horn on my peninsula [19-25]. I think you can get the idea of breaking the curve into individual scenes.

THINKING OUTSIDE THE BOX

There are many creative solutions, so don't restrict your dreaming. Lee Weldon sent me a photo of how Kevin Beck enclosed his 360-degree helix in aluminum shrouding to make it look like the rear end of a round-tail observation car [26]. Think that started any train conversations?



15. Sharks glide past Island Yard.



16. Woodbury Lake will occupy the right side, framed by tree-covered slopes.

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17. Except for the track curvature, the ascending Hunter Street in Woodbury is a prototypical scene.



18. The North Woodbury side.



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19. The Hunter Street bridge bisects the curve, creating two separate scenes. On this side, we see a town.



20. On the other side of the Hunter Street bridge, we have wooded countryside.



21. Next the lake scene with fishing dock and canoes draws attention away from the curve.



22. This portion could use some rock face.

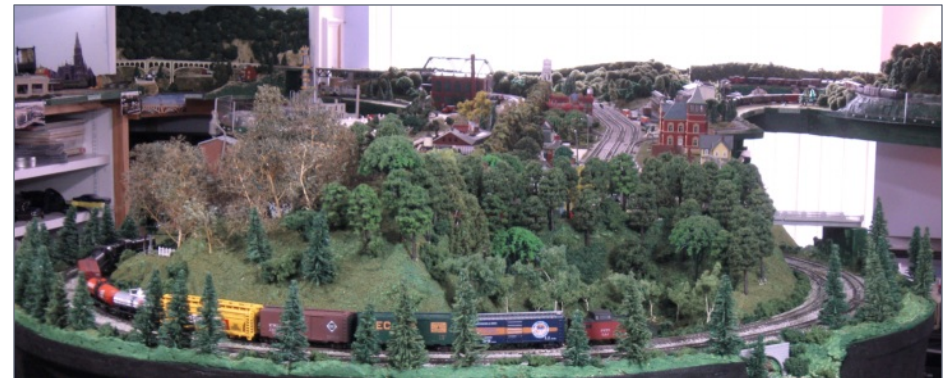




23. Approaching North Woodbury housing.



24. The “Round the World” tour is now into industrial trackage and we have successfully broken the turnback into 6 separate scenes.



25. I keep trying different styles of trees. Sometime soon I’ll need to settle on a homogeneous variety. A scenic divider board blends into the far side of the hill.

KEEPING YOUR EXPENSIVE TRAINS OFF THE FLOOR

Space was at a premium in my loft, and my peninsula tracks were less than two inches from the end of the world, so I needed a mechanism to minimize my equipment losses.

First, I built as much of a “lip” as possible between the curve and the floor. I took a roll of duct tape, attached it to the end of the 5/8” plywood and folded it back on itself. This doubled its strength, and it left a shiny, non-stick side facing the tracks [27, 28].

I then put as much Sculptamold as I could on a slope between the tracks and the duct tape. Then I painted and “grassed” it to provide a safety lip [29, 30].

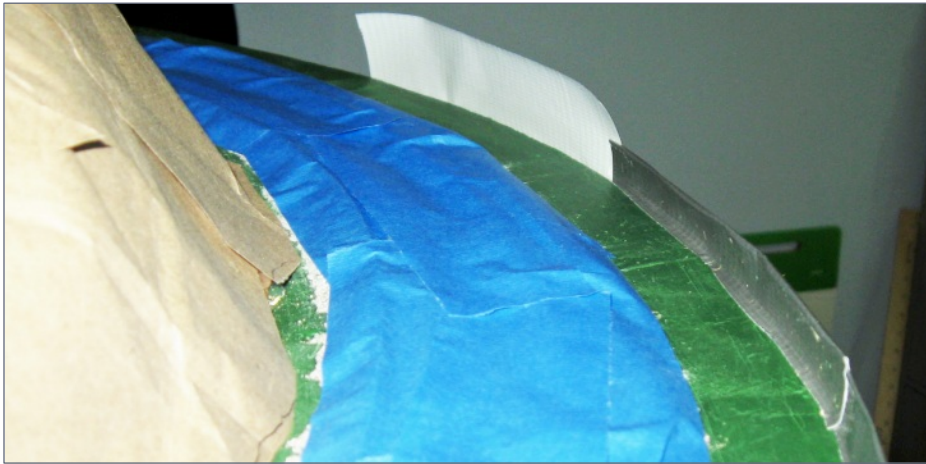
Next, I took bottle brush fir trees and drilled and “planted” them all along this lip [31, 32] Their strong wire core will repel anything hurled at it and toss it back onto the layout.

Now I had an almost impenetrable barrier [32]! (Yes, it is only a matter of time until I have to eat those words.)





26. Kevin Beck's enclosed helix. *Photo by Lee Weldon*



27. Duct tape edging from the layout facing out.

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28. The duct tape edging facing the layout.



29. Sculptamold lip.

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30. The sculptamold embankment continues to the Hunter Street bridge.

PROTECTING ASSETS ON THE EDGE

There are still instances where you must resort to other less-elegant measures to protect your inventory. The Glassboro loop has a steep fall off [10] so I used plexiglass panels to protect the trains from operators who like high speed (one once brought a bullet train to run on my 1950s layout).

I also employed the plexiglass at some elbow-danger locations. My refinery is at risk of me clumsily exiting my computer desk [34] and Buzby Brothers [35] has already had its towers smashed to smithereens.

There must be a nicer way to protect buildings from elbow bumps, so I am looking forward to more elegant reader solutions.

Until then: Keep 'em rollin' (and off the floor). ☑

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31. Bottlebrush barrier.



32. These bottle brush trees will catch most derailments.



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33. Standing ready to deflect all attempts at going over the edge of the world and descending into the darkness below.



34. Texaco Refinery Plexiglass shields.



35. Buzby Bros. Protection.

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Modeler's survey of glues Part 2



1. RapidFix (left) and Lazer Bond are two brands of UV-cured glue. Lazer Bond is a bit thicker in its liquid form.

Model Railroad Hobbyist | March 2022



JEFF PALMER STICKS WITH THE TOPIC OF ADHESIVES FOR MODEL RAILROADING ...

THIS IS PART TWO OF MY GLUE NOTES. In the first part we discussed PVA (white glue), PVP (glue stick, hairspray), CA, plastic (solvent and bonding), and epoxy. In this section, we discuss UV plastic, contact cement, transfer tape, spray adhesives, goo, hot glue, and various caulks.

UV PLASTIC

Ultraviolet (UV) glue is a liquid polymer that cures to a clear, solid plastic when exposed to UV light for a few seconds. Once

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MODELER'S SURVEY OF GLUES | 2

cured, it forms a strong, non-brittle bond that you can drill, sand, and shape like any other plastic. Getting started with UV glue is a little pricey, since the initial investment includes a UV flashlight to cure it – alas, I got rid of my black light at the end of the 60s.

My first experience with UV glue was not in an adhesive application at all. When I saw the above properties in an advertisement for RapidFix, one of the UV glue brands, I wondered if it might work to make a lens for the Cal Scale Baldwin headlight on my Climax locomotive. I had thought about 3D-printing a lens, though I don't own a 3D printer, and RapidFix was supposed to have similar properties to the UV printer resin, so I thought that it might work [1].

I filled the light cavity of the Baldwin headlight with the clear plastic and cured it with 10 seconds of UV exposure. With UV light shining on the glue, it shines a florescent blue, but when set, it is clear. The UV glue proved more than up to the task, and the LED headlight worked well.

In my first gluing application, I used Rapid Fix UV glue to repair an earpiece on my wife's reading glasses. I repaired that same pair of glasses a couple of times since, each time with Rapid Fix. They've never broken in the same place twice, which makes Rapid Fix a winner.



2. Bondic UV glue.

MODELER'S SURVEY OF GLUES | 3

Since I began experimentation with UV plastic, I've learned about UV glues that are thicker and more gel-like in their liquid forms. Bondic and Lazer Bond, are two brands that offer the thicker gel. I like working with this because it allows me to shape the glue while applying it.

It is important to note that UV glues work only if they are exposed to UV light. This means UV light must be able to penetrate to the surfaces you are attempting to bond.

CONTACT CEMENT

I've never had much use for contact cement until I started building my own switches and hand-laying track. Contact cement works by coating the two surfaces to be joined with the cement, letting it dry, then pressing them together. The two major glues of this type I've used are:

1. Pliobond – I use Pliobond to glue turnouts I've built using Fast Tracks jigs to the ties. This is the last step of construction. Fast Tracks made me a believer in Pliobond [3].



3. Pliobond contact cement

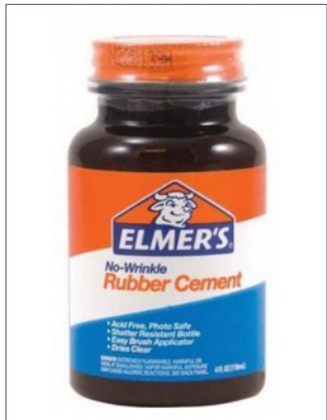


2. Elmer's Rubber Cement – I used Elmer's Rubber Cement [4] for years to represent peeled paint on structures: stain the wood, let it dry, dab on rubber cement, paint over the glue, and remove the glue once dry. I've stopped using this technique as there are better alternatives.

TRANSFER TAPE

I consider adhesive transfer tape to be a contact glue. It has all the same features of contact cement and allows you connect two dissimilar materials. It's a cleaner application method than glue, and you don't have to worry about the adhesive easing through material.

My friend Scotty Mason introduced me to transfer tape as a method for attaching roofing material and siding. While I liked the idea, I found its lack of working time vs. glues to be challenging. There were times when I did not have the position of the part as exact as it needed to be, but had no leeway for repositioning because of the nature of transfer tape.



4. Elmer's Rubber Cement.



5. Transfer tape.

I got better at lining shingles and tar paper roofing with practice. I especially like using transfer tape for adding the corrugated roofing and siding to a model. Most glues don't hold the corrugated material well over time.

SPRAY ADHESIVE

My wife introduced me to spray adhesive while we were working on an antique travel trunk. It's an excellent product anytime you need to glue paper or metal foil to another surface. As with spray painting, spray adhesives are best applied with a steady smooth motion for even coverage.

Spray adhesive does not give much work time, so don't wait too long to apply the paper or the foil once you've sprayed. Be careful to keep your fingers out of the glue. Most messes will clean up with a rag and odorless mineral spirits.

There are many different chemical bases for the glues, so be sure to read the Tech and MSDS sheets. Some spray adhesives are contact cements, though I am primarily talking about general purpose spray adhesives.



6. 3M 45, 3M Super 77, and Loctite are among the spray adhesives I use most.

As stated earlier, many of the spray glues are contact cements, so it is important to read the label. You want a general-purpose spray adhesive. As you can tell, I'm a 3M fan, but I have been exploring, and I'm liking the Loctite product as well.

Goo

Goo is a specialty glue group with several different brands. Goo is a styrene-butadiene rubber or synthetic rubber compound that was developed during World War II. Some of my favorite brands are Shoe Goo and E6000 [7].

Shoe Goo is a strong adhesive that dries clear and remains flexible. I use it to glue-down structures on the layout. Placement of a structure is never final for me, and occasional repositioning or other movement is a given.

I also use Shoe Goo for general-purpose gluing that will never be seen, like for LED lead wires in a structure. E6000 has the added advantage of going on and setting clear.

Room Temperature Vulcanizing (RTV) adhesive sealant is a goo-like silicone glue used for making/ installing gaskets and seals. I first used it when I was working on my '69 GTO. One of its qualities is its tolerances for high temperatures and vibration.

I have found RTV adhesive sealant useful in mounting replacement motors in brass locomotives. It withstands the rigors and occasional hot



7. Shoe Goo and E6000.



8. Permatex RTV Gasket Maker.

running of modern high-torque can motors. Just make sure the surfaces you want to glue are clean and free of oil or other lubricant.

HOT GLUE

Hot melt adhesive (HMA), or hot glue, is a polymer-based adhesive that you melt for application. Four of the major HMA types include: ethylene-vinyl acetate (EVA), polyolefins (PO), polyamides (PA), and thermal polyurethanes (TPU), which are also known as low-temp hot glue.

PO-based hot glue has a melting point of 450 degrees, well beyond the heat output capabilities of most consumer glue guns, which operate between 380-400 degrees. This high melting point provides a very strong bond and is resistant to most environmental issues and is especially useful for gluing nylon or Delrin. Its application is primarily industrial, not so much for hobbies

PA glues have a melting point between 375 and 450 degrees, which is still higher than most consumer glue guns will handle. Again, the application is primarily industrial and would be overkill for most hobby applications.

Most of us use EVA hot glue, which melts at 350 degrees. This is hot enough to cause severe burns, so use caution. EVA forms a strong bond as it cools.

I seldom use hot glue for layout structures, but have found it useful for bonding trees, shrubs, weeds, and other ground cover to scenery. I use a hybrid scenery methodology of hard shell and foam sheets, and hot glue excels in this environment. It doesn't melt the foam, and it has enough substance to form a good surface mount on plaster.

I have also found EVA hot glue useful in bonding cardboard strips together to form structural webs for terrain. I even use it to apply cross members to my benchwork for improved strength.

Low-temp hot glue melts at about 250 degrees and is good for most wood, cardboard, and paper applications, with lower burn risk. The nozzles for low-temp glue guns have a finer tip that delivers a narrower, more-precise bead of glue. For these reasons, low-temp hot glue has been gaining in popularity.

While a standard hot glue gun designed for use with EVA would certainly put out enough heat to melt low-temp hot glue, the excess temperature actually weakens its bonding capabilities. Many hot glue vendors have adopted a different diameter for low-temp glue sticks so they will not fit standard glue guns. You should always use the proper hot glue gun for your application.



9. A Stanley GR35K glue gun with some multi-temp glue sticks.

Hot glue can be messy, in that the gun nozzle tends to drool, so it's best to place the gun on cardboard or another easily cleaned surface like glass when not in use. Be sure to use paper towel when cleaning the nozzle, as its burn point is higher than the glue gun's operating temperature.

ADHESIVE CAULK

Most modelers primarily use interior-grade adhesive caulk for various model railroad construction activities: laying roadbed, laying rail ties, and laying flex track, just to name a few. There are four kinds of interior grade caulk: acrylic-latex, polyurethane, solvent-based, and hybrid.

Several outdoor-grade caulks may be useful for garden layouts, but that would be a topic for another article. Similarly, each of the various kinds of caulk is available with silicone, which has many good qualities such as water resistance, color stability,



10. An assortment of acrylic-latex-based caulks.



superior adhesion, and resistance to UV light, oxygen, and ozone. But these benefits of silicone caulk don't really improve it significantly for model railroading purposes, at least not enough to justify the additional costs.

Acrylic-latex-based caulk is paintable, which is an important feature. I use caulk to glue down my flex track, and I don't want the white glare of clipped ballast shining through. Not only does the caulk take paint well, but it is also receptive to the PVAs I use to glue down ballast and scenery along the track. I use Liquid Nails Projects to glue my layers of foamboard together.

Polyurethane caulk is a great adhesive and sealant good for a broad range of material including concrete, wood, glass, plastic, and metal. It has taken all the best qualities of the other sealants and rolled them into one, but it is difficult to use. Polyurethane caulk is sticky and putty-like to work with, and it is very messy. Mineral spirits are the solvent of choice when working with this type of caulk.

Most solvent-based caulks are specialty items designed for specific tasks, with only marginal use beyond those tasks. Concrete-fix adhesives and sealants generally belong in this group. As many solvent-based caulks have environmentally toxic qualities, they are gradually being phased out.

Hybrid caulks combine the best properties of silicones and urethanes. These new sealants are making headway because of their



11. A few polyurethane caulks.



12. Solvent-based caulks.



13. Hybrid caulks.



14. I always make sure the caulks I use are labeled "paintable."





15. Resealable caulks.

environmentally friendly properties and advanced adhesion. At present, hybrid caulks tend to be pricey.

Using caulk can be a messy and awkward job, especially when you factor-in the caulk gun. I've also never had success storing an open caulk cartridge. I've tried the various "caps" available, but the caulk still dries out after a couple of months.

When I'm shopping for caulk, I look for resealable packaging. I have kept caulk for more than a year when I was able to reseal it. Screw-on caps work best for me. ☑

JEFF PALMER



Jeff spent 50 years developing software, and 25 years as a college professor. During that time, he was a modeler. He loves to build structures, bridges, scenery, and locos, and his interest is in logging and mining (narrow gauge). He enjoys the ruggedness of logging and mining railroads, and the scenery and landscape. Model railroading allows him to expand his skill set, work with his hands, and share with his friends, the things he has learned.

About two years ago, he completed his MMR (Master Model Railroader) certificate from the NMRA. During that journey, he had the privilege of meeting many modelers he looked up to. He hopes to be a part of that group someday. ■

SUMMARY CHART

Type	Finish Color	Brittle	Material	Thinner/Cleanup	Use	Notes
UV Plastic	Clear	No	Plastic	N/A	General Construction, Filler	Bonding Agent, bonds anything together, Adds strength. Fast drying.
UV Plastic - Thick	Clear	No	Plastic	N/A	General Construction, Filler	Bonding Agent, bonds anything together, Adds strength
Contact	Not Clear	No	Wood, Plastic, Paper, Metal	Acetone	General Construction, Track to ties, Paint weathering	Bonding Agent, bonds anything together. Fast drying.
Goo	Clear	No	Wood, Plastic, Paper, Metal	Toluene, Naphtha	General Construction, out of sight gluing	Bonding Agent, bonds anything together. Fast drying.
Spray Glue	Not Clear	No	Wood, Plastic, Paper, Metal	Mineral Spirits, turpentine	Adding paper to a surface	Bonding Agent, bonds anything together. Fast drying
Transfer Tape	Clear	No	Wood, Plastic, Paper, Metal	Adhesive remover, Goo Gone	General Construction Used to add roofing and siding. Corrugated roofing and siding.	Bonding Agent, bonds anything together. Roofing. Corrugated roofing and siding.
Hot Glue (EVA)	Clear	Yes	Wood, Plastic, Paper	Isopropyl alcohol, Acetone	General Construction	Bonding Agent. Fast Drying. It will burn you. Fast drying.
Adhesive Caulk (Acrylic Latex)	White	No	Wood, Plastic, Paper, Metal	Water, Isopropyl alcohol, Acetone	General Construction Roadbed, Flex Track	Bonding Agent, bonds anything together. Slow drying
Polyurethane Caulk	White, Clear	No	Wood, Plastic, Paper, Concrete, Metal	Mineral Spirits, Goo Gone	General Construction Roadbed, Flex Track	Bonding Agent, bonds anything together. Slow drying

16. Adhesive summary chart



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Model Railroad Hobbyist | March 2022



Modeling realistic paved areas (part 1)

YouTube channel **Boomer Diorama** has interesting how-to videos about all aspects of this hobby. In this video (1 of 3 parts), **Boomer** builds paved areas and models a realistic pavement look.

Part 1 (37 min) starts with a few notes on wood boards around the track and then shows the full pavement process. We'll do part 2 next month: testing the paved track area to make sure things still run okay. ☑



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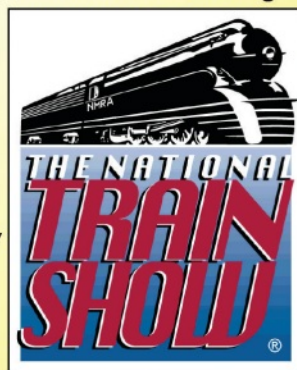
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MARCH NEWS

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Model Railroad Hobbyist | March 2022

RICHARD BALE AND JEFF SHULTZ
REPORT THE LATEST HOBBY
INDUSTRY NEWS ...



NEW CLUB CARS



To mark their 50th Anniversary, the **Associated Model Railroad Engineers of Coshocton (Ohio)** is

selling a kit for a 50' boxcar specially decorated for the Toledo, Walhonding Valley & Ohio Railroad. Accurail produced the HO scale kit which includes a number jumble decal sheet for customizing the car number.

Info: Contact amrecrrclub@gmail.com

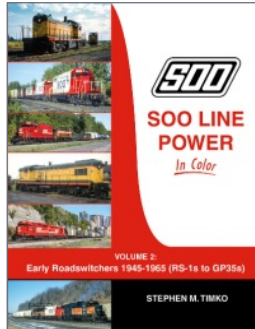
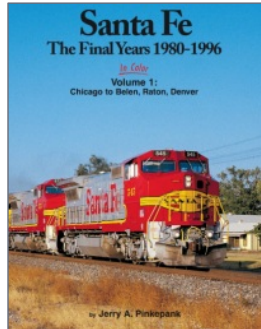
NEW PRODUCTS FOR ALL SCALES

DCC-EX has announced the release of version 4.0 of the DCC++EX command station software with EX-RAIL automation and accessory control. DCC++EX is a free, open-source command station solution designed to run on an Arduino microcontroller with an attached motor shield and a computer running JMRI. The EX-RAIL (Extended Railroad Automation

THE LATEST MODEL RAILROAD PRODUCTS, NEWS & EVENTS

Instruction Language) is used to automate the operation of trains, turnouts, signals, lights, and animations, as well as sensors, switches, servos, motors, and outputs.

Info: dcc-ex.com



New books from **Morning Sun** include *Santa Fe, the Final Years, 1980-1996*. The colorful last years of the Santa Fe saw red and yellow SPSF liveries mix with red and silver Super Fleet Warbonnets. Famed

author Jerry A. Pinkepank takes Santa Fe rail fans across the Transcon from Chicago to Belen and along the Front Range from Denver to Raton.

Also new is *Soo Line Power in Color, Volume 2*, in which Stephen Timko presents the Soo's early road switchers ranging from the Alco RS-1 to the EMD GP35s, GP7s, GP9s, GP30s. Rebuilt variations are included, as are the Baldwin road switchers.

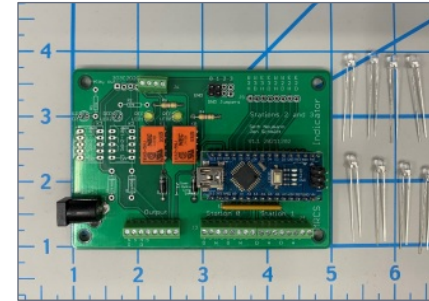
Info: www.morningsunbooks.com



Deepwoods Software has released an ESP32 PWM Half-Siding Node kit for LCC. The boards feature two stall motor drivers with point sense, two occupancy detectors, and 16 LED signal lamp drivers. The boards come with all SMD components soldered on, with some through-hole parts included

to be soldered by the modeler. The kits include the board, through-hole parts, a Lily-Go TTGO-T1 ESP-32 module, a thumb drive with software and a 40+ page instruction book.

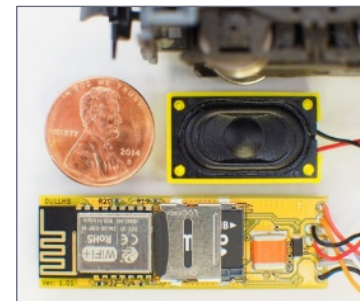
Info: www.thecountryrobot.com/product/esp32-pwm-half-siding-node-kit



Model Railroad Control Systems is now selling a TT&TO Approach Indicator. The Approach Indicator board alerts a train order operator or Yardmaster that a train is approaching, and the dispatcher should be contacted to determine if there are

additional orders for the train. The Approach Indicator can cover up to four stations, two with photo transistors and two more with the logic output from a detector circuit. Multiple versions are available, with one or two circuits with 4 analog sensors per circuit or with four circuits with two analog and two digital inputs. The circuit can be used to trigger a sound module such as the Iowa Scale Engineering SoundByte.

Info: www.modelrailroadcontrolsystems.com



WiFi Model Railroad has released LocoFi 3 (DULLHB), the third generation of its WiFi based receiver module capable of providing user-editable sounds. LocoFi 3 is a universal sound module that may be customized for diesel, steam or electric locomotives.

Info: www.wifimodelrailroad.com/product-page/dullhb-locofi-3-next-gen-wifi-sound-decoder-for-ho-locomotives

O SCALE PRODUCT NEWS



Atlas O has made some surprise O scale announcements for March, leading with the Premier GE Genesis P42 locomotive in

the Amtrak Operation Lifesaver 50th anniversary paint scheme. Available in both 2 and 3-rail versions, the model features an ABS body, metal chassis and detail parts, movable roof fans, hand painted cab figures, and die-cast truck sides, pilots, and fuel tank. Equipped with Proto-Sound 3.0, the locomotive has scale MPH increment speed control and a ProtoSmoke diesel exhaust unit.

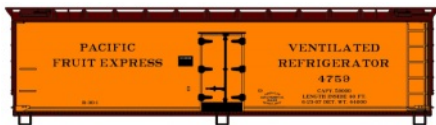


A special run of a 2-rail 40' steel Fruit Growers Express reefers is also part of the March announcement. It features true 1/4" dimensions and details, die-

cast ladders stirrups, and grab irons; 50-ton Bettendorf trucks, scale 33" wheels, and scale couplers.

Info: shop.atlasrr.com/d-673-march-2022-surprise-o-scale.aspx

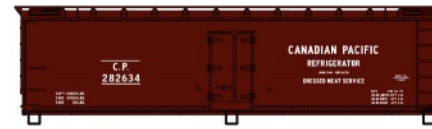
HO SCALE PRODUCT NEWS



New economy priced HO scale freight car kits from **Accurail** include three versions of a 40' ACF wood refrigerator car with 4' insulated swing doors.



Decorating schemes include an R-30-1 class PFE Ventilated Reefer, an Illinois Central car



built in 1921, and a Canadian Pacific refrigerator car fitted with brine tanks and designated for Dressed Meat Service.



Kits for ACF twin-bay Center Flow covered hopper cars are

available from Accurail decorated as a Chicago, Burlington & Quincy car built in 1968, and a Burlington Northern version repainted in 1979.



Accurail has released a kit for a Canadian National 40' single-sheathed wood boxcar. The HO scale model is based on a

prototype built in 1924 with wood ends and doors.



This Canadian Pacific 40' riveted steel boxcar with Youngstown sliding doors represents a prototype built

in 1959. Completing Accurail's list of new HO scale kits is a 40' Milwaukee Road rib side automobile boxcar with double doors. The decorating scheme includes an angled Milwaukee Road herald and a Route of The Hiawatha slogan.



All Accurail HO scale freight car kits come with Accumate knuckle couplers and appropriate trucks with Delrin Wheelsets.

Info: www.accurail.com

Last June **Athearn** announced it was developing new tooling for an HO scale General Electric AC4400CW locomotive. Scheduled for release in April 2023, the project has been upgraded to the Genesis 2.0 level with several railroad specific details including variations in fuel tanks, horns, pilots, trucks, and handrail configurations.



numbers featuring notched fuel tanks, front ditch lights, and GE Hi-Adhesion trucks.



without a notch, and an early version of the Hi-Adhesion trucks with struts on all four corners of each truck.



and front ditch lights. The lightning bolt under the road number indicates these units have AC traction motors.



Southern Belle paint scheme, will have high number boards, a late version of a notched fuel tank, front and rear ditch lights, and GE steerable trucks.



The list of road names begins with a CIT Group of three CEFX road

Chicago North Western units will have low number boards, fuel tanks

AC4400CW units decorated for CSX will have low number boards

Kansas City Southern units, in the road's attractive

Spotting features on Southern Pacific units include high

number boards, an early fuel tank without a notch, alternating front ditch lights, and GE Hi-Adhesion trucks.



Union Pacific units, formerly owned by SP, will be available in Athearn's

Primed for Grime scheme. Current ownership will be identified by a yellow renumbered patch over the faded SP paint. Athearn's Genesis 2.0 AC4400CW locomotive models will be available for DC operation and with factory installed SoundTraxx Tsunami2 sound with dual cube speakers.



Athearn's April 2023 production schedule includes a Genesis HO scale model of a Trinity triple-bay covered hopper.



Decorating schemes will be available for CAGX-ConAgra, DJTX-Joseph Transportation, INTX-Interstate Commodities, AGPX-AG Processing, KRIX-Kyle Railways, GCCX-General American Marks Co., and Dakota, Minnesota & Eastern.



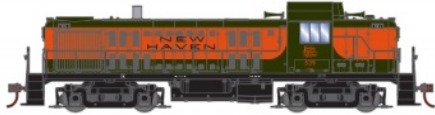
Features of the Genesis model include separately applied end cages, etched-metal end platforms, a photo-etched metal roofwalk, McHenry knuckle couplers, and 100-ton roller-bearing trucks with 36" machined metal wheelsets with rotating end caps.



Also coming from Athearn in April 2023 is an HO scale Ready-to-Roll model of an Alco

RS-3 road switcher. This will be Athearn's first release of this model with factory installed LED lighting and Tsunami2

sound with a cube speaker. An added feature on the RS-3s is a newly designed can motor. The list of road names begins with a CP Rail unit in the road's Action Red multi-mark scheme as applied to the prototype in the 1970s.



New Haven units will have forward and reverse horns, a steam generator stack, and a single headlight.



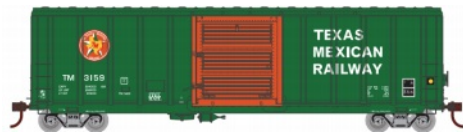
Athearn's version of a Green Bay & Western RS-3 will have a warning beacon on the cab roof, and partially-blacked cab windows.



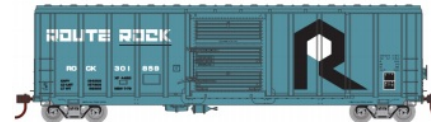
Like the prototypes they represent, Athen's Denver & Rio Grande Western and Burlington Northern RS-3s will be fitted for operation with the long hood forward.



Features on all of Athen's HO scale RS-3 models include metal grab irons, a see-through etched metal radiator fan, and all-wheel electrical pickup. DCC sound versions will be available with Tsunami2 sound and a cube speaker. DC versions will be DCC-ready with a 21-pin connector.



Athearn's April 2023 schedule includes a 50' Pullman Standard 5344 cu. ft. boxcar with outside posts and 10' Youngstown sliding doors. Road names will be The Rock, North Louisiana & Gulf, Sandersville, South Branch Valley, Winchester & Warren, and Texas Mexican Railway.



The HO scale model will feature separately applied wire grab irons, knuckle couplers, and appropriate trucks with 33" machined metal wheelsets.



Reaching back into Horizon's collection of tooling acquired in the 2004 acquisition of Model Die Casting, Athen is upgrading the original dies cut by Clarence Menteer in the 1970s. Upgrades to the shorty passenger cars with the distinctive Harriman arch roof include new steps, separate grab irons, vestibule partitions, a removable magnetically attached roof, and body-mounted knuckle couplers. The trucks have also been upgraded and will be fitted with 33" metal wheelsets.



Cars in the 2023 release will include an RPO, baggage car, coach, and diner/observation decorated for Union Pacific, Pennsylvania, Illinois Central, and Southern Pacific. Gray MOW versions will also be in this release.



Athearn reports it will include a mill gondola with positionable drop ends in its April 2023 schedule. The 65' 6" gondola will have individual wire grab irons and show some interior detailing.



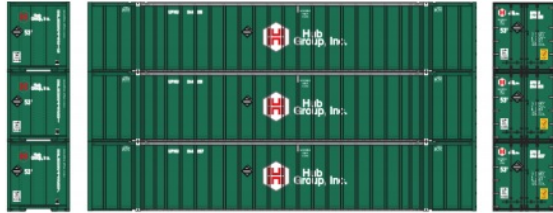
Road names will be Southern Pacific, Santa Fe, Alaska Railroad, Lehigh Valley, Missouri-Kansas-Texas, and Chicago, Burlington & Quincy.





Athearn will release a group of containers next year based on a 53' corrugated steel prototype made by Stoughton Trailer in Stoughton, Wisconsin.

The HO scale stackable models will be available in 3-packs with individual numbers.



Carrier names in this release will be Swift, HUB Group, EMP, Schneider National, and Optimodal.
Info: www.athearn.com



Bowser is accepting reservations for a group of HO scale Baldwin AS16, AS616, AS416 and DRS 4-4-1500 road switchers. DRS 4-4-1500 models based on a four-axle 1500hp prototype will be available decorated for Durham & Southern Railroad and Soo Line.



Line and the Union Railroad.



A six-axle DRS 6-6-1500 will be available for Soo Line and the Union Railroad.

Baldwin pushed the prime mover up to 1600hp in the AS-616 unit and equipped it with a motor on each of the six unevenly spaced axles. Bowser will offer the AS-616 correctly decorated for Chesapeake & Ohio, Baltimore & Ohio, Milwaukee Road, Penn Central, Pittsburgh & West Virginia Railroad, and Duluth, South Shore & Atlantic.



Four-axle AS-16 units will be available for Erie, Erie-Lackawanna, and Baltimore & Ohio. Completing this release is a Baldwin AS-416 unit with A1A-A1A trucks decorated for Norfolk Southern.



Features on all of the Bowser models in this release include correct MU hoses, air hoses, windshield wipers, operating headlights, window glass, can motors with flywheels, blackened nickel silver wheels and knuckle couplers. The ready-to-run models will be available with LokSound (sound and DCC) or for analog DC (DCC-ready) with a 21-pin connector for easy installation of an aftermarket decoder.

Info: www.bowser-trains.com



R. Bale

PRR E6 4-4-2 STEAM LOCOMOTIVE

The E6 was the final class of 4-4-2 Atlantic steam locomotive built by the Pennsylvania Railroad. After the pilot engine proved successful, PRR ordered 80 E6s from its Juniata Shops. They were all delivered by 1914, and all were still in service in 1947. Following his successful transatlantic flight from New York to Paris, Charles Lindbergh returned to the United States on June 11, 1927, and was greeted in Washington DC by President Calvin Coolidge. There was intense competition between various newsreel companies to be the first to get footage of the ceremony back to New York to show in theaters. Several companies chartered aircraft, but one chartered a special train from the Pennsylvania Railroad. A plane could get from Washington to New York faster than a train, but the train could carry a darkroom to develop the film while en route, making the train competitive. E6 locomotive No. 460 was assigned the high speed job of hauling a baggage car equipped with a darkroom and a P70 coach to carry PRR and newsreel officials. The line was cleared and the crew was authorized to run as fast as they considered safe. The newsreel brought by train reached the cinema screens over an hour before the ones flown by air. The Lindbergh engine, PRR E6 No. 460, is preserved at the Railroad Museum of Pennsylvania at Strasburg, PA.





the Pennsylvania Railroad's E6 4-4-2 Atlantic steam locomotive.



round headlight, clawfoot markers on the pilot and smokebox, and a superheater damper on the smokebox.



The post-war models have the standard round headlight, clawfoot markers on the pilot but not on the smokebox, a whistle shield on the firebox, a wind deflector at the rear of the cab roof, and no superheater damper on the smokebox. Both versions come with a PRR 70P66 coal tender.



In addition to authentic PRR schemes, Broadway Limited is offering the PRR E6 in a fantasy Southern Pacific Daylight scheme. This release, which is scheduled for July, also includes an undecorated model.

In addition to the Lindbergh edition with gold pin striping, **Broadway Limited** is producing both pre-war and post-war versions of the Pennsylvania Railroad's E6 4-4-2 Atlantic steam locomotive.

Production of the HO scale model will include a pre-war version of the prototype as it appeared in 1927. The pre-war models have a standard

The post-war models have the standard round headlight, clawfoot markers on the pilot but not on the smokebox, a

In addition to authentic PRR schemes, Broadway Limited is offering the PRR E6 in a fantasy



R. Bale

GREAT NORTHERN'S S-2 4-8-4 STEAM LOCOMOTIVE

Baldwin delivered six 4-8-4s to GN in 1929. Classified as S-1s, they had 73" drivers and, like most GN steam locomotives, Belpaire fireboxes. They were intended for passenger service but were soon relegated to hauling freight. The following year GN took delivery of 14 Baldwin-built class S-2 passenger 4-8-4s. They were built with 80" drivers. To reduce weight, the S-2s were delivered with a radial stay boiler, nickel steel boiler plates, cast steel cylinders, dual air pumps mounted on the smoke box front, and a 17,000-gallon welded Vanderbilt tender. They all had chrome plated cylinder covers and steam chest heads. All S-2s were delivered in the Glacier Green paint scheme except for Number 2577, which wore light grey or aluminum paint on the boiler and cylinder jackets. It was eventually repainted to Glacier Green, matching the rest of the class. By the 1950s, all engines had received the more economical all-black paint scheme. Vestibule cabs were added to engine Number 2577 in the early 1930s and engines 2582, 2586, 2587 and 2588 by the late 1940s. Great Northern's S-2s spent most of their career pulling premier passenger trains between St. Paul and Seattle, including the Empire Builder and the Oriental Limited.



Broadway Limited has scheduled a May release date for another production run of Great Northern class S-2 4-8-4 steam locomotives. The

HO scale model will be decorated in GN's distinctive Glacier Park scheme that features a green boiler, red cab roof, and chrome plated cylinder covers and steam chest heads.

Three road numbers each will be available for models with open cabs and closed vestibule cabs. One S-2, Number 2584, will have a black boiler. BLI's HO scale model is composed of a handcrafted brass superstructure mounted on a heavy die-cast



chassis. Both the PRR and GN steam locomotives in this report will feature Broadway Limited's Paragon4 sound and control system that

functions in both DC and DCC environments.

Info: www.broadway-limited.com



ExactRail has scheduled the release of a new

production run of its HO scale GSC depressed center flatcar in March. The Evolution series model replicates the one-piece cast-steel prototype developed by General Steel Industries.



Road names available on this release include TTX, TTX (new logo

repaint), Erie-Lackawanna, Norfolk Southern, Norfolk & Western, and Penn Central.



ExactRails HO scale version features wire grab irons, Kadee No.

58 knuckle couplers, and ASF 100-ton Ride Control trucks with machined metal wheelsets.

Info: www.exactrail.com

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R. Bale

PRR X-29 BOXCAR

In the early 1920's the Pennsylvania Railroad's engineering department developed plans for a 40' 50-ton all-steel box car. Designated X-29, production of the then state-of-the-art car began in 1924 and continued into 1934. During this 10-year period, nearly 30,000 Pennsylvania X-29 cars were built -- but not all X-29's were the same. The car body and its dimensions were consistent, but variations occurred in frame components, brake systems, arrangement of the steel sheathing, and the selection of ends and doors. Power assisted hand brakes on the X-29 were a mix of Ajax, Universal and Ureco. One common accoutrement was Apex metal running boards which were applied to all X-29s. The otherwise successful X-29 had two significant flaws: a short 8' 7" interior height and deteriorating side panels at the floor level. To remedy these issues, subsequent rebuilding programs involved replacing the entire X-29 body with an AAR car body with a 10' 6" interior height. Despite its shortcomings, the PRR X-29 was considered a highly successful design. Nearly identical cars were built by other railroads including New York Central, Baltimore & Ohio, Reading, Central of New Jersey, Maine Central, Lehigh & New England, and Wheeling & Lake Erie.



InterMountain Railway is soliciting reservations for another production run of Pennsylvania Railroad X-29 boxcars. The HO scale model will be produced from the well-regarded tooling original developed by Red Caboose. The ready-to-run models will include a mix of Dreadnaught and flat plate ends.



Models with 3-panel Creco doors will be available for PRR (Circle Keystone), Nickel Plate Road, and Chicago Great Western.



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A PRR X-29 wearing a Shadow Keystone will have a Youngstown door.



InterMountain's release will include several road names that built close copies of the PRR's X-29. This group

includes Baltimore & Ohio, Central of New Jersey, Maine Central, Norfolk & Western, and Lehigh & New England. The models will have knuckle couplers and Bettendorf-type trucks with 33" machined metal wheelsets.



InterMountain Railway has released 14 panel Coalporter gondolas in 12 paint schemes. Railroad names for the HO scale models are Conrail, Canadian National, and BNSF.



Coalporters decorated for power companies include SULX-Sultran, FPPX- Fayette Power, HIPX-Houston

Lighting & Power, TGNX-NRG Energy, WFAX-Western Fuels, GSNX-Gulf States Utilities, JECX-Jeffrey Energy Center, MBKX-Mitsui Rail Capital, and WEPX-Wisconsin Electric Power. InterMountain's Coalporters come with 100-ton trucks with 36" machined metal wheelsets.



InterMountain is accepting reservations until March 25, 2022 for a 70-ton flatcar. The HO scale models feature laser-cut wood decks, metal knuckle couplers, and appropriate trucks with machined metal wheelsets.



New road names in this release include

B&O-Chessie System, Baltimore & Ohio repaint, Delaware & Hudson, and Western Maryland.



Rerun road names with new numbers will be available for Santa Fe, Central of New Jersey, New York Central, Wabash, and Chesapeake & Ohio. Info: www.intermountain-railway.com



Kadee is selling three different undecorated versions of its acclaimed HO scale PS-1 boxcar. A 40' PS-1 boxcar with narrow bolster tabs as built by Pullman-Standard from 1950 to 1953 is available with a 6' corrugated Youngstown sliding door. A post-1954 version is available with an 8' Youngstown door.



An undecorated 50' PS-1 boxcar with a 9' Youngstown door is also available. Info: www.kadee.com



KR Models is booking reservations for an HO scale Class B three-cylinder, two-truck Shay steam locomotive. Delivery is planned for the 4th quarter of this year. The HO scale model will have working drive shafts, external valve gear, and front and rear directional lighting.

KR's HO scale model will be available for DC operation (DCC ready), with DCC, and with ESU LokSound V5 decoder. All versions will be fitted with a speaker to ease installation of an aftermarket sound decoder.

Info: www.krmodels.net

Moloco has released the third run of its HO scale 50' Santa Fe Fe-34 class boxcars. The highly-detailed HO scale model represents cars built at Santa Fe's Topeka Shops beginning in the early 1960s.



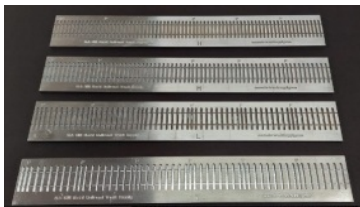
This production run will include Fe-34 class boxcars with double plug doors.



Bx-94 class cars with 10' offset plug doors and a similar Bx-97 class car with alternate lettering have also been released. Each version

will be available in six road numbers.

Info: www.molocotrains.com



Oak Hill Model Railroad Track Supply has announced four straight track template designs. The designs feature different tie spacings to represent different types of track.

Heavy Freight features a tie spacing of 19.78" apart, Medium freight has a tie spacing of 22.25", Light Traffic tie spacing is 25.75", and Yard/Industry has ties that are 29.67" apart. Additionally, the templates include a "p" marking, which indicates where PC ties can be used, and every other "p" on the top and bottom indicates a 39' spacing, to locate jointed rail ends.

Info: www.ohrtracksupply.com

Plate C Model Prototypes has released six new HO scale freight trucks. The correctly scaled resin trucks are created using 3D printing. The trucks come with machined metal wheelsets with code 88 treads.



The new 3D trucks include an ASF A-3 50-ton converted to roller-bearing (left) and a

Symington-Wayne XL-70 truck with roller-bearings (right).

Also available now are Barber S-2 50-ton roller-bearing trucks with early caps, the same truck as used by ACL/SCL, and three versions of Barber S-2 100-ton plain-bearing trucks converted to roller-bearing with and without journal box lids.

Info: www.platecmp.com



R. Bale

ACR BOXCAR

In the years just before and immediately following World War II, several railroads built various classes of 40' and 50' boxcars of lightweight design. Since these cars were built using thinner side sheeting to save weight, they needed additional support posts behind the sides. The posts required an additional row of rivets down the middle of each side panel. These added vertical rows of rivets were generally spaced twice as far apart as the rivets along the panel edges, giving an alternating pattern and a unique appearance. Rail fans and some historians dubbed the cars Alternating Center Rivet or ACR boxcars.





Rapido Trains has added a Union Pacific postwar 40' ACR boxcar to its list of essential HO scale freight cars. Classes B-50-39, B-50-41, and B-50-42 will be available for the car with side panels with alternating center rivets.



Each class will reflect the changes that occurred on the prototypes over a relatively short period of time. Rapido has tooled two styles of roof (straight and diagonal panel), two styles of end (early and late Improved Dreadnaught), four styles of brake wheel (with the correct

corresponding gear housings), and two varieties of etched-metal running board and brake platform.



The initial release will include 1947-era Class B-50-39 cars with 4/4 Improved Dreadnaught ends, a straight panel roof, and with *Route of the Streamliners* and *Serves All the West* paint scheme.



Class B-50-41 cars built in 1950 with R+3/4 early Improved Dreadnaught ends, diagonal panel roof, black ends and roof, with *Route of the Streamliners* and *Be Specific Ship Union Pacific* are next up. A class B-50-42 representing cars built

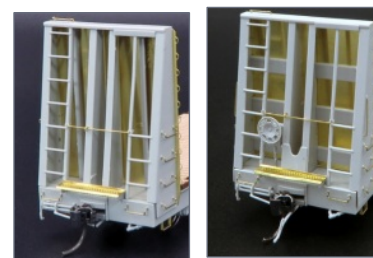
in 1951 will have the same details as the B-50-41 except it will not have the black ends and roof.

Completing this release are two 1956 cars: a class B-50-39 with 4/4 early Improved Dreadnaught ends, straight panel roof; and a class B-50-41 with R+3/4 early Improved Dreadnaught ends and a diagonal panel roof. Both cars will have the *Be Specific* slogan.



Rapido is booking pre-orders for an all-new Canadian-built 66' bulkhead flatcar. The model is based on

prototypes built in the 1970s and 80s by Marine Industries and National Steel. Notable details on Rapido's HO scale version include etched metal bulkhead end sheets, tie-down loops, and cross-over end platform, individual grab irons, metal knuckle couplers, and 100-ton Barber S-2-c trucks with machined metal wheelsets.



Variable details include three different bulkheads, two styles of laser-cut wood deck, four different jack pad arrangements, and two different end sills.



Six road numbers will be available for cars decorated for CP Rail (Action Red and black), Canadian National and CNIS (International service, both cars in mineral brown); British Columbia, BCIT, and Iowa, Chicago & Eastern (all in dark green scheme); Ontario

Northland (yellow), BNSF (mineral brown), and BNSF (grey with ex BC patch).

Most of the development work on Rapido's new HO scale E8/9 has been completed with production planned for later this year. The project includes numerous road-specific



versions of both E8A and E8B units. To replicate the EMD nose accurately, Rapido commissioned a 3D laser scan of UP E8 #942 at the Southern California Railway Museum.

Variables on the E8 nose include different nose doors, single or dual headlight configurations and three different arrangements of lifting lugs and grab irons. Other variables include three different back ends, and 36" or 48" fans or non-dynamic brake options.

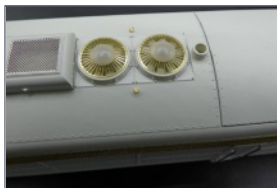


Decorating schemes on the initial release include Amtrak Phase 1 and Erie Lackawanna, two roads whose E units shared several features, including horizontal air grilles, Hyatt journal boxes, and blanked portholes on the side of the body. All other road names have portholes.



E8s decorated for Illinois Central, New York Central, Southern, and Union Pacific will have freight pilots, Farr grilles, and trucks with Hyatt journal boxes. Pennsylvania and

Burlington E8s will have passenger pilots, and horizontal side grilles.



Canadian E8s decorated for VIA and three unique CP paint schemes will all have portholes, skirted fuel tanks, freight pilots, horizontal side grilles, and trucks with early square journal boxes. The VIA

unit in this group will have operating ditch lights. To see Rapido's pre-production E8 in action visit: www.youtube.com/watch?v=KJQhUPhHu8Q.



In response to numerous inquiries, Rapido has announced that in addition to several authentic decorating schemes, the HO scale Fruehauf trailers announced last month will also be available undecorated. The group, which includes 35' trailers and 40' exterior post

and fluted side trailers, including side door versions, will all be available painted silver without any lettering.

Info: www.rapidotrains.com



Smoky Mountain Model Works is accepting reservations for a rerun of an HO scale resin kit for a Southern Railway and Norfolk Southern G82/GS50 wood chip gondola. The model was formerly marketed by Crosstie Models using a body

casting produced by Smoky Mountain Model Works. The model replicates prototype cars built by General Steel Casting in 1985 and Trinity, successor to GSC, in 1986.



The kits will consist of a one-piece cast urethane body, Plano etched metal crossover platforms, detail parts including brakes, ladders, stirrups, and styrene strip; phosphor bronze

wire, weight, Kadee shelf couplers, Tichy truck sideframes, and Kadee 36" code 88 wheelsets. Decals covering 1985 or 1990 to present are included along with detailed assembly instructions on

a mini-CD supported by 23 prototype photos. Note that production of this model is dependent upon receiving sufficient reservations. Info: smokymountainmodelworks.com/HO_wood-chip-gon.html



Walther's has released HO scale models of 53' General Steel Casting bulkhead flatcars.



Road names for the Walther's Mainline series ready-to-run model are Santa Fe, Burlington Northern, Northern Pacific, Soo Line, Union Pacific, and Chicago, Burlington & Quincy.



Also available from Walther's is an 89' flatcar with C-shaped channel sides to facilitate piggyback loading of trailers.



The HO scale Mainline series model is based on class F89R cars owned by Trailer Train.



Channel side flatcars decorated for Trailer Train, JTTX, and KTTX are available in multiple road numbers.



Walther's is quoting a June release date for a new production run of 60' Pullman-Standard flatcars.



Road names scheduled for this release will be Trailer Train HTTX (heavy duty service), MTTX (general loading), OTTX

(modernized version), and VTTX with loading fixtures for 20' and 40' containers.



Walther's also plans to release 60' Pullman-Standard bulkhead flatcars in June.



Decorating schemes scheduled for this release are Canadian National, Canadian Pacific, Indiana

Harbor Belt, Trailer Train, Trailer Train with B&O bulkheads, and Weyerhaeuser.



All the flatcars in this Walther's report come with Proto MAX metal knuckle couplers and appropriate trucks with 33" machined metal wheelsets.



Walther's has an upgraded 60' Pullman-Standard auto boxcar with double sliding doors due for release in June.



The Mainline series HO scale model features one 10' and one 6' sliding door on each side. The ready-to-run model comes with metal knuckle couplers and 70-

ton trucks with 33" metal wheels.



Road names include Erie Lackawanna, Penn Central, Conrail, CSX, Norfolk & Western, Rock Island, SSW-Cotton Belt, and Union Pacific. An undecorated

model will also be available in this release.

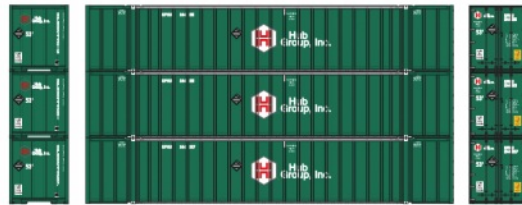
Info: www.walthers.com

N SCALE PRODUCT NEWS



Athearn has scheduled the release a group of N scale 53' containers for April 2023. The models are based on a corrugated steel prototype made in

Stoughton, Wisconsin. The N scale stackable models will be available in 3-packs with individual numbers.



Carrier names in this release will be Swift, HUB Group, EMP, Schneider National, and Optimodal.

Info: www.athearn.com



Bachmann has released a USRA 55-ton 2-bay hopper in N scale. The fully assembled model features accurate details, needle-point axles, NMRA RP-25 profile metal wheels, and

body-mounted E-Z Mate Mark II couplers.

Info: shop.bachmanntrains.com



Broadway Limited is quoting a May release date for a new 40' all-steel boxcar. The N scale model is patterned after a large group of prototype cars built by

the New York Central Railroad beginning in 1922.

Broadway's N scale version will have rectangular-paneled roofs, AB brakes, Bettendorf-style trucks, and metal running



boards. They will have a mix of Dreadnaught and Murphy corrugated ends.

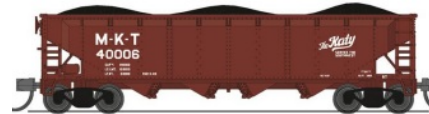


In addition to three NYC paint schemes, nine fantasy cars will be available for railroads that operated similar cars. They

include Boston & Maine, Chesapeake & Ohio, Chicago North Western, Delaware & Hudson, Great Northern, New Haven, Southern Pacific, and Union Pacific.



Also coming from Broadway Limited in May is a new ARA 70-ton quadruple-bay coal hopper car.



The ready-to-run injection molded plastic models have appropriate trucks with metal wheelsets and a removable coal load.



Road names will be Baltimore & Ohio (W2b), B&O-Chessie System, Boston & Maine (post 1947 Minuteman scheme),

Chesapeake & Ohio (H7-13), Milwaukee Road, and Missouri-Kansas-Texas.



Fantasy schemes for railroads that owned similar equipment include Santa Fe, Canadian National, Canadian Pacific,

Reading, Southern Pacific, Union Pacific, and Western Maryland.

Info: www.broadway-limited.com

Jacksonville Terminal Company's February releases include 53' True Ocean containers with ISO castings at the 53' corners.



Roadnames include three APL schemes, Trailer Bridge (ex-APL), Crowley blue, Crowley brown, and OCEANEX LTL.



53' high cube containers have been released in PACER, EMP green, UMAX (ex-PACER), and HUB Group patch.



40' high cube containers are available in CMA CGM (Globe logo), CMA CGM (logo only), and HAPAG Lloyd. Info: jtcmodeltrains.com



R. Bale

GENESIS P42 LOCOMOTIVE

The Genesis P42 is a passenger diesel locomotive produced between 1992 and 2001 by GE Transportation. A total of 321 units were built for Amtrak, Metro-North, and VIA Rail. The Genesis series were the lowest North

American diesel locomotives until the introduction of the Siemens Charger. This height restriction allows the locomotive to travel through low profile tunnels in the Northeast Corridor. The GE Genesis series is unique among North American passenger locomotives in that it uses a single, monocoque body making it lighter, more aerodynamic, and more fuel efficient than its predecessors. However, monocoque construction is more costly and time-consuming to maintain and repair. In 2004, Amtrak started installing bolt-on nose cones on its units for easy replacement in the event of a grade crossing collision. The P42 is a fully computerized locomotive which automatically controls all on-board functions. The trucks of Genesis locomotives were made in Germany by Krupp Verkehrstechnik, which has since been absorbed by Siemens. Trucks on the newest Genesis locomotives carry the Siemens name.



KatoUSA is preparing to release its N scale version of General Electric's P42 Genesis locomotive in the latest Amtrak schemes. Locomotive No. 169 in Amtrak's Phase V scheme will be available during the first quarter of 2022.



A P42 in the same Phase V scheme plus a 50th Anniversary logo will be available this summer.



Also coming this summer is Amtrak No. 100 in Midnight Blue with a 50th Anniversary logo.



Locomotive No. 160 displaying a 50th Anniversary logo with the Phase III "Pepsi Can" paint scheme is scheduled for release in early fall 2022.



The final N scale P42 coming from Kato in this release will be No. 203 in a striking Operation Life Saver scheme that includes Amtrak's 50th Anniversary logo.



Kato has expanded the list of road names available for its N scale EMD F7A / F7B diesel sets.



The added road names are Baltimore & Ohio, Union Pacific, Southern Pacific, and Milwaukee Road. The previously announced Canadian National and Santa Fe in both traditional Warbonnet and Yellow bonnet schemes continue

to be available. F7A units in this release will have illuminated number boards and directional LED headlights.



Kato will release a DC version of each P42 and F7 first, followed about one month later with DCC models with a choice of Digitrax DCC or ESU LokSound DCC and sound.
Info: www.katousa.com



a 10' Youngstown sliding door while the Burlington Northern boxcar has a pair of 8' Youngstown doors.

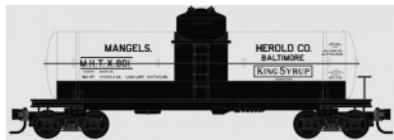


Micro-Trains' latest list of new N scale releases includes two versions of 50' boxcars with short ladders and no running board. The Union Pacific car has

Micro-Trains N scale Chessie System flatcar represents a prototype built in 1956 at B&O's shops at DuBois, PA. The N scale model comes with an unpainted vessel head load.



This Louisville & Nashville 100-ton triple-bay coal hopper is based on a prototype built by Bethlehem Steel in 1971. Micro-Trains N scale version comes with Barber roller-bearing trucks.



The full-size version of this MHTX 8,000 gallon tank car was built in 1926 by American Car & Foundry. The Mangels Herold Co. used it to transport table syrup.
Info: Contact a dealer.



Scale Trains has announced new variations of their N scale UP Turbine. UP #6 includes dual Farr Dynavane air intakes on the B unit and UP #30 includes a special air intake system on the B unit that includes two long pipes. The modifications were intended to reduce the amount of maintenance required by these units.

Info: scaletrains.com

NEW STRUCTURES & SCENIC SUPPLIES



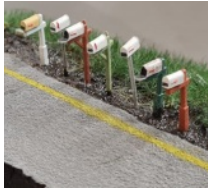
Frenchman River Model Works has introduced three new 1:48 scale structure kits designed by Thomas Yorke. Betty's Bakery (left) has a footprint of 2.5" wide by 4.75" deep. Dr. Gordon Painless Dentist, right, occupies a space approximately 2.75" wide by 5.75" deep including the boardwalk.



For added scenic interest, Frenchman River's third new 1:48 kit, Standard Mercantile Company, is designed to be positioned on a slope. This model has a footprint 3.75" wide by 8.75" deep.

All of the kits are composed primarily of unpainted cast resin parts, plus roofing material, window glazing, and decal signage. The kit for the Standard Mercantile Company includes tar paper sheets and corrugated roofing material.

Info: frenchmanriver.com



Maple Leaf Trains has an assortment of nine 1:87 scale mailboxes with three types of posts, and three options: flag down, flag up, and open box. Also new from Maple Leaf Trains is a

set of five HO scale Rail Yard figures. All items in this release are unpainted resin castings.

Info: www.mapleleaftrains.com

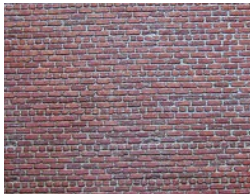


Mine Mount Models has released six separate kits under the



theme "The Sheds." Each shed design is different, varying in size from 1.25" x 1.25 to 2.6 x 1.5. The models feature Mt. Albert Scale Lumber, Tichy doors and windows, and rolled roofing materials.

Info: minemountmodels.com/shop/ols/products



After an extended period of inactivity while battling COVID 19, **Monster Model Works** has reissued several products including sheets of scale brick, stone work, and wood siding in HO, S, N, and O scales.



Tie plates and road work materials are also back in stock.

Info: www.larkspurlaserart.com/monster-modelworks-products



Oxford has released three new 1:87 scale cast metal vehicles including this 1936 Buick Special convertible coupe in Cardinal Maroon. Note the red interior and twin side mounts in the front fenders.



Oxford's latest release of a 1957 Dodge D100 pickup is decorated in Tropical Coral and Glacier White. The wrap-around windshield and finned rear fenders were standard for the period.



1954 Pontiac Chieftain 4-door sedan in maize yellow shows lots of chrome.

Info: www.walthers.com



Rusty Rails has released 1:87 scale cast resin models for 1935 Fords. A four-door sedan and a five-window coupe are available now. Some minor assembly is required for

the unpainted resin models. A Ford Model T and a Fordson tractor are currently under development.

Info: www.rustytrain.com

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! BRIEFLY NOTED

AT PRESS TIME ...

James Sacco, personable owner of City Classics, passed away in Pittsburgh, PA on March 7, 2022. Mr. Sacco established City Classics in 1989 and in subsequent years developed an impressive line of HO scale kits for urban structures, and interior and roof top details. A memorial service is pending.

Mask Island Decals has released HO scale decals for six piggyback trailers including GTW, Clinchfield, XTRA (25000), XTRA (regular logo), Trans America (with both large and small logos), and Realco. Info: www.maskislanddecals.com

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Model Railroad Hobbyist | March 2022

MARCH

Due to COVID-19 restrictions, please check with any organization hosting an in-person event for the latest status of the event.

Ongoing 2021

ONLINE, YouTube & Facebook, March 21-24. NERx Virtual Convention, Northeast Region Virtual Event.

Info: www.nerx.org

ONLINE, Zoom, dates vary, see website. Operation Special Interest Group Meetups – limited attendance available.

Info: www.opsig.org/Virtual

Archive: www.opsig.org/Virtual/Past

ONLINE, Zoom & YouTube, Wednesday & Saturday, see Facebook page. "New Tracks" Meetup, hosted by Jim Kellow, MMR.

Info: newtracksmodeling.com

YouTube: www.youtube.com/channel/UCMA_VhPb5pjdkAYTdXLceJA

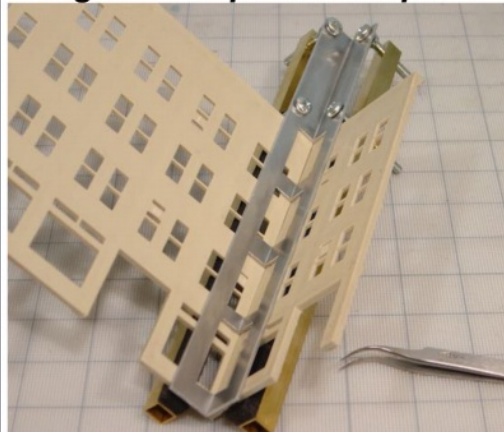
ONLINE, Facebook & YouTube, dates vary, see Facebook page. "NMRax" organized by Gordy Robinson, Martyn Jenkins, Gert Muller, Jordan Kramer.

Info: www.facebook.com/groups/nmragroup

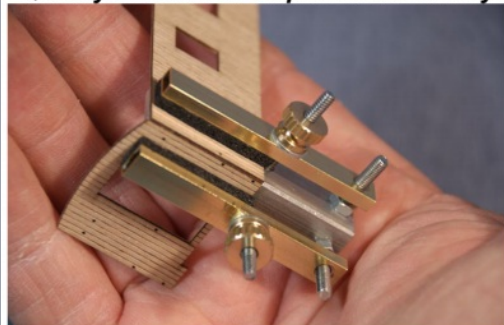
ONLINE, YouTube, every other Saturday. 4th Division, Pacific Northwest Region, NMRA hosts online layout tours and clinics.

Archive: www.youtube.com/c/4DPNRMovies

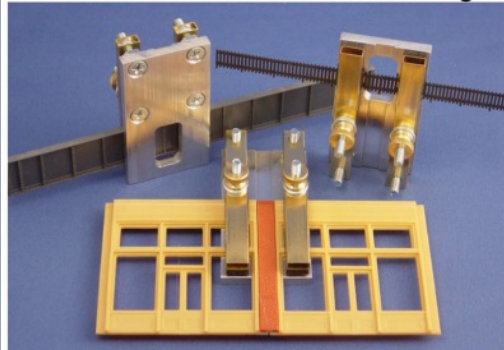
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Info: groups.io/g/NNG

AROUND THE USA, IN-PERSON, Various dates.
ScaleTrains.com Road Trip.
Info: www.scaletrains.com/roadtrip

March – April 2022

CANADA, SASKATCHEWAN, REGINA, April 30-May 1. Regina Railfest 2022. Caledonian Curling Club, 255 Sandra Schmirler Way.
Info: reginarailfest.com/railfest-2022

NEW ZEALAND, CHRISTCHURCH, April 15-18, 2022. Back on Track National Model Railway Convention 2022. St. Andrews College, 347 Papanui Rd.
Info: www.modelrailcon.nz

CALIFORNIA, ROHNERT PARK, April 21-24, 2022. Return to the Redwoods, Pacific Coast Region NMRA Convention. Doubletree by Hilton Hotel Sonoma Wine Country, One Doubletree Drive.
Info: www.pcrnmra.org/conv2022

COLORADO, DENVER, April 2-3, 2022, Rocky Mountain Train Show – Spring 2022. National Western Complex, 4655 Humboldt St.
Info: rockymountaintrainshow.com

GEORGIA, SAVANNAH, March 25-26, 2022. Savannah Prototype Modeler's Meet. Southside Assembly of God, 401 Tibet Ave.
Info: www.savannahrpm.com

ILLINOIS, URBANA, March 26-27, 2022, Lincoln Square Train Show, sponsored by the Illinois Terminal Division, NMRA. Lincoln Square Village, 100 W High St.
Info: itd.illinoisterminaldivision.org/show/show.htm

INDIANA, NAPPANEE, March 19, 2022, 17th Annual Nappanee Train Show, sponsored by the Elkhart Model Railroad Club. Claywood Event Center, 13924 N 1100 W (County Line Road).
Info: www.emrrc.com

KENTUCKY, LOUISVILLE, March 19, 2022. 32nd Annual Division 8, MCR Train Show and Sale. Holy Family Parish Saffin Center, 3938 Poplar Level Rd.
Info: div8-mcr-nmra.org/site/index.htm

MARYLAND, TIMONIUM, April 2-3, 2022. Great Scale Model Train and Railroad Collectors Show, Maryland State Fair, 2200 York Rd.
Info: www.gsmts.com

NEW YORK, BATAVIA, April 3, 2022. The Great Batavia Train Show, Richard C. Call Arena, Genesee Community College.
Info: www.gsme.org

OKLAHOMA, TULSA, March 18-20, 2022, Layout, Design, Operation Weekend (LDOP), sponsored by the Indian Nations Division of the NMRA. Akdar Shrine Center, 2808 S Sheridan Road.
Info: www.tulsanmra.org

OREGON, CORVALLIS, March 19-20, 2022. Winterail 2022, Railroad photography exposition and collectables sale. Corvallis High School, 1400 NW Buchanan Avenue.
Info: www.winterail.com

OREGON, ELSIE, April 2, 2022. 2022 Pacific Model Loggers' Congress. Camp 18 Restaurant & Museum, 42362 Highway 26.
Info: pacificmodelloggerscongress.org

PENNSYLVANIA, MALVERN, March 24-27, 2022, Valley Forge Railroad Prototype Modelers 2022. Desmond Malvern Conference Center.
Info: www.rpmvalleyforge.com

SOUTH DAKOTA, SIOUX FALLS, March 26-27, 2022. Greater Sioux Falls Model Train Show, sponsored by the Dakota Southeastern Division. Multi-Cultural Center, 515 N Main Ave.
Info: dakotasoutheastern.org

TEXAS, NEW BRAUNFELS, April 9-10, 2022. New Braunfels Railroad Museum Spring Train Show. New Braunfels Civic Center, 375 South Castell Avenue.
Info: newbraunfelsrailroadmuseum.org/nbrr/train-shows

WASHINGTON, TACOMA, March 17-20, 2022. First Annual Rails to Sails Train Show, sponsored by the Foss Waterway Seaport Maritime Museum. 705 Dock Street.

Info: fosswaterwayseaport.org/blog-post/rails-to-sails-train-show

WISCONSIN, ONALASKA, March 19-20, 2022. 41st Annual La Crosse & 3 Rivers' Model Railroad Show also featuring Doll Houses & Miniatures. The Omni Center, 255 Riders Club Road.

Info: www.facebook.com/events/1001728953764113

Future 2022-2023 by location

NEW ZEALAND, DUNEDIN, May 7-8, 2022. Dunedin Model Train Show. Taieri Bowling Club, 12 Wickliffe Street, Mosgiel.

Info: dunedinmodeltrainshow@gmail.com

UNITED KINGDOM, CREWE, November 4-6, 2022, Crewe North Junction 2022, British Region NMRA Regional Convention. The Heritage Center, Emperor Way, Crewe Business Park, CW1 6BD.

Info: convention.nmrabr.org.uk

CALIFORNIA, SAN DIEGO, September 7-11, 2022. Back on Track in 2022, Pacific Southwest Region convention. Four Points by Sheraton San Diego, 8110 Aero Drive.

Info: web.cvent.com/event/1474b6bc-b18a-49ec-9b4e-9f58fb4665cd/summary

CALIFORNIA, SANTA CLARA, May 26-28, 2022, O scale - S scale - Narrow Gauge West. Hyatt Regency Hotel, 5101 Great America Parkway.

Info: www.oscalewest.com

COLORADO, LAKEWOOD, June 2-5, (Proposed) Sn3 Symposium. Sheraton Denver West, 360 Union Boulevard.

Info: groups.io/g/NNG/topic/87954737#1335

CONNECTICUT, WINDSOR, September 15-18, 2022. Connecticut Yankee, Northeastern Region Convention 2022. Marriott, Hartford/Windsor Airport, 28 Day Hill Road.

Info: ner-conventions.org/connecticut-yankee

INDIANA, INDIANAPOLIS, May 18-23, 2022. Indy Junction 2022, the Midwest, Mid-Central, and North Central Regions NMRA Convention. Indianapolis Marriott East, 7202 East 21st Street.

Info: www.indyjunction2022.org

INDIANA, INDIANAPOLIS, May 18-22, 2022, RPM Conference at Indy Junction 2022.

MAINE, WESTBROOK, May 14, 2022. Southern Main Model Railroad Club Train Show. Westbrook Community Center, 426 Bridge St, off exit 48 I-95).

Info: southernmainemrc.wordpress.com

MASSACHUSETTS, ORLEANS, December 18th, 2021, Nauset Model Railroad Club Open House. Rear of Hiltop Plaza, 180 Route 6A.

Info: www.nausetmodelrrclub.com

MINNESOTA, SAINT CLOUD, May 14, 2022. Granite City Train Show, River's Edge Convention Center, 10 4th Avenue South.

Info: www.granitecitytrainshow.com

MISSOURI, St. LOUIS, August 7-14, 2022, NMRA National Convention and National Train Show. St. Louis Marriott Grand Hotel, 800 Washington Avenue.

Info: gateway2022.org

NORTH CAROLINA, CHARLOTTE, October 20-23, 2022. Carolina Special Look South 2022, Mid-Eastern Region Regional Convention. Hilton University Place, 8629 M Keynes Drive.

Info: www.carolinasouthern.org/MER2022.html

OREGON, EUGENE, May 10-14, 2022. Make Tracks to Eugene, PNR 2022 Regional Convention, Valley River Inn, 1000 Valley River Way.

Info: pnr.nmra.org/1div/Eugene2020/home.htm

PENNSYLVANIA, HARRISBURG, June 10-11, 2022. 2022 Harrisburg Narrow O Summer Meet. New Hope Church, 584 Colonial Club Drive.

Info: www.facebook.com/modelingevents

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PENNSYLVANIA, HAMBURG, September 16-18, 2022. Reading Railroad Modelers Meet X, hosted by the Reading Company Technical & Historical Society and the Anthracite Railroads Historical Society. Reading Railroad Heritage Museum, 500 S. Third St.
Info: readingrrmm.com

TENNESSEE, JOHNSON CITY, June 3-4, 2022, George L. Carter Railroad Museum Big Train Show, East Tennessee State University Mini-Dome, State of Franklin Road.
Info: www.etsu.edu/railroad/events.php

TENNESSEE, NASHVILLE, June 15-19, 2022. 28th Annual National N Scale Convention, Sheraton Music City, 777 McGavock Pike.
Info: www.nationalscaleconvention.com

TEXAS, GRAPEVINE (Dallas Area), Summer 2023. NMRA National Convention, Gaylord Texan Resort & Convention Center, 1501 Gaylord Trail.
Info: www.2023texasexpress.com

TEXAS, TEMPLE, May 5-7th, 2022. Where Modeling meet Prototype Convention, Lone Star Region Regional Convention, Mayborn Convention Center, 3303 N 3rd Street.
Info: lsr2022.org

VERMONT, WHITE RIVER JUNCTION, October 16, 2022. Upper Valley Model Railroad Show, sponsored by the Connecticut Valley Model Railroad Club. Connecticut Valley Auto Auction Building, 1567 VT-14.
Info: cvrr.railfan.net/cvmrr

WASHINGTON, TACOMA, September 1-4, 2022. 42nd National Narrow-Gauge Convention, Hotel Murano, 1320 Broadway.
Info: www.seattlenngc.com

WYOMING, CHEYENNE, May 14-15, 2022. Sherman Hill Train Show. Event Center – Archer, 3801 Archer Parkway.
Info: www.shermanhillrails.org/trainshow

WYOMING, CHEYENNE, May 11-14, 2022, Union Pacific Historical Society Convention. Red Lion Hotel, 204 West Fox Farm Road.
Info: uphs.org/conventions/future-conventions ■

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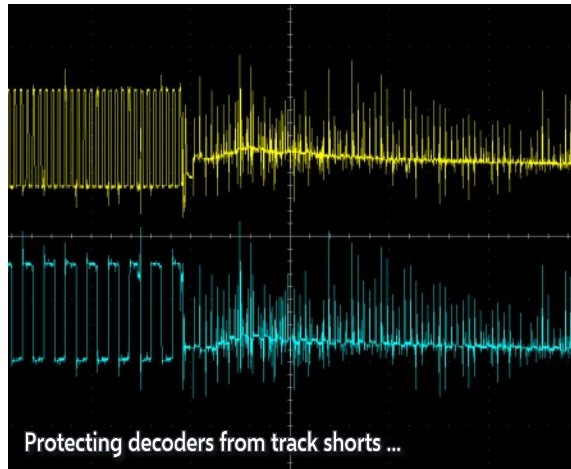
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Coming next month in MRH ...

MRH visits Charlie Comstock's Bear Creek & South Jackson for an update ...



3D printing a U30CG ...



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