

TRAIN GATE

Photos by Phil Opielowski, drawings by Carey Hinch.

PHIL OPIELOWSKI

It's not pretty, it could use some paint, but it works. It was the obvious answer to crossing a doorway on my railroad; I certainly wasn't going to allow this little obstacle to cause me to abandon the perfect trackplan. I also wanted something better than the typical options, such as bench or bridge sections that lift out completely or solid skull-crushing duck-unders; they can become a nuisance.

Traingate may not work for every situation, for example where you have a yard throat or other complex trackage. This was designed to be a simple way to complete a loop, giving my point-to-point Ware River Railroad a continuous running option when I want to just turn a train loose to entertain visitors or myself.

Traingate merely is a glorified, solidly constructed fence gate. I might be able to swing on it like I did at my Grandma's farm during my innocent youth eons ago. Certainly, this will support the heaviest possible piece of O Scale equipment we could ever run.

There are important points about building your own reliable Traingate. The adjoining sections of benchwork must be solidly attached to a non-movable structure. In my case, it's the foundation of the house. We don't want to be bothered by misalignments, excessive maintenance and any other failures. We want to treat this like any other door or passageway in our home, more or less coming and going as we please.

The photos show varying angles and details, but you can make this any way that suits your needs. Mine is built to accommodate a curve, for instance, and to span a doorway. When the Traingate is in place, I lock the door to prevent any wayward grandchildren or other persons from opening the back door and crashing into it. When the last unit is shut down and the world of the Ware River Railroad is again suspended in time, the gate is opened and a retainer locks it to prevent it from errant swinging or from bumping the plumbing of the heating system.

Although I'm presenting a plan for an installation based on my requirements, you can stretch, condense, and modify it for your purposes. Add more tracks or even lay down a switch on it and have two tracks on one end if you dare. Here's the big secret to success. Don't lay an inch of track until the entire unit is DONE! Once it opens and closes flawlessly and all the hardware is installed,



Photo 1 — The docking section contains a lip to accept the gate. You can see a stop made from a piece of 1" x 1" aluminum angle. The gate slips between the lower lip and the one made of basswood where rails are attached.

then lay the track. Treat the track building as you would on regular benchwork. Just be sure that all surfaces are built in the same plane when the gate is closed. A long piece of aluminum angle used as a straightedge will tell you if everything is flat.

Let's begin by making some decisions. First, determine the length of the span. Not only will you need to have the clear space for the gate to swing through its arc, but you'll need to make provisions for the gate to be secured in its open position, hopefully out of the way.

Next, build the approaches. Make sure that the benchwork is rock-solid. Remember, we want both approaches to be in the same plane. If you can design the trackwork so that there is no grade across the gate, then you can use a level to lay everything out. Here's where that long rigid straightedge comes in handy. If you are dealing with a grade, that straightedge becomes indispensable.

My Traingate and approaches are decked with scrap 5/8" plywood, but a 3/4" thickness would be even better. The non-hinge approach side should have a lip of bench material extending out from the benchwork frame about two inches (See Photo 1). We also want to attach our approaches to a solid wall. In my case, I borrowed an impact drill, and bored 1/2" holes in the concrete foundation wall to accept anchors for 1/4" lag screws or machine screws.

Build the gate portion as shown, and allow it to be about 1/4" shorter than the actual opening. Bevel any edges that will interfere. The detail in Photo 2 shows how the end of the gate is angled to the track to allow immediate clearance once the gate begins to open. Frame the gate with 1 x 4 lumber, or go a step further and attach two 2" x 2" aluminum angles for absolute rigidity.

The hinge side of the gate and the approach are built using vertical 2 x 6's. (Photo 3) With heavy-duty door hinges attached as

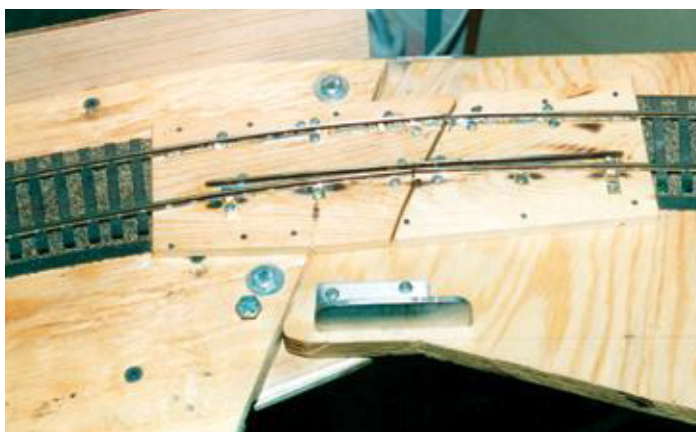


Photo 2 — The top of the joint with about 8" of ties removed from the track. The adjusting screws to adjust the press fit may not be necessary. Edges of wood components are beveled so the sections slide together. Rails are attached with brass strips.

shown, this section will be really solid; just be sure your hinges are square and aligned so the pivot points or hinge pins all line up with each other (Photo 4). I didn't frame the gate. Instead I used a rigid piece of aluminum channel under the plywood.

Now let's make the "docking" section. With about 1/8" of clearance and all surfaces in the same plane, we can make up a dock-

ing plate with somewhat of a press fit. Attach another piece of plywood as shown in Photo 1. Use two $\frac{3}{8}$ " diameter by 2" long



Photo 3 — The hinge side made from 2 x 6 framing lumber

machine screws to attach this plate. Drill and tap the bench section as shown for another $\frac{3}{8}$ " machine screw. This screw will become an adjusting screw to adjust our press fit (Now this part is arbitrary – I haven't used the adjusting screws, but included them anyway). Next, make stops as shown, and add or make a locking latch if you want (Photo 5). In my case, the press fit works fine without a lock.

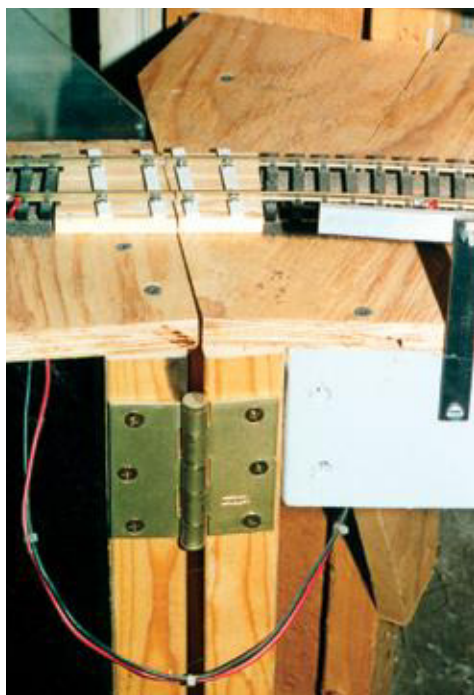


Photo 4 — Closeup of top hinge and draped power wire.

Once all construction is done and tested, lay your track completely across all joints and to your best standards. I suggest using flextrack and flowing geometry on your favorite roadbed material. I used Midwest cork roadbed. Where joints will soon be cut, I used a solid piece of basswood for roadbed, allowing for two or three inches on either side of the joint. Just be sure that no track components "float" anywhere near the opening joints. On the docking side, I stripped away track ties over about 8" of track. Because this track is on a curve, a guardrail was added. The photos also show how I soldered tabs made from 0.016" x 0.250" brass to the rail bases and drilled them to accept #4 panhead sheetmetal screws as fasteners. Gauge your rails and fasten.

Now it's time to cut the joints, but first we must build in some



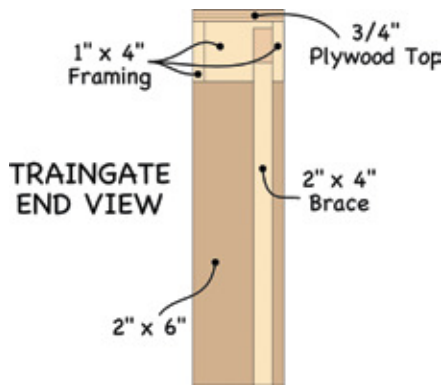
Photo 5 — Gate partially opened.

insurance against misalignments on the hinge side. Count back three or four ties on each side of the eventual joints. Drill holes in the ties next to the rails and secure the rail using several pan head sheetmetal screws. These are heavy-duty adjustable spikes. These will not only make our alignments solid but will allow the rails to be adjusted later, if needed. Any errant bump will do severe damage to an elbow instead. You can see in the photos how I made ties from styrene and used the screws to solidly anchor the rails.

Now cut the rails as shown to allow swing and clearance as your Traingate opens and closes. Be sure to cut one rail about $\frac{1}{4}$ " back so that it misses the next rail during opening or closing (See diagram). Your gate should open and close freely, with only a slight push, as it enters the press-fit docking plate. File the



Photos 6 and 7 — Traingate open and tucked away showing retaining bar and guardrails. Note that benchwork also becomes a catchall for sundry household items – some typical, some questionable.



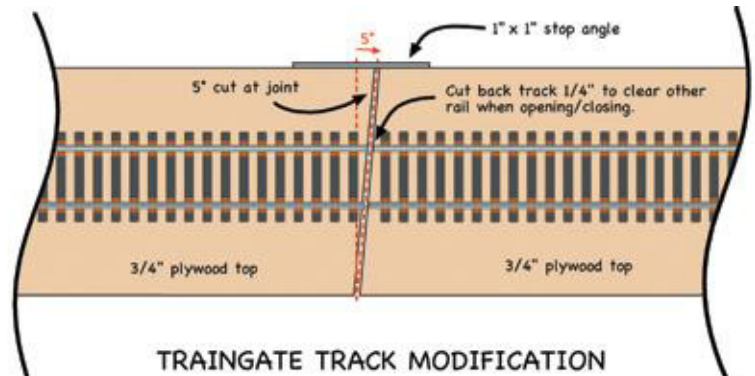
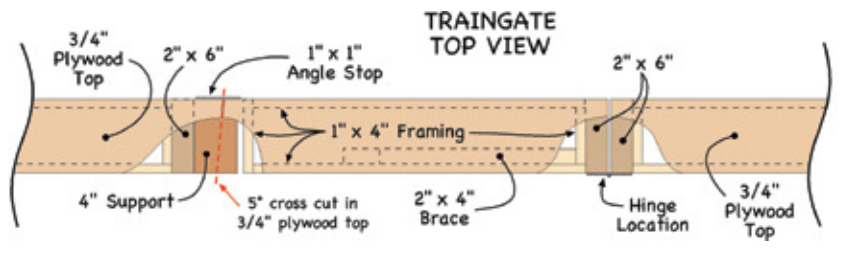
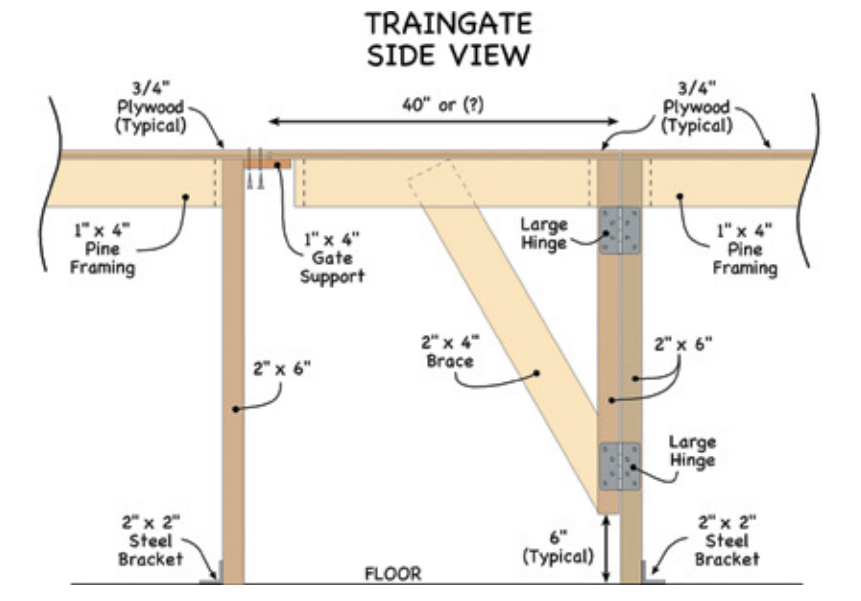
rail ends and slightly break the insides of the rail heads. Attach power feeders from the stationary portion of the railroad and, of course, solder them to


the rails. I used #18 gauge stranded automotive wire. Drape the wire, and make it long enough to eliminate any bind or snags (Photo 4).

Once your Traingate operates smoothly and the track aligns each time you close it, it's time to make a retaining bar to keep it out of the way when fully opened (Photos 6 and 7). This bar is just a flat piece of $\frac{1}{8}$ " x $\frac{3}{4}$ " steel. I made a pin from a $\frac{1}{4}$ " machine screw to attach it to the gate. A $\frac{1}{4}$ " hole in the bar slips over the pin. When you close the gate, just tuck the bar away on the benchwork. We don't want the gate swinging in the breeze (that is, if it's perfectly balanced as we O-Scalers are known to strive for). If you're lucky, your Traingate will have a surrealistic "creeeeeeak"; mine did until I finally get around to oiling the hinges.

That's basically the entire process for making your very own Traingate (I had to name it something to add in any new published model railroad glossaries!). This article only presents how I made mine to give you, the typical innovative O-Scaler, the basic concept.

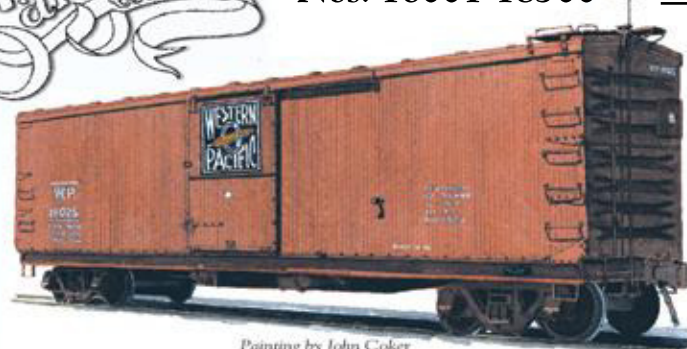
Since you don't want to send your precious loot to the depths of the earth by forgetting to close the gate when operating, I'll leave you to think about how you can interlock track power to prevent any mishaps. Here's where micro switches come in handy. Perhaps some spring-loaded physical stops that pop up as soon as the gate begins to open will fill the bill. I haven't done this part yet (and may someday regret it, given my far-less-than-perfect memory).





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Around the Room Lay- out Entrance with *NO* Duckunder

Are you ready to get up off your hands and knees and really enjoy that walk-around track plan? ...

– Bob Bucklew
Model Photos by the author



When I was considering track plans for my Quaker Valley Railroad back in the early 1980s, I wanted to incorporate a walk-around style layout plan. The entrance to the basement layout room could accommodate large turnback loops on either side of the entrance, but they would consume a lot of space.

A track plan that was essentially an around-the-room plan worked best, but with double tracks at 47" high, how do operators and visitors enter the room without getting on their hands and knees? My western Pennsylvania locale for the railroad precluded using a lift bridge. And I wanted something that would be sturdy and work for years. What I developed has been in service for more than a quarter century, with only seasonal adjustments to account for changes in humidity.

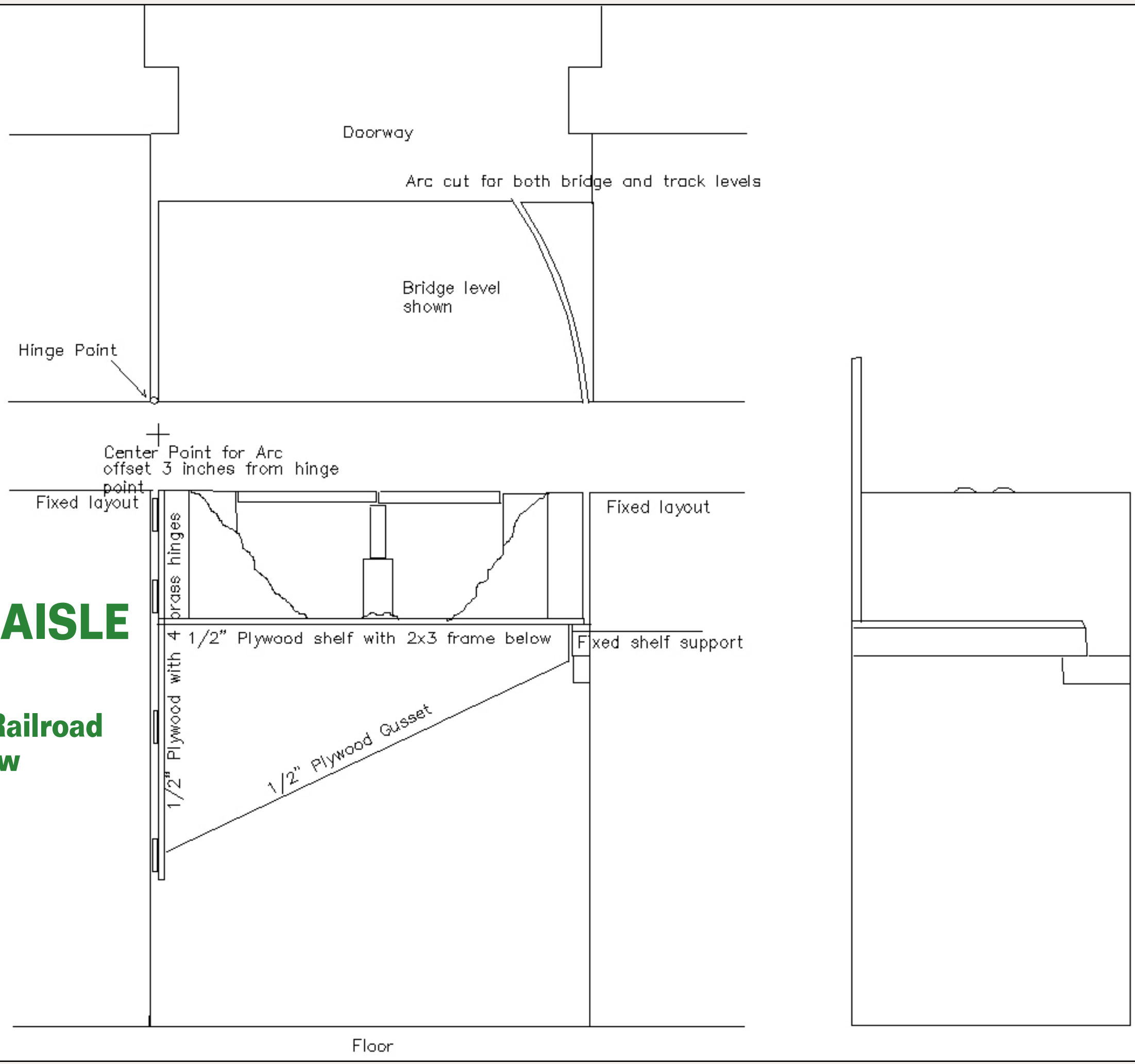
I considered a skeletal (minimal) drop down or swinging bridge, but decided that a sturdy gate could be scenedicked benchwork and become a part of the railroad, perhaps even a focal point.

Because I would be swinging a large and heavy gate, it had to have sturdy support on both sides. I started with $\frac{3}{4}$ " plywood sheet on both sides, fastened to the wall, and resting on the floor. With the approach track and roadbed installed, these became very sturdy anchor points for the gate.

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1: Hinge side of layout entrance with flex wire.

1



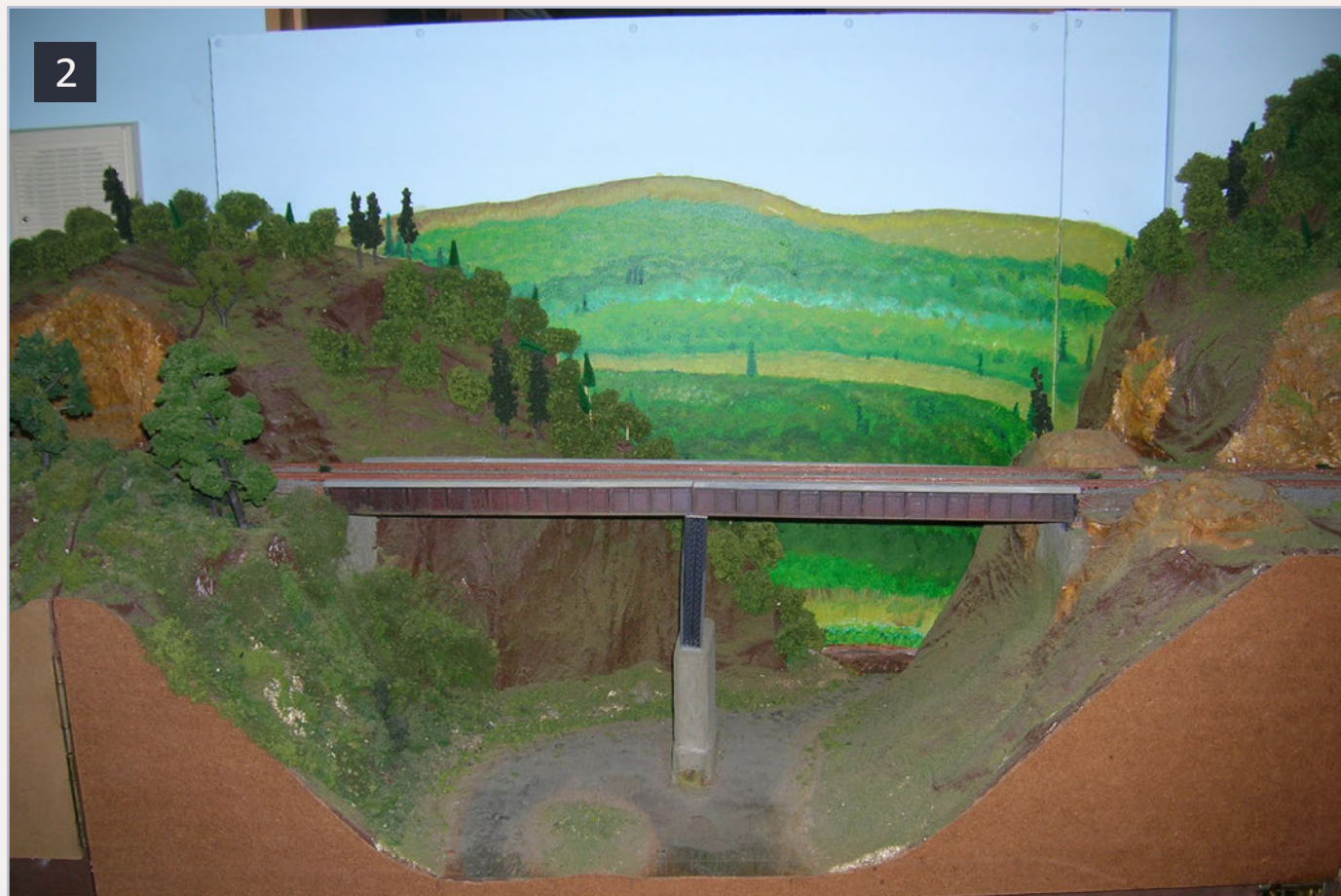
SWINGING AISLE GATE

Quaker Valley Railroad
R. Bucklew

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I started by constructing the hinged side of the gate. It is also a piece of $\frac{3}{4}$ " plywood and joined to the fixed part of the layout by four 3" brass door hinges (1). You could also use a full length "piano" hinge. This needs to be substantial as everything turns on it. On the open end of the gate, I used a piece of 2x4 to construct a ledge for the gate to rest on. The front edge was beveled to catch the gate as it is closed (4). After 25 years, this wood is showing some wear from use, but the vertical adjustment has been accommodated at track level.

With this in place, I constructed a shelf across the aisle at 37" high. For a flat land railroad, this could be nearer to track level, but I built mine to accommodate a two-track plate girder bridge. The shelf is also $\frac{3}{4}$ " plywood and fastened securely to the hinged side of the gate with glue and wood screws. The



open end has a curve, so it does not interfere as the gate is opened. But it only needs to rest on the 2x4 support, and there is no interference with the fixed side of the layout. I added a diagonal brace under the shelf to transfer some weight from the open end back to the hinged end of the gate, as shown in the drawing. I also added a length of stair railing diagonally, as an additional support brace for when the gate is left open (5).

With this shelf complete, it is sturdy enough to sit on when in the closed position. I built the rest of the track supports and scenery on this sturdy base, using scrap construction materials I had left over from our home construction. To

2. Closed gate overview.

3. Backside of gate.

4. Ledge to support closed gate

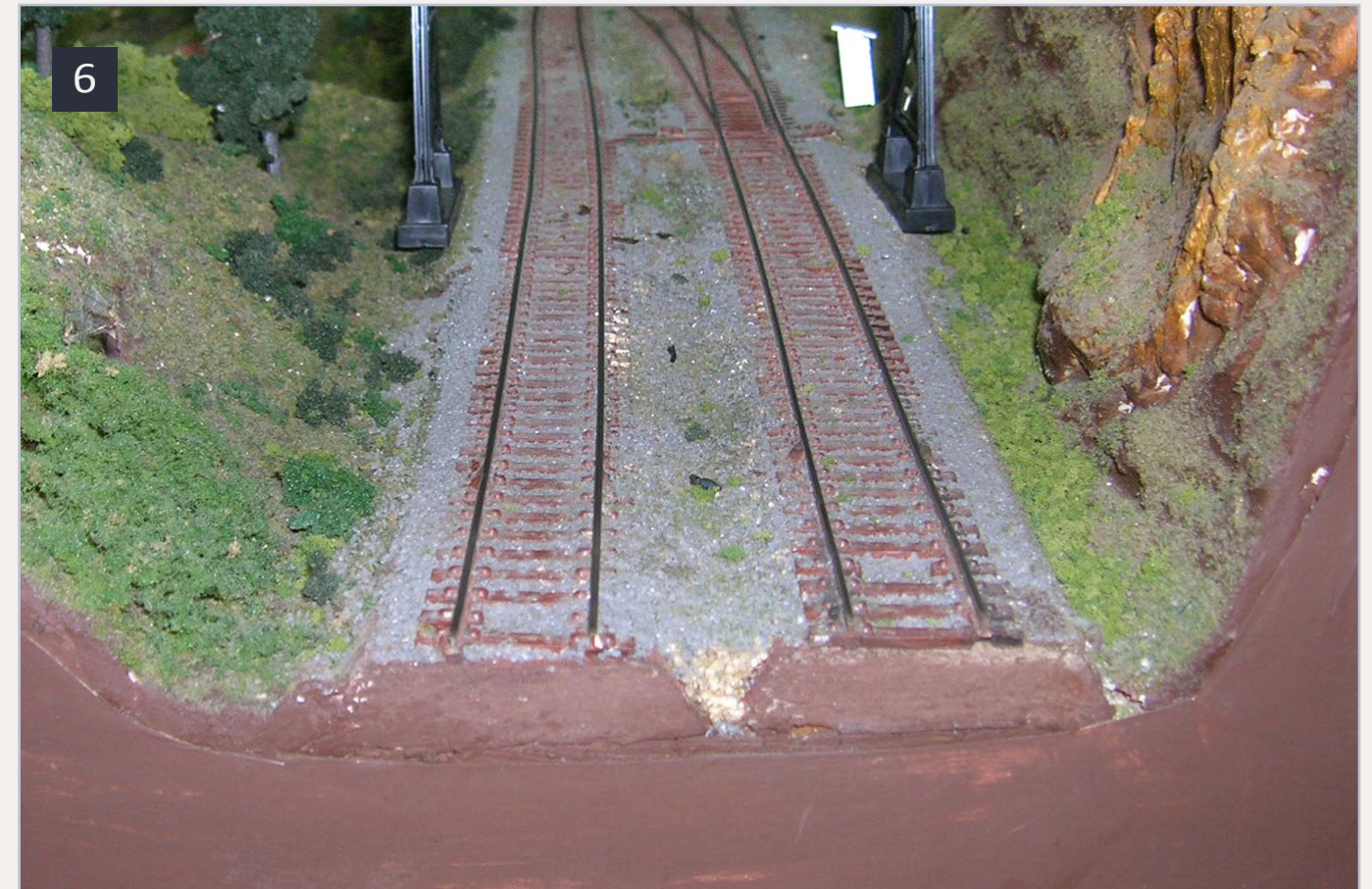


make sure the trackwork fit with the fixed roadbed on either side, I laid a continuous piece of plywood sub-roadbed across the entire aisle gate area, and secured it to the fixed benchwork on both sides. I placed supports under it and secured it in place with glue and screws. I only cut the moving parts of the sub-roadbed free after ensuring that all supports were in place.

To eliminate the possibility of interference of wood on wood, or rail on rail, I used a cam action when cutting the sub-roadbed. Instead of having an arc centered on the hinge pins, I placed a tripod 3" out in the aisle and marked a circle at the open end with the circle center offset by that 3". I used a jigsaw to cut the plywood sub-roadbed in a straight line at the hinged end, and on the cam action curved line on the open end. Once these cuts are made, the gate can be opened, closed, and checked that nothing binds or interferes with smooth operation.



5. Underside of gate.



6. Detail of shimmed rails and roadbed.



7. The gap beneath is big enough for a "crawl under."

To account for vertical alignment of the track at both the hinged and open ends of the gate, I used wood screws when fastening the three inches of Homasote roadbed on both sides of the rail gaps (4). The balance of the Homasote roadbed is glued to the plywood sub-roadbed. Adding (or subtracting) cardboard or paper shims between the Homasote and plywood permits very small vertical adjustments.

After 25 years, I have still not found a need to adjust the hinged end of the gate. These tracks align very reliably both winter and summer.

On the open end of the gate, I remove shims in the early summer as humidity causes the wooden structure to expand slightly. As the wood dries out in the fall, the shims are put back in place, raising the railhead to match the fixed part of the layout. Other than the twice a year vertical adjustment, no other adjustment has been necessary.

By placing a continuous strip of the Homasote road bed across the entire gate area, I made sure everything started life in perfect alignment. I used a razor saw to cut the Homasote so there is a close fit for the roadbed.

After checking for smooth operation with the roadbed in place, I added the track. I used code 83 flex track for my HO layout, but you can use any track used on the adjoining fixed portions of your layout. I again used the razor saw to cut the gaps on the hinged and open ends of the gate. I then filed small chamfers in the ends of the rails to ease wheel sets across the gaps. Building the roadbed and trackwork across the entire gate area, before cutting them, ensured that everything lined up.

The cam action design for the gate allows the gap between the moving and fixed parts of the gate to increase as it opens, moving the vulnerable rail ends away from each other (8, 9). This

feature allows me to have a double track scenicked gate with no interference.

The cam action also provides a solid stop when the gate is closed. Most times I don't even find a lock necessary to secure the gate in the closed position. I did add a common brass gate lock to the front edge of the gate, as shown. I considered replacing it with an electronic door latch to permit the dispatcher to control access. In 25 years, we have not had an accidental opening of the bridge under a train.

Power to the rails on either side of the aisle is straightforward. I routed this power up through the wall and across the suspended ceiling to make both sides part of the same electrical block. I then ran wires to the four rails on the bridge, and have them crossing to the fixed part of the layout almost parallel



Bob Bucklew began his modeling career at age 8 with a Lionel train set from his uncle. Though the Lionel was traded for HO scale, the pleasure of model railroading has remained.

Bob got serious with model railroading while working for Excelsior Truck Leasing, a Penn Central and later

Conrail subsidiary.

His current layout was begun almost 30 years ago, an HO scale free-lanced Quaker Valley Railroad set in western Pennsylvania in 1977. It employs a JMRI CTC panel to control the NCE layout. He recently authored an online tutorial on construction of the panels using JMRI software.

Bob and his wife, Lynda, live near Reading, PA.

to the hinges on the gate. That way, the stranded wires are twisted each time the gate opens and not bent back and forth which would surely break them over a period of time.

When my niece was young, there was almost an incident where a train was driven into what Charlie Comstock would call the “The Gorge of Eternal Peril.” That near-miss encouraged me to add an electric interlock to stop trains approaching the open access gate.

I placed two micro switches on the hinged side where the opening gate would activate them (10). The switches cut track power to the two blocks on the gate, and on the approaching tracks at least 2 feet on either side of the gate. That worked with DC operation for more than 15 years. More recently, I added a magnetic switch sensor that connects to my JMRI



8. Cam action – closed.



9. Cam action – opening.



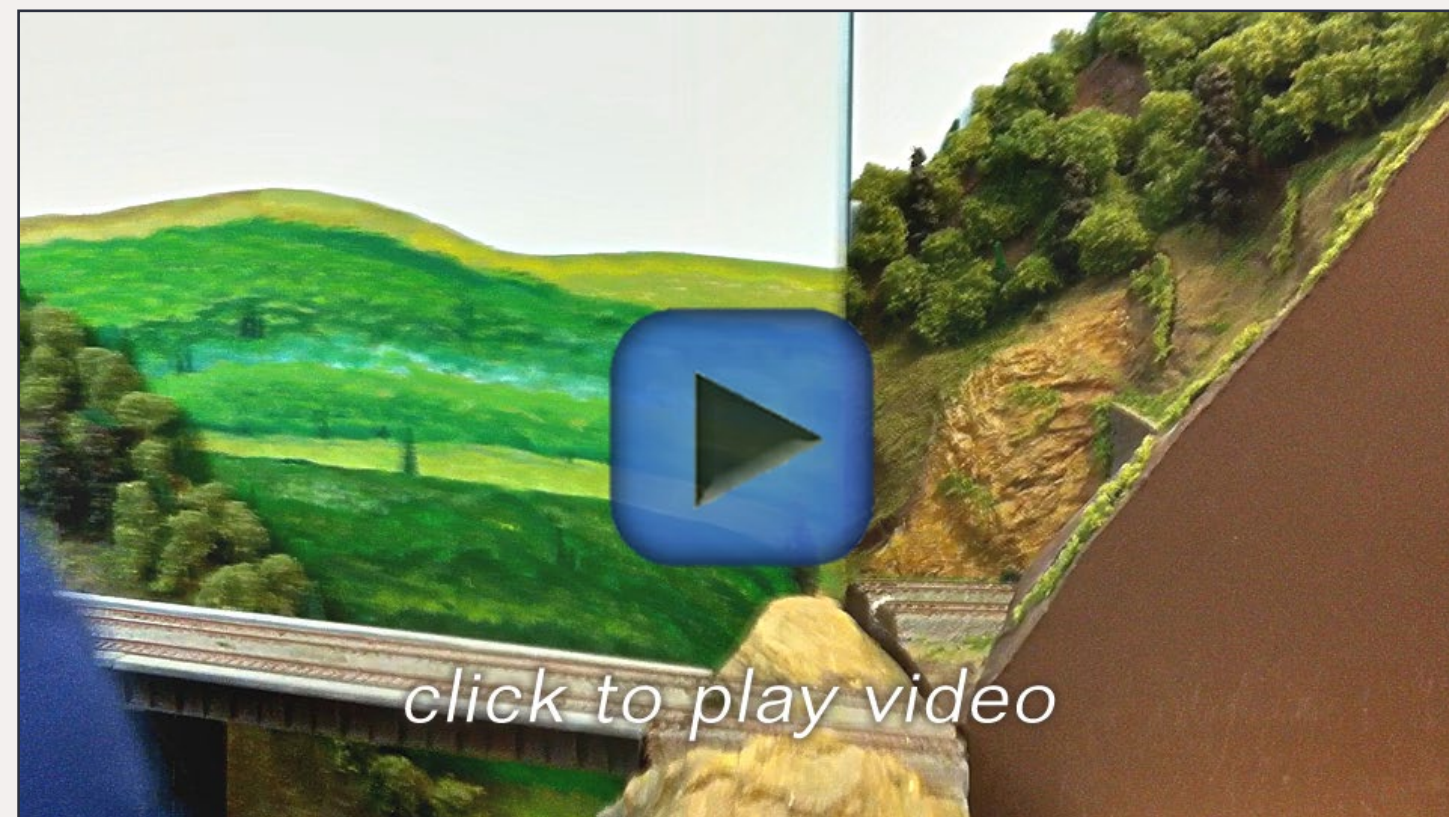
7. Detail of limit switches.

monitored Loconet to provide an alert to the dispatcher when the aisle gate is open. It also drops signals on the approach to the gate.

I have added a cloth skirt to my gate, matching those fastened by Velcro to the fixed benchwork of the Quaker Valley. But the opening between the gate and the floor is still accessible and my daughters and the dog would often come in when the gate was in the closed position (see 7). I'm getting too old for that now.

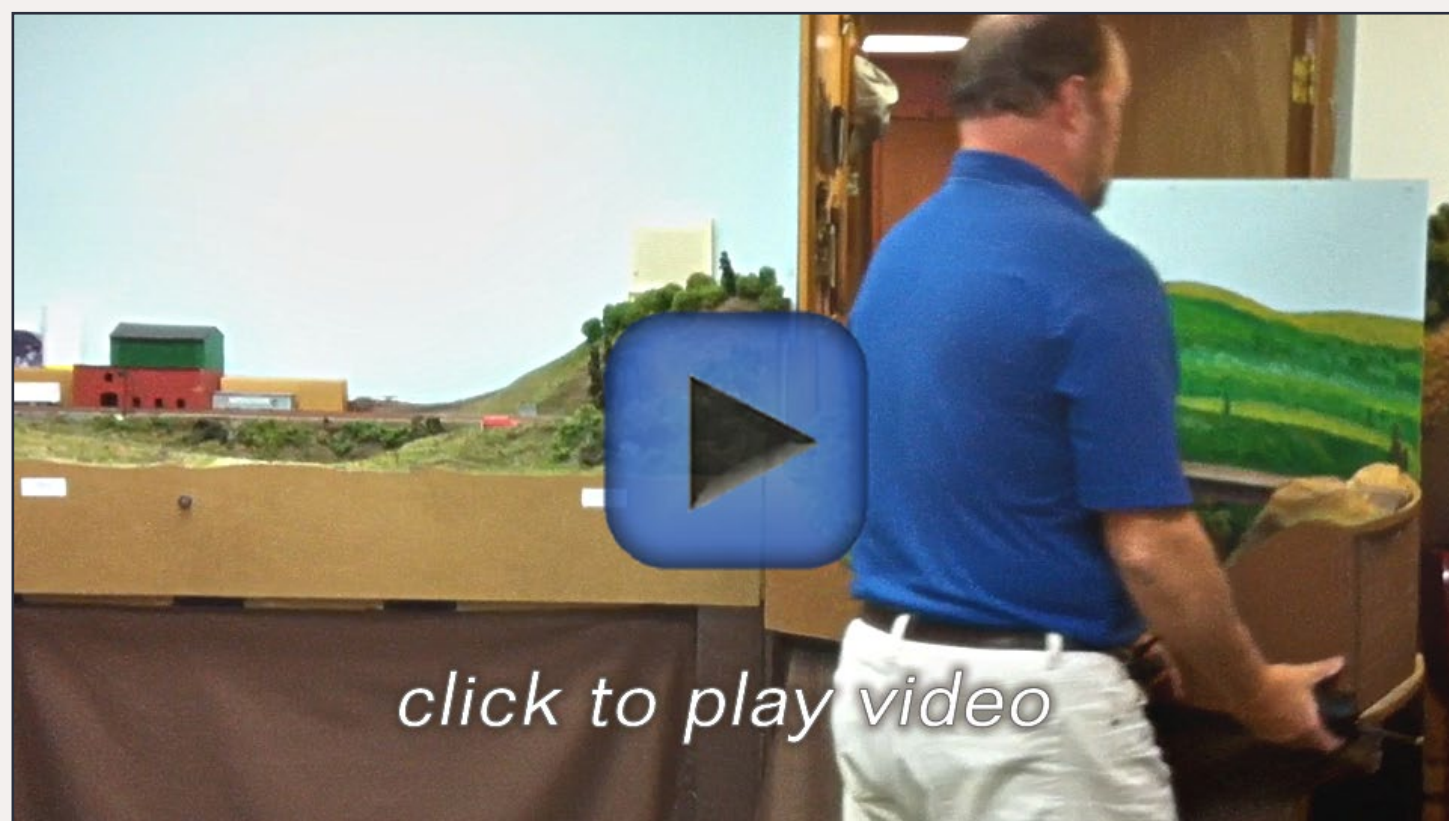
I would avoid placing very complex trackwork on a moving gate, but a turnout or crossover could easily be accommodated by keeping the frog and moving parts away from the ends.

Charlie Comstock, in his April 2009 article in MRH (mrhmag.com/mrh2009-Q2/up_the_creek) indicated that a swing gate



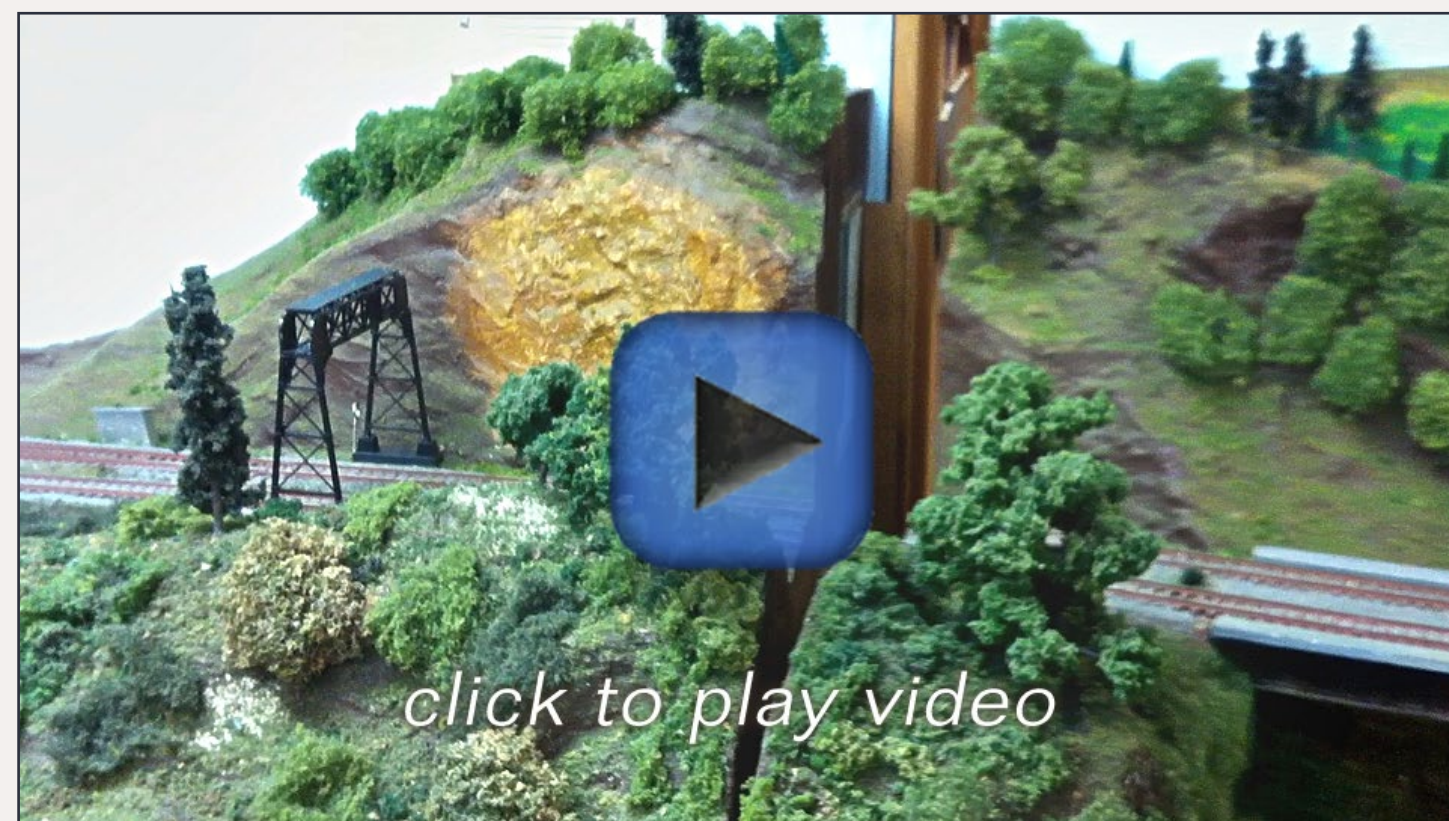
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Video 2: Aisle cam action – Cam action of gap when opening.



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Video 1: Aisle gate operation – Train across bridge, open and close, second and third train.



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Video 3: Aisle hinge side – Hinge side when opening.


was not appropriate “where there is a high volume of train and foot traffic. Opening and closing the swing gate for people will disrupt train operation or worse, someone may open the gate while there’s a train on it!” Constructing a gate as I have minimizes these issues, as shown in the videos.

Here are the issues to consider before you can find if an aisle gate will work for you:

- Is there room for the gate/ bridge to swing out of the way?
- Can it open wide enough to be useful for entry/exit?
- Can the side supports be made very solid?
- Can you route layout wiring for track power and control around the bridge?
- Will you permit duck/crawl under traffic when the gate is closed?
- How will you lock the gate in place when closed?
- How will you provide safety for trains when the gate is open?

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