BALTIMORE AMERICAN FLYER CLUB

STARTER SET EXPANSION LAYOUT PLAN

Prepared by: David Avedesian

As often the case, as we play and grow with our new train set, we think of plans of expanding our railroad empire to include more trains and more track including sidings for American Flyer operating accessories.

A quick search on the internet will show many layout designs to meet the needs of any railroad empire mogul.

The Baltimore American Flyer Club has taken a two train layout design that was presented in O-Gauge Magazine, January 2015, titled "Twice the Fun" and modified the design to fit American Flyer track and switches. The layout will fit on a 5 foot x 8 foot table top.

The attached layout includes a scale drawing with a materials list. The material list includes the number of switches and track pieces needed for the two train layout. The layout design comprises of standard full section AF tinplate track. There a few pieces of straight track that will need to be custom cut to complete the design. The AF sectional track is easy to cut. The advantage of the AF sectional track is its low cost. AF section track can be gotten for 10-25 cents per section. If you are looking for a more realist AF sectional track, there is new track systems available in the $5.00 per section cost range. For a starter set expansion program, the low cost AF tinplate sectional track will serve your railroad empire for many years of "Play Trains Fun".

Our recommendation is to layout the design of the modified Twice the Fun Railroad with the exception of the cut straight track. Once all the full sections of curve, ½ curve, straight track and AF switches are in place, then measure the length of each custom cut straight track for a proper fit.

The O-Gauge magazine article suggests placing anchors in the pink form for securing the track. This method is easy to follow and will allow the track design to change once mounted on the train board. However, a different approach to the anchors/screw method would be to use a water based adhesive caulk.

The adhesive caulk method eliminates the need to pre-measuring the anchor location. With adhesive caulk, one runs a small bead of caulk on either side of the track centerline. After you run the bead of caulk, with a small putty knife you spread the caulk to a thin film. The working time for the adhesive caulk is 30 minutes. It will dry completely clear within 60 minutes. The adhesive caulk will secure the track to the pink foam on a permanent basis.

The disadvantage of the adhesive caulk method is the lack of track design change flexibility. The advantage of the adhesive caulk method is it secure the track to the foam board in a permanent fashion. The track will not come loose over time and/or moving the track board from the basement to the living room during the holiday season. The adhesive caulk is flexible to layout movement without adhesive failure.

We have included a copy of the original O-Gauge Magazine article for your reference and review.

If you have any questions about the design, this article, S-Gauge track systems, construction, wiring and in general playing trains, feel free to em me.

All Aboard,

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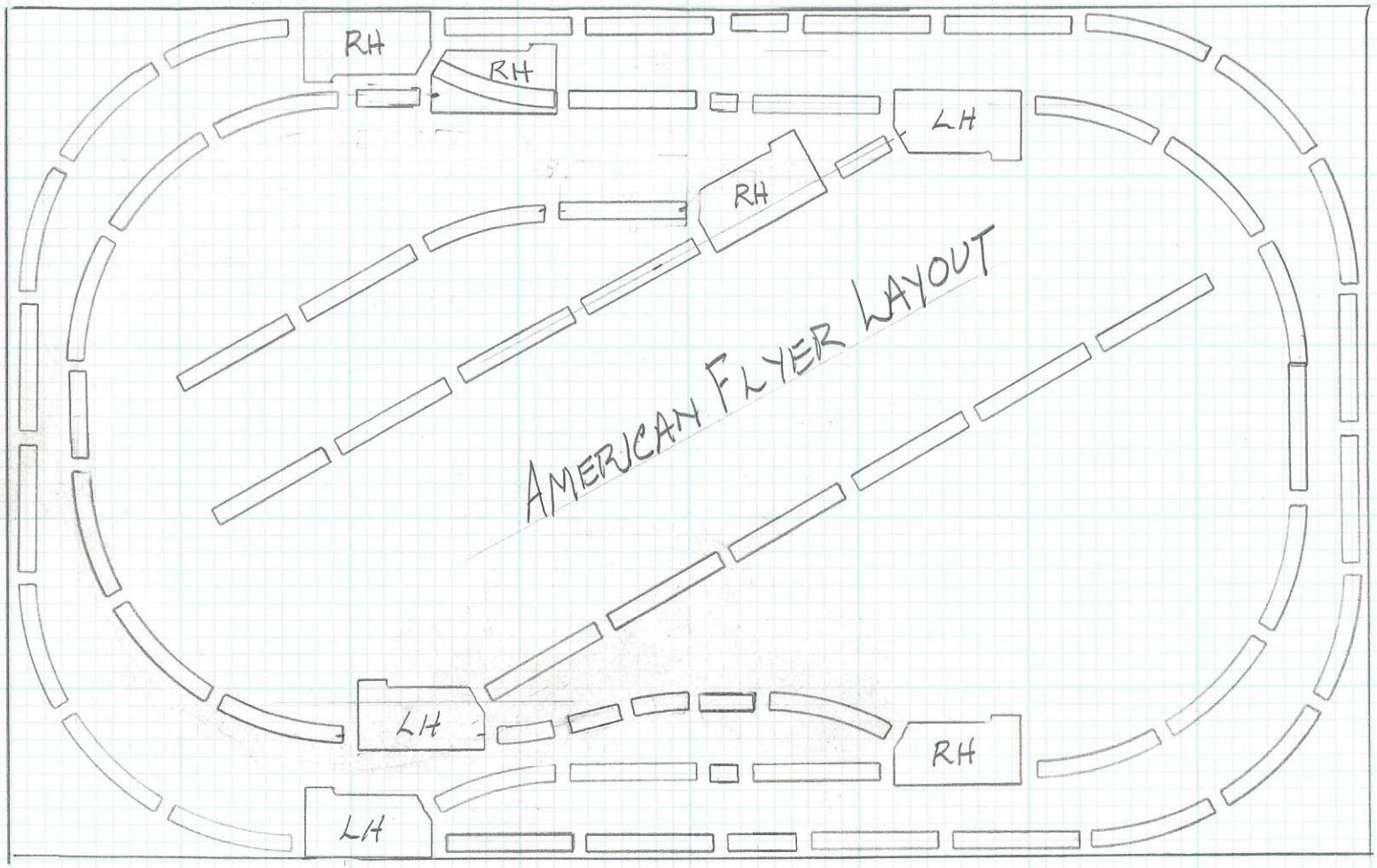


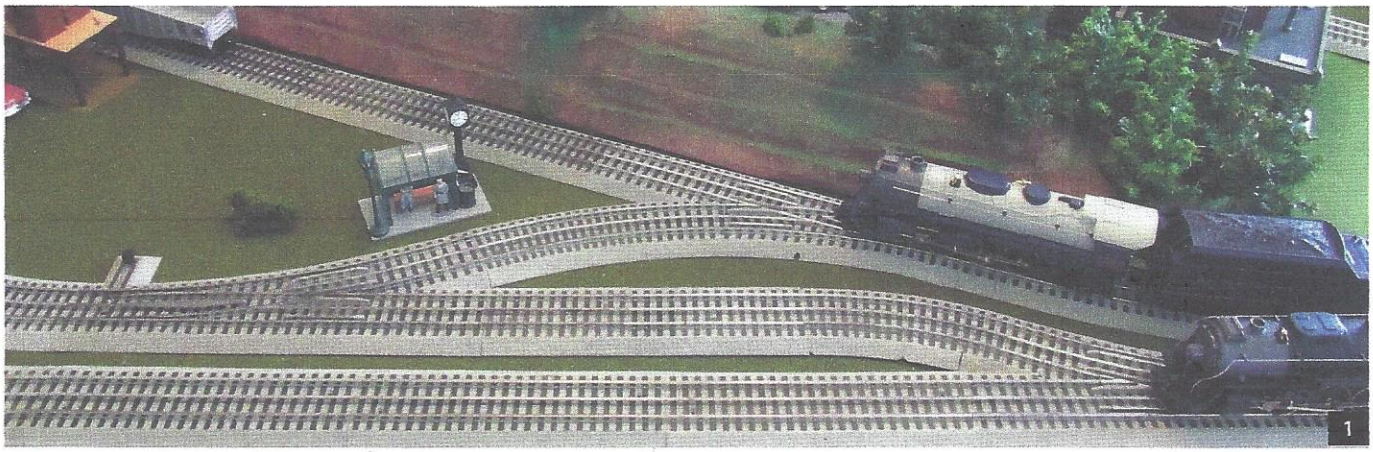
MATERIAL LIST
3 LEFT HAND SWITCHES
1 RIGHT HAND SWITCHES
29 AF CURVE TRACK
29 AF STRAIGHT TRACK
2 AF HALF CURVE TRACK
9 AF CUSTOM CUT STRAIGHT TRACK

TWICE THE FUN RAILROAD
TWO TRAIN OPERATION ON A 5'x8' TABLE
DRAW BY: DAVID AVEDESIAN
DATE: NOVEMBER 2014
SCALE: 1 INCH = 1 FOOT

Two-train operation on a 4x8 platform

TWICE THE FUN

Article, Photos, and Figures by Ken Hoganson



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Named for the real whistle-stop town of Cisco, Georgia, just four miles from the Tennessee border in the foothills of the Appalachian Mountains, the Cisco RR track plan is a great way to expand a Lionel FasTrack train set into a two-train empire in a limited space.

My fictional Cisco RR serves the small town of Cisco with its one store, two industries, water tower, and station platform at the edge of town along a gravel road that leads 'round the hill to a coal-loading facility. With your choice of terrain and vegetation, the railroad could be located in just about any region, and the track plan accommodates modest-size steam or diesel power pulling freight and passenger trains—any equipment that is happy with the Lionel O36 FasTrack curves included in the firm's starter sets.

For ease in construction and a small footprint, the plan fits two independent O36 FasTrack routes on a single 4x8 sheet of plywood or, in this case, a 4x8 sheet of extruded polystyrene foam board available at home and building supply stores. The layout is ideal for conventional operation of traditional-size trains (typical train set equipment) and works great with Lionel's new LionChief and LionChief Plus trains.

The Concept

The plan consists of two independent routes linked by two short connecting tracks (Photo 1 and Figure A). Trains can run on each route without conflict or switching so two kids can run trains at the same time without tension or needing to throw turnouts or block toggles to get the trains past each other. The two independent routes also allow two-train continuous running without intervention, allowing the operator to kick back and enjoy watching the trains go.

The FasTrack O36 diameter curves included in Lionel train sets are the minimum diameter curves used in this layout. Lionel and nearly all other traditional train set engines and cars will negotiate these curves flawlessly and look good doing so. In addition to the minimum diameter of O36, each route includes easements leading from straight to curved, allowing trains to ease into the curves (Figure B). While only minimally improving operation for model trains, the prototypical wider-curve easements are aesthetically pleasing, leading the eye to see the curves as less sharp with trains gliding smoothly around the layout. See Figure C for the full list of track components.

The outer loop is O36 minimum diameter with the transition from straight to curve eased by O48 diameter curves. Also shown in Figure A are the optional O48 turnouts and layout expansion tracks leading off the edge of the layout. These may be included to connect the Cisco RR to the class 1 railroad of your choice, justifying the use of your favorite railroad locomotives as run-through power.

The inner route is a butterfly or hourglass shape with O36 minimum diameter curves and O60 turnouts easing into each curve. The waist of the hourglass is comprised of O48 turnouts and O48 curves. The inner route also includes two spurs to serve industry: one the town of Cisco and the other the Lionel coal loader facility.

Slow orders? No way! The layout adheres to strong design guidelines for small layouts: minimum diameter O36 curves (as opposed to O27 or O31). All curves have easements from straight track, and turnouts are all wider than the minimum curve diameter. Even the S curves of the loop connecting tracks are made of a generous O60 turnout with a short section of O36. These are good design rules to follow for any scale leading to a reliable and enjoyable layout.

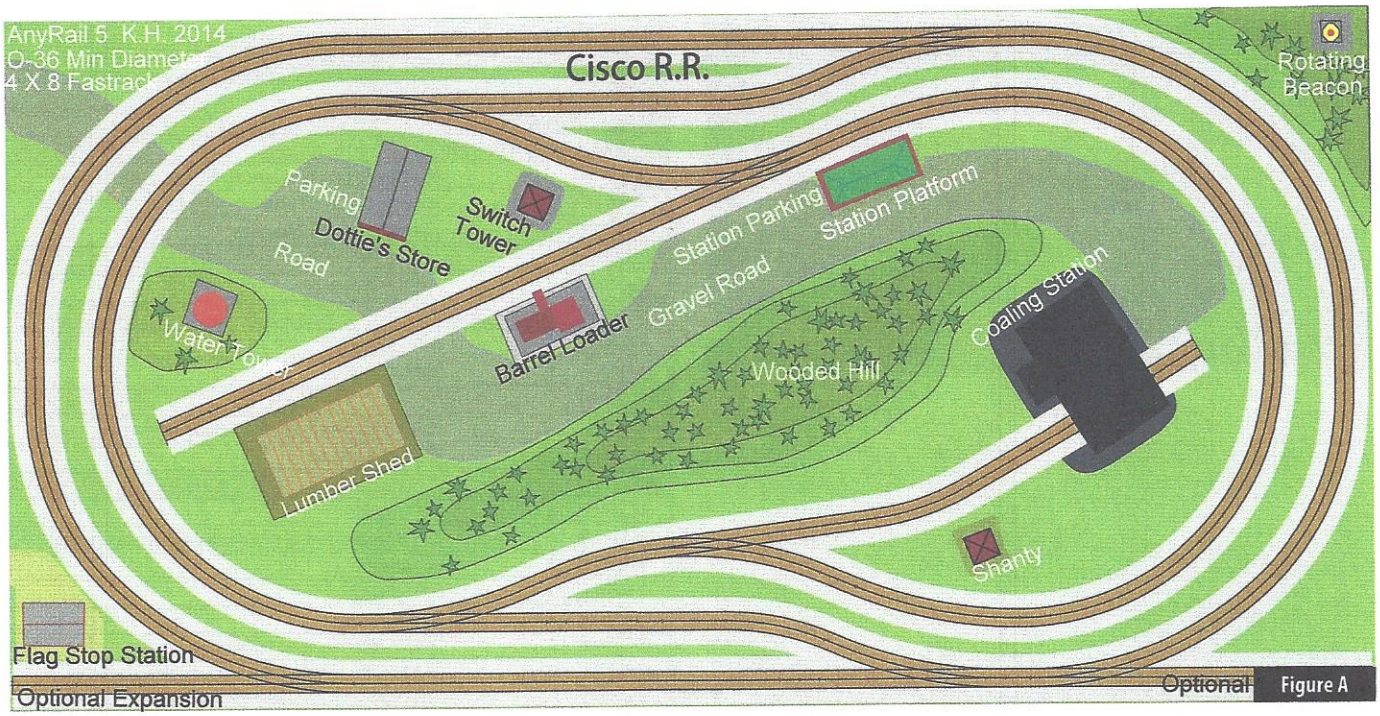


Figure A

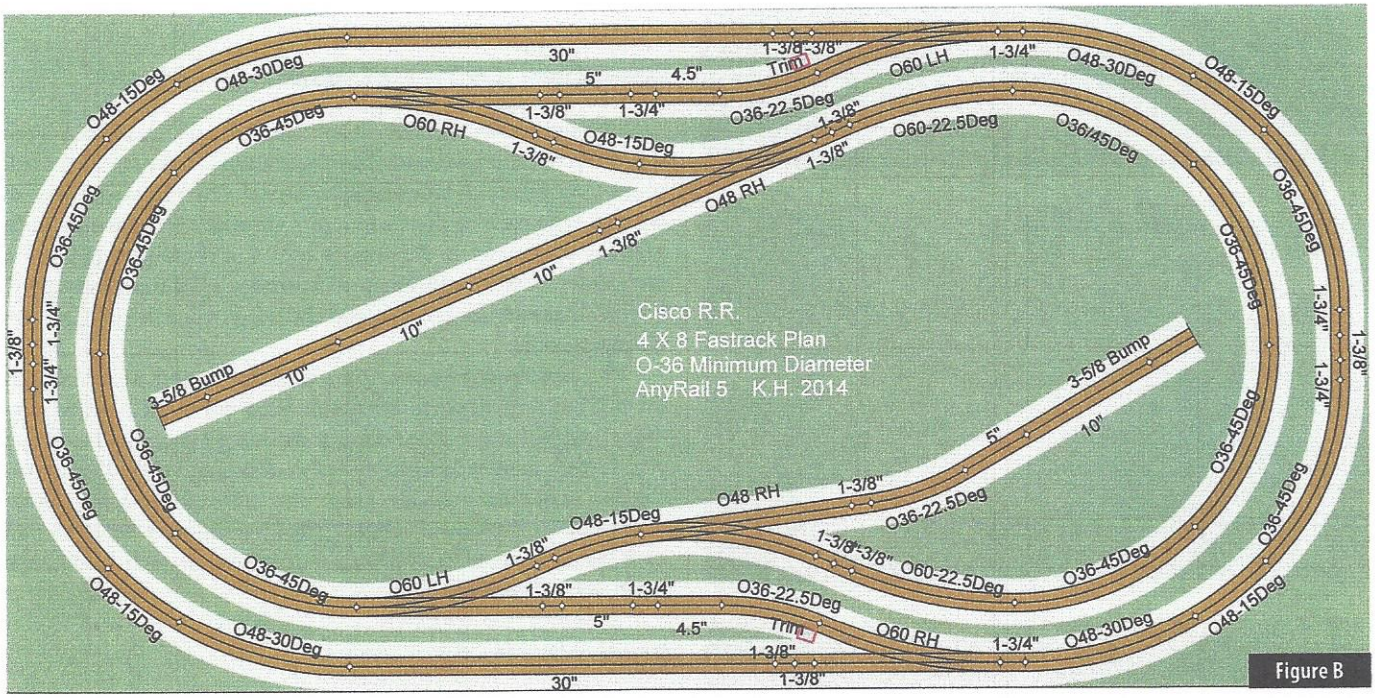


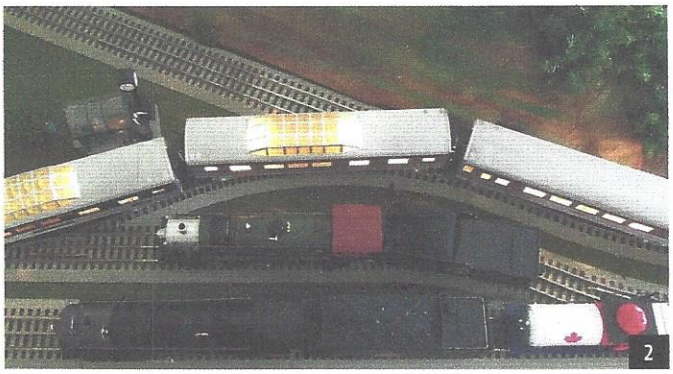
Figure B

The track plan also features more closely spaced parallel tracks for better viewing. The track spacing is 4-1/4″ at its tightest points and about 5″ at its widest giving a more prototypical spacing with more than adequate room to allow O gauge trains to pass on the curves (the O48 and O60 easements help here). See Photo 2 of trains on the points of closest spacing and two steamers on parallel tracks.

Each Lionel O60 turnout comes with two small 1-3/8″ fitter tracks without roadbed on one side, designed to fit into the turnout (see short section at top of Photo 3). These fitters are not needed if you trim a piece of FasTrack to match. Trimming a small section from the plastic roadbed is not hard and can be done with a hand tool or power tool. The Cisco track plan needs two pieces of O36, 22.5-degree curves with one edge trimmed.

LionChief or Command Control

For command control, wire the entire layout from a single power source without any power toggles with recommended two power drops in the middle of each loop semicircle (four total). This will ensure that all trains will see strong power voltages across the entire layout.



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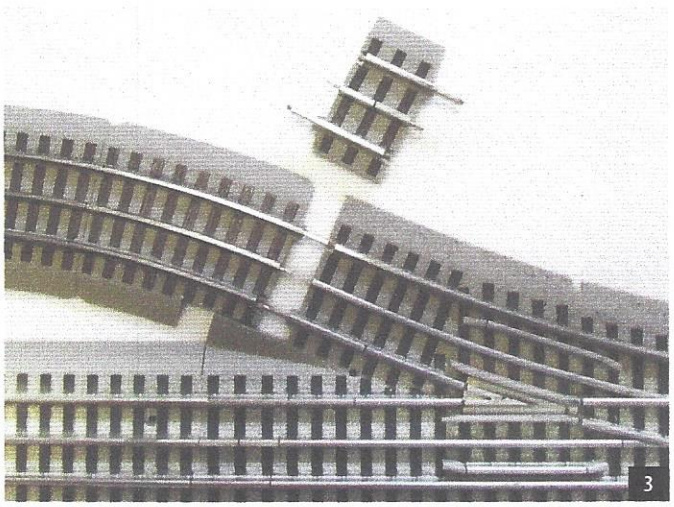

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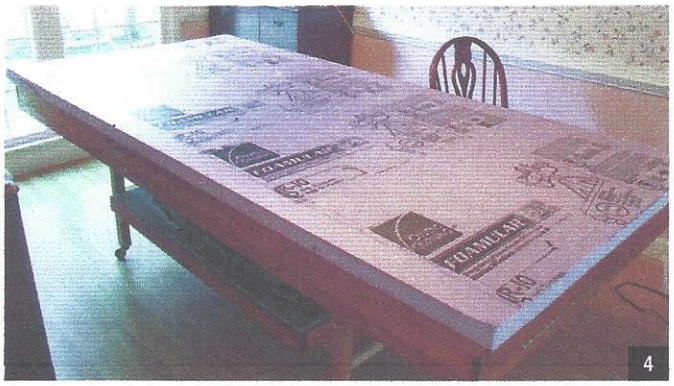

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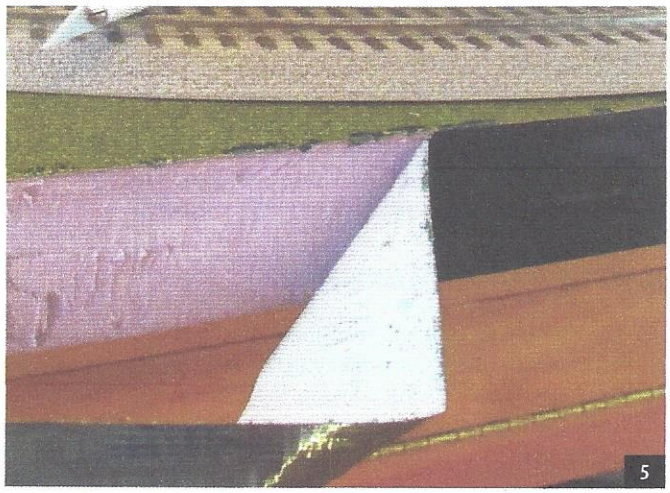

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Cisco Railroad Lionel FasTrack Components — Figure C

(Without optional layout expansion connections)

Part No.	Qty Req'd	Two sets include	Description
Turnouts (manual or remote)			
6-12057	2		O60 Left-Hand Turnouts (with four 1-3/8" fitters)
6-12058	2		O60 Right-Hand Turnouts (with four 1-3/8" fitters)
6-12066	2		O48 Right-Hand Turnouts
O60 Curves			
6-12056	2		O60 22.5 degree
O48 Curves			
6-12043	4		O48 30 degree
6-16834	6		O48 15 degree
O36 Curves			
6-12015	12	16	O36 45 degree (two sets include all that are needed)
6-12022	3		O36 22.5 degree
Straights			
6-12042	2		30" Straight
6-12014	6	8	10" Straight (two sets include all that are needed)
6-12024	3		5" Straight
6-12025	2		4.5" Straight
6-12026	8		1-3/4" Straight
6-12073	6		1-3/8" with roadbed both sides.
Included in turnout	6		1-3/8" with roadbed one side. (eight come with the O60 turnouts, no additional needed)
6-12035	1 pr		3-3/4" Lighted Bumpers

Conventional Transformer Control

Though this is a perfect layout for Lionel's LionChief locomotives or another command control system, many operators still prefer conventional transformer control. To run conventional control, wire each of the two loops to separate transformers with a shared common on the outside rails and the center rails from each route wired to a different transformer. One transformer will control the outer loop route, and the other will control the inner hourglass route.

The two short connecting tracks that connect the two loops should have isolated center rails, each wired to a single-pole, double-throw toggle. Each toggle connects its siding's center rail to either transformer thereby facilitating trains changing loops. This allows the dispatcher to electrically assign the connecting track to either the inside or the outside route. The two industry spurs should each have center rail on/off toggles to allow a parked locomotive to sit isolated on either spur.

Constructing the Cisco

Cisco RR construction philosophy involves simplicity and ease in building for the new O-gauger who may be assembling a first layout. The layout could be constructed on traditional plywood, but I elected to use a 2" thick sheet of 4x8 foam insulation board (extruded polystyrene) for the platform (Photo 4). The foam sheet is rigid, lightweight, and portable. It can rest on a bed, kitchen table, dining table, or upon one or two folding tables (also portable of course). If your home building supply store does not stock the 2" thick foam, you can make do with three sheets of 1" thick foam board glued together.

The foam plus a grass mat covering results in a layout base quiet enough to listen to TV in an adjacent room at normal volume.

1. Wrap the edges of the foam sheet with Duck Tape to protect them from erosion while handling and to improve overall appearance (Photo 5).
2. Roll out the grass mat on the smoothest side of the foam sheet. The grass mats are sold larger than a 4x8, so trim one side and one edge to fit (Photo 6).
3. Working around the layout, glue one edge of the grass mat to the foam board using Gorilla Glue. Glue from the edge to about 4″ in—the interior of the grass mat should not be glued at this time. After applying the glue, place weights on the glued area (the glue behaves a bit like expanding foam and will rise up creating a hump without the weights). Allow about two hours to bond to 90 percent of its strength.

Now lay out and connect the FasTrack sections following the track diagram and then place the buildings. The structures and accessories I used are listed in Figure D. Do not fasten anything down at this point.

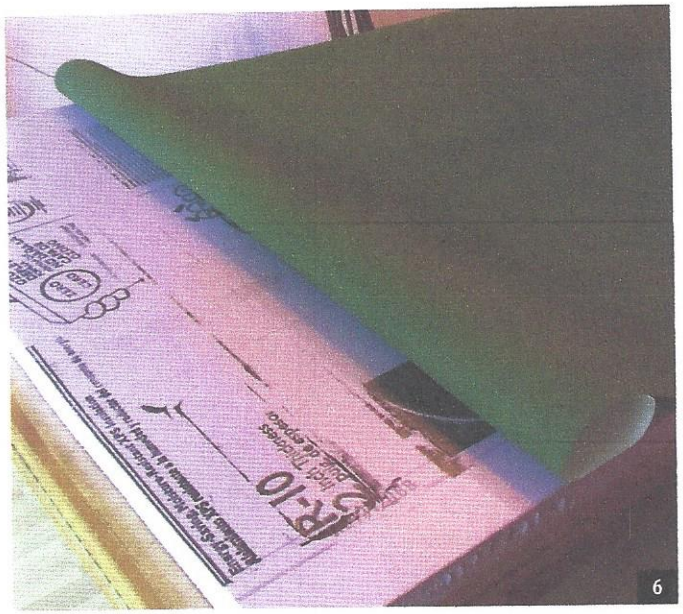
The Cisco RR runs all wires for power for track and buildings underneath the grass mat and above the foam foundation. This technique is very easy. It involves no crawling under the layout; the bottom of the foam board stays smooth and unobstructed; changes are easy to make; and mistakes are easily covered up. The foam board is easily compressed using thumb pressure alone to create a trough for the wires. All that's needed is one 50′ roll of 22-gauge solid-core two-conductor wire (or two 25′ rolls of different colors for track power and accessory power), a sharp hobby knife, and the transformer(s) or power sources of your choice (Photo 7). You will need two runs of wires: one for train power and a second for building and accessory power.

Construction Materials

- One 4x8 extruded polystyrene (foam) sheet, 2″ thick
- One roll of 2″ wide black or dark green Duck Tape
- One scenic grass mat in your choice of color (Woodland Scenics Summer Green shown)
- One container of Gorilla Glue
- Scrap lumber or books for weight while the glue sets

1. The Cisco RR shown here runs LionChief locomotives, greatly simplifying locomotive power wiring. Power enters the layout at one corner where wires dive beneath the grass mat and provide power to each of the loops nearby. A wire pair also runs beneath the outer route track to the other end of the layout. This run will connect to a track section within each train route. Power connects at four places on the layout: two connections at each end of the loops.

   Power for the lighted buildings is routed from the transformer to the nearest building and then runs in turn to the next and the next working from one end of the layout to the other. Underneath each building will be access for wires to provide power.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Cisco RR List of Buildings and Structures — Figure D

Part No	Description	Dimensions
Lionel 6-37102	Watchman Shanty (lighted)	2-1/4 X 2-1/2
Lionel 6-81629	Lumber Shed	6-1/8 X 3-1/8
Lionel 6-81017	Barrel Loading Building (lighted)	5-3/4 X 3 X 3
Lionel 6-81016	Coaling Station (lighted)	13 X 9-7/8
Lionel 6-37166	Crossing Shanty (lighted)	2-1/3 X 2-1/2
Lionel 6-37807	Station Platform	5-3/4 X 2-7/8
Ameri-Towne	Dottie's Store Kit	6 X 3
Ameri-Towne	Flag Stop Station	3 X 4
RMT	Water Tower (lighted)	3 X 3 X 12
RMT	Rotating Beacon (lighted)	3 X 3 X 12


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2. Begin where your power will enter the layout. Here a single CW-80 transformer on one corner of my layout provides all power for trains and accessories. Create a flap in the grass mat, using a hobby knife, positioned to allow the wires from the power supply to dive under the grass mat.
3. Make an X in the grass mat beneath the four track sections that will connect train power. Flip back the four sides of the mat to allow access beneath.
4. Cut a length of two-conductor power wire to run from the power supply to each of the two track sections that will connect power, allowing extra length. Remove insulation from each wire end.
5. Push the wires beneath the grass mat from the power supply flap over to each track access flap.
6. Connect the wires at the transformer and to two track sections. Test connectivity. Reconnect track sections and test a locomotive on each loop.
7. Push down using thumb pressure to indent the foam board so it accepts the wires running beneath the grass mat.
8. Run a length of two-conductor wire from the power supply to an access hole beneath the outer track route. This wire runs beneath the track and above the mat all the way to the far end of the layout where it will provide power to the far end of the layout.
9. Connect power to each track route and test with a locomotive. Trains should be able to circle the layout without problems.
10. Run accessory and building lighting wires from the transformer to the first structure, feeding beneath the grass mat. Each structure will be joined in turn working from one end of the layout to the other. Test that power reaches each structure as you progress and that the building lights properly.

Scenery Materials

- Half of a 4x8 sheet of 1" thick foam to be cut into layers to build up the hill
- A sharp hobby knife and one hacksaw—the hacksaw will make a mess but leaves natural-looking rough surfaces and eroded shapes
- One 16 oz tub of Woodland Scenics Foam Putty used to fill and smooth the hillsides as desired
- Tan and green spray paints
- Assorted trees and foliage

Create a Scenic Feature

As a simple and possibly first layout, the Cisco uses lightweight modern foam materials to construct a single, long, thin, wooded hill and commercially available trees.

1. Cut the rough hill shapes. Using the hobby knife, cut four foam layers to shape the hill, checking the shape on the layout (Photo 8).
2. Glue the layers using either white glue or Gorilla Glue sandwiched between boards with weight on top and allow to dry overnight.
3. Shape the hill with the knife and hacksaw accepting the inevitable mess and clean-up. Have fun shaping the terrain to your liking (Photo 9).
4. Use Foam Putty to fill and smooth your hill as you like. It's okay to experiment; the foam putty remains flexible and removable (Photo 10).
5. Repeat steps 3 and 4 until satisfied with hill shape and texture.
6. Spray the hill with tan or earth-colored paint in an outside or well-ventilated area using newspapers to protect overspray areas.
7. Using green spray paint, spray the top surfaces of the hill. Grass, moss, and vegetation will cling more to the horizontal surfaces, but steep-angled hillsides should also receive some green. Be creative and experiment. An optional step at this point is to add commercial grass sprinkled onto the paint while still wet.
8. After the paint is thoroughly dry, plant trees and vegetation using white glue (Photo 11).

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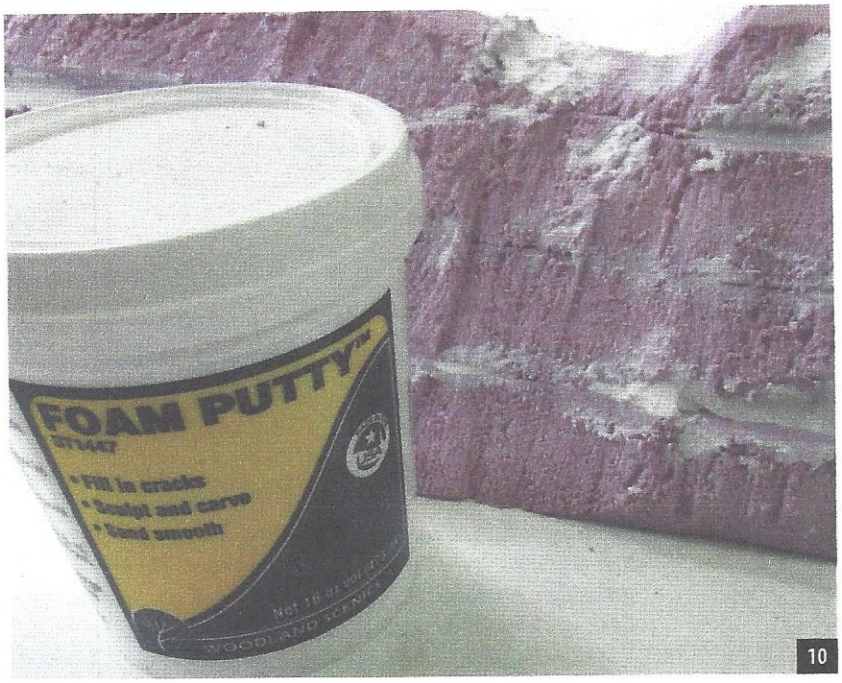

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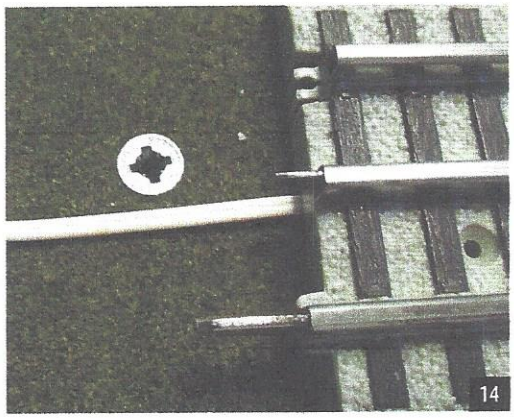
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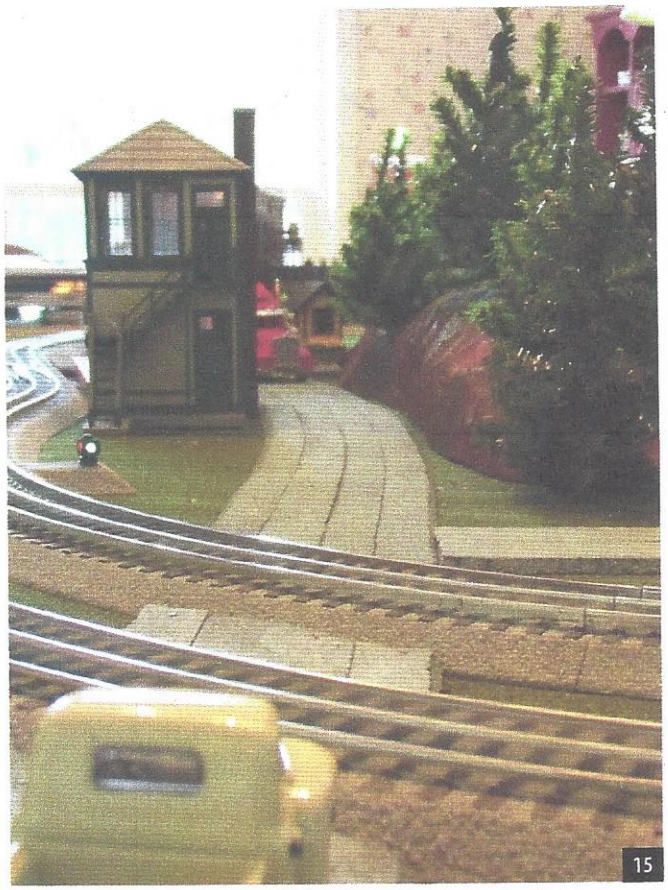
Secure the Track

The Cisco road construction is intended to be lightweight and portable. Moving the layout requires first removing the trains, vehicles, and some scenic details, but the FasTrack needs to be secure.

I used screw-type hollow-core door and drywall anchors to secure the track with screws that can be removed to access the underside of the track or to move or add track. You'll need a total of 50 anchors, 50 #6 x 1″ sheet-metal screws and a Phillips-head screwdriver (Photo 12). Note that the screws packaged with the anchors have round heads that project above the roadbed while the replacement #6 sheet-metal screws seat flush.

1. Doing a section of the layout at a time, use a nail or small screwdriver to push through the FasTrack mounting holes to puncture the grass mat and foam below thus marking the location for the anchors. Most track sections will need only one anchor.
2. Remove the track sections. Using the screwdriver, widen each hole a bit by inserting with a single thrust.
3. Insert a large drop of Gorilla Glue into each hole.
4. Insert and screw an anchor into each hole so the anchor is flush with the foam top (Photos 13 and 14).
5. Repeat steps 1 through 4 for the entire layout. Allow the glue to set at least two hours.
6. Screw each FasTrack section into the anchors.
7. Each turnout accepts two screws. Care should be taken to ensure that the screws do not interfere with movement of the turnout points.



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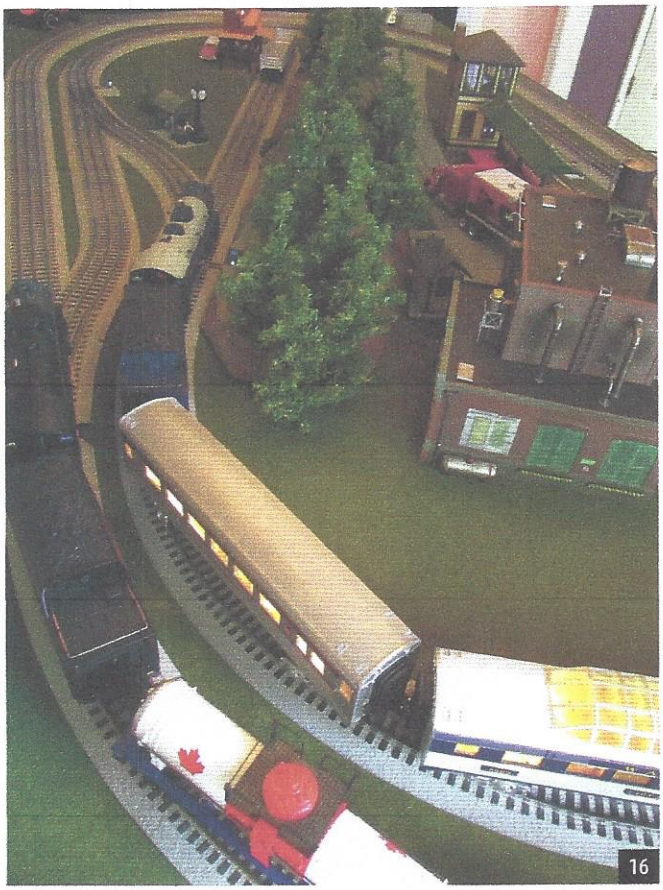

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Road Building

Roads are constructed easily and inexpensively using HO scale cork roadbed.

Road-Building Materials

- HO scale cork roadbed, 9´
- HO scale cork sheets, 3´ for parking areas
- Krylon Natural Stone textured paint, your color choice or Granite color
- Brads 3/4″ to 1″ long and thin with a small head for securing the cork roadbed to the foam.

1. Paint the roadbed in a well-ventilated area separating about half of it into sides, each with a beveled edge. Do not try for a perfectly painted surface, but allow the cork texture and color to show through for a more natural look.
2. Lay out the road where you would like it to run. A beveled-edge roadbed section forms each road side with a center section of roadbed not yet separated. Use a sharp hobby knife to slice sections. Push brads through the roadbed into the foam to hold it in place (Photo 15).
3. Use Foam Putty to fill in cracks and edges and to create a simple grade crossing.
4. Touch up with textured spray paint. Careful application can be done to the assembled roads on the layout with barriers for overspray. Alternatively, spray into the inside of the can top and use a brush to dab and paint the roadbed and Foam Putty filler.

Once you've reached this point, all that's really left to do is the fine detailing. Add an assortment of vehicles, people and animal figures, benches, trash, parts, lumber, mailboxes, etc. around the layout to suit your tastes.

This completes an action-packed, 4x8, starter layout that supports operation of two trains, conventional or with command control (Photo 16). This railroad will provide fun and easy operation in a compact space with attractive scenery and train-watching views and with plenty of options for future expansion. Happy railroading!

About the Author

Ken Hoganson lives in the north metro Atlanta area where he teaches computer science and owns a weekend home near the real Cisco, Georgia. He has layouts in O, N, and Z scales with O the primary focus for the last 15 years. His wife, Mary, takes him on annual train vacations where train travel features prominently.