The Kayton Short Line

$500 contest 2nd place

– by Robert Douglas
Photos by the author

Railroads are built for a reason and so should be model railroads. My reason for building the Kayton Short Line was to keep me sane by giving me somewhere to relax and run trains without expending vast amounts of energy and money. It is also to create a "chainsaw" layout on which to hone my hobby skills. To do this I used what I had laying around; there are no grades, fancy woodwork or scenery.

Reader Feedback (click here)

Morning sunshine illuminates the nose of the Alco S4 which is holding down the switching duties today.

There are almost no structures at this time but I have an operating layout that gives me hours of satisfaction and enjoyment shuffling freight cars.

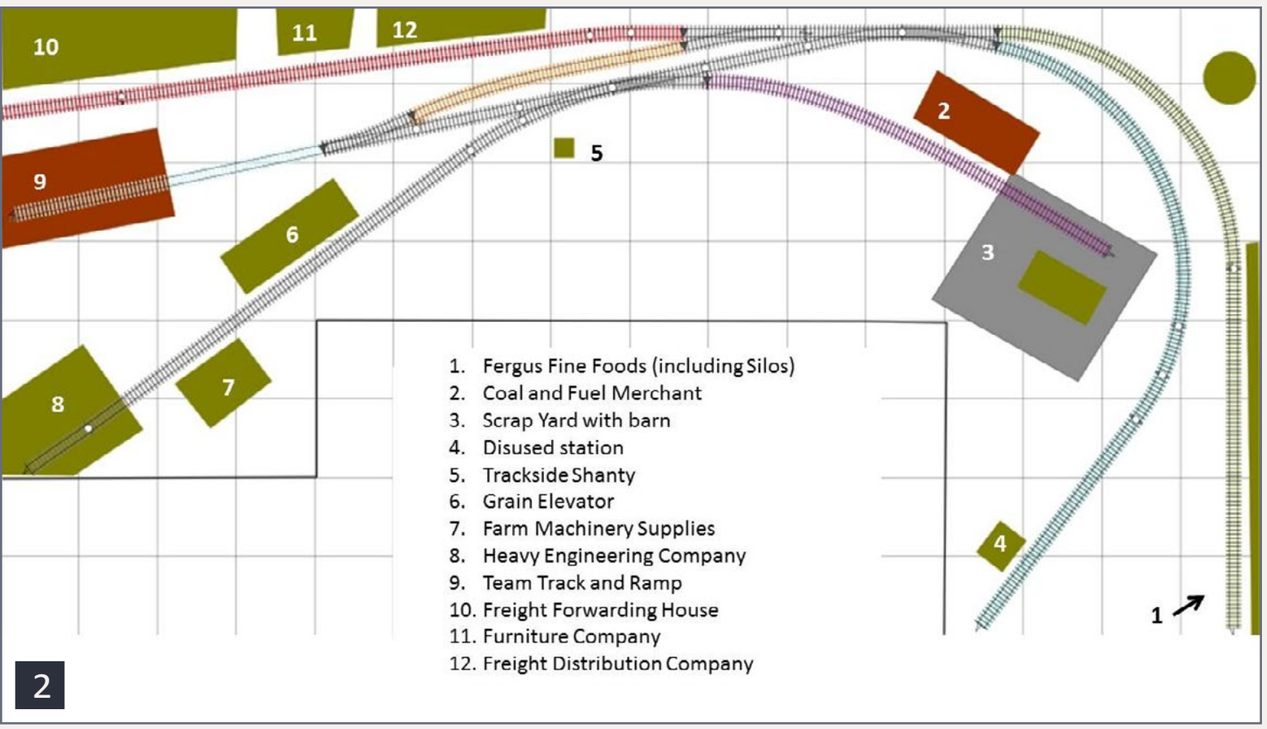
The Kayton Short Line is small switching layout with no specific prototype. The premise of the layout is either a small town branch line or a city industrial spur to which a daily freight

trundles in and services the industries. I love the ’60s and ’70s era of first- and second-generation diesels, so I aimed for the late ’60s and use 40 and 50 foot cars plus some 36 foot covered hoppers. I switch with either a GE 44-ton loco or an Alco S4, both of which are nicely sized for the layout.

My main constraint is space. I had a 4x8-foot area already from an earlier project that fell through, so I reused it. The key elements I wanted were:

- Lots of car spots
- A two- or three-car runaround track
- Easy reach to all car spots for coupling and uncoupling
- An inbound / outbound track to serve as a staging track
- Did I mention lots of car spots?

As with all model railways, the first issue is coming to grips with compromise. I wanted 22 inch and 24 inch radius curves



2. Track plan for the Kayton Short Line.

with long spurs. I very quickly realized that 18 inch radius curves may not look as good but they let me get more track into a tight space. Of course, the key element is having lots of car spots even if coupling and uncoupling on an 18 inch radius curve is not the easiest thing to do.

The track plan evolved as I tested various combinations of switches and lengths of flex to get enough operating room. The plan drawn has one significant difference to the railroad actually built, in that the runaround is better fitted and longer on the plan than on the layout.

The track plan evolved as I tested various combinations ...

The “U” shape of the layout means it can easily butt against a wall as, unlike an oval 4x8 layout access from both sides is not required. It also ensures that all switches and car spots are in easy reach for the operator.

The final layout [2] as described has 16 car spots, space for six cars and a loco on the staging track and some spare room for handling cars during switching. However, if you run it with 22 cars it would probably get a little busy. I started operating with only eight freight cars and have slowly increased that number so that now I run with 19 freight cars and loco. This leaves enough room to shuffle cars but causes some enjoyable operating “headaches.”

Track descriptions

Track 1 serves Fergus Fine Foods, a large commercial food operation receiving fruit, flour and food oils whilst constantly

shipping loaded 40’ and 50’ insulated box cars of product. As such it has three car spots at its three doors for the box cars and reefers, and a silo spot for the tank cars and covered hoppers. It is treated as the “important” customer.

The next track is the inbound/outbound staging track that links with the mythical town of Santel.

Track 2 has two car spots, for the local scrap metal merchant and coal dealer. It has a bit of spare space and comes in handy for holding cars during switching moves.

Track 3 is a good long straight line, with two car spots for local manufacturers located at the far end, and another three car spots for a grain elevator, making a total of five. Because grain traffic is seasonal, sometimes there is a bit of empty space to spot cars here too.

Track 4 is the local team track and doubles as the lead for the runaround. It is deliberately sized to accommodate only a loco and two 50 foot cars, which means a bit of an enjoyable problem if there is a car spotted there.

Track 5 has five car spots, spaced a little bit apart so that cars need to be uncoupled to be spotted to their locations. Here I have a freight forwarding agency, a furniture company and second small general freight company. Again, there is a little excess capacity to spot cars during moves.

Locos and rolling stock

Our local version of eBay, called TradeMe, had a DC Bachmann Alco S2. These are nice little items with their can motors and, given a good DC power pack, should work well. However, like most other people with the $500 layout, I would urge you to splash out a little more and buy a bottom end DCC system and DCC loco. I use a Digitrax Zephyr and Bachmann Alco S4 with DCC and sound and she purrs along nicely. I bought the S4 from TradeMe for a mere $70 New Zealand. But I won’t include that here as it was very much the exception and they normally go for more than double that.

I have bought all my rolling stock off TradeMe and set a limit of $10 to $12 per car. I don’t buy them unless they have Kadee couplers fitted and preferably with metal wheels. For eight cars and a loco the total cost would be $171 at the most. With eight cars it would take 15 to 20 minutes to switch the layout but now I can be enjoyably lost for over an hour shuffling cars around with 19 cars. A loco and 19 cars would be $303.

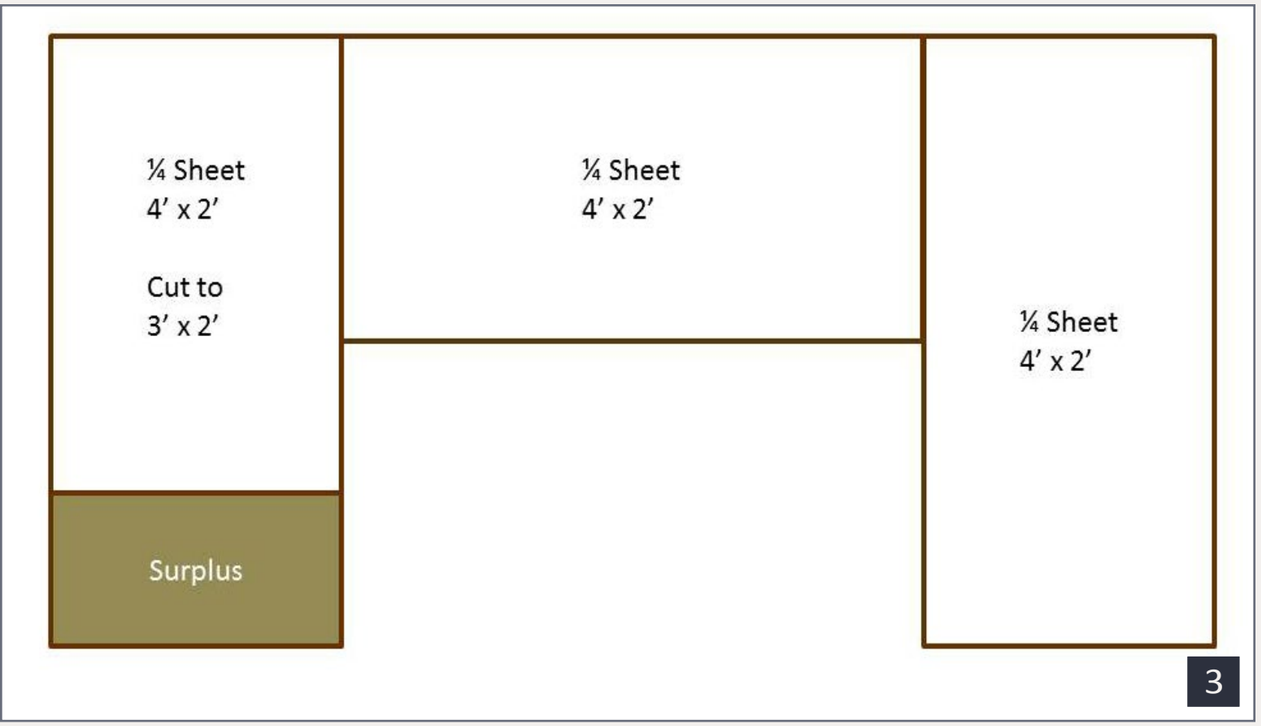
I have specified a new MRC DC throttle and power pack. Like track work, the quality of the throttle has a great impact on the enjoyment of the layout and I have used an MRC DC dual throttle in the past and was very pleased with it. The unit specified is not the cheapest so you could shave a few dollars there as well.

Table One – Rolling stock and power pack

Item	*No*	*Source*	*Cost*
Bachman Alco S2 Switcher	*1*	*TradeMe*	*$75.00 (NZD)*
Assorted Freight Cars (max $12 ea)	*8*	*TradeMe*	*$96.00 (NZD)*
DC Power pack and throttle MRC AA370 Railpower	*1*	*Trainworld.com*	*$47.99 (NZD)*
		Total	***$218.99 (NZD)***

Benchwork and roadbed

What you spend really depends on where you want to locate the layout. My layout was built on pre-existing benchwork for an 4x8 N scale layout that never happened. If I were starting from scratch I would bolt brackets directly to the walls and thus I have allowed for six good heavy-duty brackets. Some additional framing timber may help to secure the plywood base. For the track base I have used one inch (25mm) expanded polystyrene foam. Thicker boards would give more depth for scenery but would also be more expensive. On the whole I feel that one inch is fine for scenery on a switching layout.



3. Cutting guide and sheet use.

Table Two – Benchwork

Item	No	Source	Cost
Full sheet, 12mm Plywood (1/2 inch) (cut into four ¼ sheets – you'll have one spare)	1	Mitre 10 Hard-ware	$39.89 (NZD)
25mm (1 inch) polystyrene sheet (Cut into four ¼ sheets)	1	Bunnings Ware-house	$20.48 (NZD)
Wall Brackets - $9.82 ea	6	Mitre 10	$58.92 (NZD)
		Total	$119.29 (NZD)

Track

I use Peco switches because they are easily available locally and their spring system means ground throws or other mechanisms are not required. I have purchased a lot of these used from online auctions, but it does mean waiting until they come up at the price point around $10 each that I am comfy with. Brand new these are around $20 to $25 NZD each, depending on discounts. Given the crucial nature of good switches to smooth operation I would build any new layout using only brand new switches and have priced them in here from a US source.

All other track is flex track totalling a little over 26 feet. If you wanted you could substitute set track which would make some of the construction easier for novices. I used nine lengths of flex which allows a mere 12 inches to spare. One extra length may help but I'm keeping costs down. To be honest, it is probably easier to buy this new rather than buy peoples' cast-offs from online auctions. I have priced new track from a U.S.

source, however, for me in New Zealand, the cost of shipping from the U.S. would be huge!

Table Three – Track

Item	No	Source	Cost
Peco SL92 LH #4 Switch Code 100 ($20.39 ea)	4	Trainworld.com	$81.56 (NZD)
Peco SL91 RH #4 Switch Code 100 ($20.39 ea)	2	Trainworld.com	$40.78 (NZD)
Peco Wooden Tie Flex Track Code 100 ($5.99 ea)	9	Trainworld.com	$53.91 (NZD)
		Total	**$176.25 (NZD)**

Note: Sourced locally the switches would be approx. $21.00 each and the Flex track $8.00 each

Scenery and structures

Here I must come back to the original reason for building the railroad. It was built to keep me sane by providing enjoyable train operations. Yes, scenery and structures add considerably to this enjoyment. However, as a starting point, I'm loving just shuffling cars around. Thus my structures are food skewers and printed flags, and my scenery is nil. I may splash a little paint around later. This sounds like cheating but I derive hours of pleasure from shuffling cars without siphoning funds off for structure kits. Having said that, I constantly watch online auctions for interesting structures and have a couple of Walthers Cornerstone kits and a Campbell Scale Models grain elevator under construction. All came from auction sites.

Table Four – Scenery and structures and extras

Item	No	Source	Cost
Food skewers			
Paint			
Solder, light gauge wire, pins, nails, screws etc.			
Additional 1 x 2 bracing if required			
One or two structure kits to start off			
Additional freight cars, Kadee #5s, height gauge, washers etc.			
		Total	**$ Whatever is left**

Total cost

I have priced everything in New Zealand Dollars and the total is shown in Table Five

Table Five – Total cost

Item	No	Source	Cost
Rolling stock and power pack			$218.99
Bench work			$119.29
Track			$176.25
Additional items			
		Total	**$514.53**

At first glance it would appear that I have missed the mark however, the New Zealand dollar exchanges at only $0.82 USD! So, at the current rate, $514.53NZD is equivalent to $421.92USD, leaving $78.00USD for additional bracing timber, freight cars and some structure kits!

Putting it all together – Operating the Kayton Short Line

The key to this layout is how it operates. Each car spot is labelled with an industry and car spot number and one track is set aside as an inbound / outbound (staging) track. My pet peeve is having to "hand of God" trains on and off the layout. This track is large enough to store a loco and up to seven or eight cars ready to come into the switching area

Looking at [4] you will see I have allocated car spots starting at the spurs' far end from the switch and then consecutively numbering forward until I reached the switch or the vacant space. Don't forget to allow for the length of the loco when

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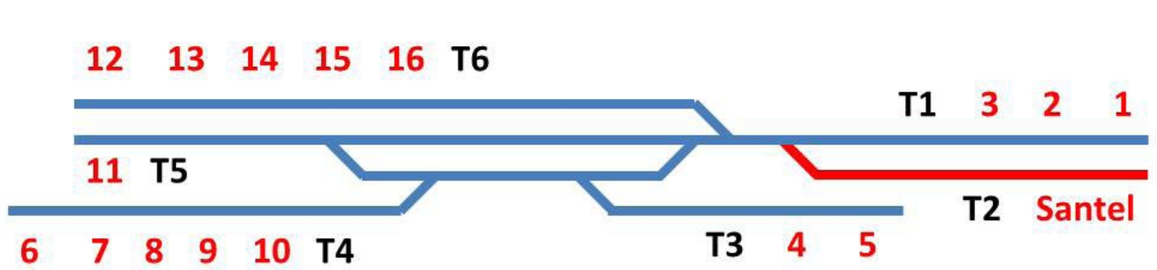

Track 1	O=3, CS=3	*Fergus Fine Foods*: Door 1-3	1,2,3
Track 2	O=7, CS=0	Inbound / outbound to Santel	
Track 3	O=4, CS=2	*Salvage Yard* : Flat, Box, Gondola	4
		Coal Merchant: Gondola, Hopper, Flat	5
Track 4	O=6, CS=5	*Engineering* Box, Gondola, Flat	6
		Farm Supplies Box, Gondola, Flat	7
		Grain Silo: Box, C-Hopper	8, 9, 10
Track 5	O=2, CS=1	*Team Track*: Flat, Box, Gondola, Hopper	11
Track 6	O=7, CS=5	*Freight Forwarding*: Box,, Gondola, Flat	12,13
		Manufacturing: Box, Gondola, Flat	14
		Freight Forwarding: Box, Gondola, Flat	15, 16

4. Car spots and occupancy.

5

1	8/9/10	15	XE
2	8/9/10	16	X1
3	8/9/10	X	3A
4	11	X	
5	12	X	
6	13	X	
7	14	X	

Car Spot Markers
20mm x 10mm
(0.8" x 0.4")

Print in color
or on color cardstock

5. Car spot markers.

you measure the occupancy, especially for the inbound/outbound track and the runaround lead track. I use only 40 foot and 50 foot cars, and so have spaced the car spots accordingly. Some groups of car spots assume cars coupled together whilst other car spots leave a gap between cars which makes placing freight cars "on spot" just that bit more difficult. On the whole, I have left the first part of each spur free.

The next step is to mark the car spots on the layout. Initially, I simply wrote numbers on the roadbed but soon found I couldn't see these through the cars. I drilled a small hole in the soft board and inserted a cooking skewer to indicate the location of the car spot. The skewer denotes where the freight car's door should be. Adding flags gives a little more meaning to the car spots but if you already have some buildings to install it will certainly enhance the space and look much better!

The final step is to make up a set of car spot markers, one for each car spot plus several "X" for exchange (these cars are switched to Track 2 in any order). I printed one of each number 1 to 16 and six "X" marks on some lightweight card and cut them out. Now you're ready to go!

Running a session

6. An inbound freight ready to go.

On my “one track in full view” staging yard, I normally have cars attached to the loco while other freight cars are scattered about the layout on various car spots after the last session. First I mix all of the Car Spot Markers in a container and then place them on the cars. You can be as random or directed as you feel. In my case, I never put an “X” on car already sitting on the inbound and I usually don’t put the same marker back on a car.

Because I have some specific industries in mind, I generally choose the type of car that should have a specific spot. For instance, I use mainly grain hoppers or box cars for my grain elevator. I built Fergus Fine Foods with the idea of box cars on doors 1 and 2 and a 50 foot insulated box car on door 3, so I usually try to stick to that.

That’s it. Away you go and start banging the freight cars around until you have everything spotted where it should be and all the “X” cars lined up on the inbound/outbound. Due to the lack of run-around space I specify that the engine does not need to lead the cars but may push cars out of town.

7. Spotting a car at the “to be built” Wilson Coal Merchants dealership.

At the end of your operating session, take away all the car spot markers, shuffle them up and start all over again. With 19 freight cars on the layout it works well, being quick to set up and interesting to run, taking over 60 minutes to complete each session. Even better, you can leave an operating session half way through and it doesn’t matter as the markers will still be there when you come back.

Getting the X’s Right

The only issue is getting the right number of “X” markers. I use six “X” markers as my inbound/outbound track holds seven 50 foot or eight 40 foot cars plus loco. Using six “X” markers means I always have at least one or two spaces spare on Track 2 which due to the lack of other space doubles as a make-up track.

Refinements and adding further interest

1) For some reason I created a 3A car spot at Fergus Fine Foods. I don’t know why, but there is nothing stopping you

from doing so without having to re-label all the car spots again. The rationale I used was that it is where the odd tank car or grain hopper would be spotted to unload into silos. However, it is now part of my plan and has boosted the number of car spots to 17.

2) With spots 7, 8 and 9 I envisioned a grain elevator so the actual order of the cars is immaterial. Thus, I created three car spot markers numbered 7/8/9 which is the three car spots together in any order. This accidentally solved the problem of confusing 9s and 6s.

3) Whilst I don't block the outbound train ("X" marks) I have added a little wrinkle in the system. I now have four "X" plus an "X1" and an "XE" marker. X1 means the car must be coupled to the locomotive and XE means it must be at the far end of the outbound train.

8. Bob and Fergus inspect the waybill for the tanker.

4) Fergus Fine Foods operates 24/7 with staff loading and unloading cars and so are a bit concerned about other freight cars on their spur. Thus I have created the following local rules:

a) Where possible, Fergus Fine Foods (FFF) will be switched first.

b) Due to FFF staff working loading and unloading cars, the speed limit on the FFF track is 5 miles per hour. The bell must sound for the duration the loco is on the spur.

c) Only FFF freight cars are allowed on the FFF spur and no other cars may be spotted there, even for a short duration. This effectively reduces the amount of switching space available to the local.

Plans for development

As I enjoy switching cars, I will develop a car card system for this layout. This would be relatively easy to do with the car cards simply having a single number on them to match the car spots. When spotted, turn over the card for the next spot.

Finally, I am starting on my permanent layout and the initial benchwork for the first portion is in. It is a staging and classification yard which will connect directly to Kayton by straightening out the inbound/outbound track to run parallel to Fergus Fine Foods. This will extend the life of the Kayton Short Line until I finally dismantle it to make way for the next expansion. ☑

Robert Douglas received a Triang-Hornby train set as a boy in England, sparked a life-long interest in trains. He quickly became fascinated with American railroading but life and family called, resulting in a 30 year hiatus.

A mere three years ago, after trying N scale he moved back to HO and the Kayton Short Line is his first operating layout. Robert is a member of the North Shore Model Railway Club in Auckland, New Zealand, and enjoys meeting fellow modelers and operating on their layouts. Prototypical operation has become his latest interest.

To pay for his train obsession, Robert is an IT manager for a state high school. He and his wife, Kay, have two adult daughters, the oldest of which is also a member of the NSMRC. More recently they gained a son-in-law and a grand-dog and are looking for a new home with a larger railroad room!

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