

The Exhibitor's Layout

Among layout builders, there are Operators, who want to perform complicated sequences with their trains (usually replicating the way real railroads work); there are Preservationists who want to replicate a slice of space and time; and there are Builders for whom the journey is more important than the destination – the ones who rip it all out and start again with layout number five.

This layout is for a group who get less attention from layout designers: those who like to show their models off. Perhaps they build them, perhaps they collect them, but for them the biggest pleasure is showing the models, often to non-modellers. I call us Exhibitors. This is the Exhibitor's layout I designed for the competition, which is similar to the layout I am building at home.

Setting

I looked for a setting that would allow steam and diesel, with a mix of eras and a mix of types: how to mix up class 1 varnish and geared locos? I chose a steam museum next to a mainline as I can cram favourite models in a compact space just as a museum does.

Then I thought about a setting that would include my favourite types of scenery: dense urban industrial grunge, waterfronts, and steel bridges, with some scenic grandeur as well. Finally, for me, it has to be Southern Pacific.

The result is loosely based on Port Costa on San Francisco harbour. Huge rail ferries ran here. Though they stopped in 1930, Port Costa remained busy due to the nearby refinery in Martinez and traffic from the US Navy Weapons Depot (I bet there were some interesting flatcar loads). Holley Sugar was located in nearby Crockett, a massive plant, as well as numerous packing house spurs and chemical industries. Port Costa had a five track yard and a three stall roundhouse which was torn down after steam operations ended (it would have been a tight squeeze between the hills and the water). By the 1970s autos were offloaded from ship to rail at Port Costa and grain transferred from rail to ship. Port Costa was once a helper station and until recently a passenger stop for Amtrak. The double tracked line runs within feet of the Susan Bay all the way from Port Costa to Martinez with industry occupying all remaining real estate.

I alter history so the steam facilities were taken over by someone like the Pacific Locomotive Association, who had facilities and museum equipment stored not too far away, near Richmond.

It does not replicate an exact date – heaven forbid, as that would limit what I could run. It is second half of the 20th century; there are highways and cars, and obsolete steam facilities. Since the ferry Salerno carried two whole trains at a time and this is exactly what the elevator (more of this later) does, I stretch history and still have ferries running.

That is the setting for me; it may not be for you. We aren't Preservationists, we are Exhibitors. So you can make the layout be anywhere or nowhere: place is not the point of the design.

If you like snowy mountains and deep canyons then build a John Armstrong scene and run what you like through it. Perhaps the Denver and Rio Grande mainline passes a restored logging railroad.

We have an enthusiast here in New Zealand who imports 12"-to-the-foot steam locos from all over the world (now *that* is a hobby). You could imagine a disused yard down on the Hudson River where a locomotive collection is being assembled ready to ship, while the New York Central rumbles by overhead.

Maybe it is a glittering European city of old stone buildings and great bridges over the Rhine where you can run your Märklin collection along with occasional startling appearances by the SuperChief or some Thrall container cars. If you don't care, we don't. It is for you and your visitors to enjoy.

Whatever setting you choose, this layout design provides some key elements: eye level layout, with space below; deep scenery; simple construction (except the elevator engineering); and arranged to impress visitors as they walk in and to show your models.

Design

The design is around the room on wide shelves. It is sectional, so pieces can be removed to work on them. Any work done in position will need a stepladder, because track height is 59" on the top deck and 48" on the staging. I am 5'9" tall and this height is OK for me (but at the upper limit).

Much has been written lately about eye-level layouts. One less-mentioned advantage is that joins between sections are easier to hide. Consider making detailed scenes removable too (e.g. the engine servicing area).

There is not much room for scenery extending below the track, if you are into high bridges. You could model the access lift-up as a bridge.

All mainline curves have easements, though some would be longer in a larger room. I chose 27" minimum visible, 24" hidden, for big locos, passenger cars, modern freight. The curves into the engine terminal are tighter: your big locos will complain, but so long as they are not hauling anything they should go round 20" curves. The waterfront area has tight curves too: you'll be using small switcher locos and low speeds, just like the prototype.

Top deck turnouts are Walthers code 83. These are chosen for their availability, and their range of curved turnouts. I would use code 83 flextrack to go with them. I chose code 83 because it looks noticeably lighter than code 100 but still has a high-enough profile for most flanges, even older

wheels on collectables. In staging, track is code 100 and turnouts are mostly Atlas code 100: cheap and robust.

Some of the turnouts have been trimmed to fit. People hesitate to use rail-nippers on an expensive turnout but it works well if done carefully, and gives nearly as much flexibility as hand-laying them.

There is a 4" allowance for "bevy shelves" designed in. A cold refreshment is considered by many to be an essential element of model appreciation, and the track is not the place to set it down. Too often, layout designs include no allowance - when calculating aisle widths or reach depths - for control panels, shelves on the fascia, throttle hangers, car-forwarding card boxes, protruding turnout controls, or shelves.

Compromises

There are a few compromises. Wide curves and a continuous run leave no option but a duck-under or lift-bridge at the entrance. I prefer the lift-bridge (or lift-out). 95% of the times you walk in and out of the room you won't be running trains. On those occasions when you are showing visitors or running in a loco, drop the bridge. The rest of the time, walk in comfort.

The height is a compromise to allow storage below. My workbench is one desk stacked on top of another so that set the height. Advantages are eye-level viewing and easy duck-under, but I regret that kids (and my Mum) will

need steps. I like manually thrown turnouts in yards, but this layout will be too high for ground throws – fascia-mounted controls are required.

The layout is wider than modern guidelines, especially this high. But all track is within 30" of the edge, with the additional depth being used for scenery. Consider using a couple of inches for lighting the backdrop from below. This reduces shadows on the sky, and allows sunrise/sunset effects.

Extensive staging in a small bedroom demands either "behind the backdrop" staging like the brilliant layout of Mike Hamer (Model Railroad Planning, January 2001 page 22), or two levels. Since we have decided on an eye-level layout, I went for two levels. Simple construction implies no hidden spirals or descending ramps. The answer is one advanced bit of engineering: a train elevator. It has a small footprint compared to a helix (and is no slower to traverse), and it leaves everything else on the level. It does limit train length, but with two parallel tracks you can bring a train up in halves and assemble it.

Construction

The layout consists of two flat decks. I will have quite a steep grade down to the waterfront, just because I like the sight of a mainline passing on elevated tracks, but you can have as little or as much grade as you wish. Likewise you could split the staging into two or more levels so the back tracks are higher, or not.

Minimum thickness on the top level is important, so plywood-on-grid construction is better than L-girder or extruded-foam slabs – hence the rectangular shapes for the sections.

Supporting the layout on legs is harder when it is this high, and they make the under-layout space less useful. I suggest adjustable wall-mounted Bohnacker shelf brackets. My workbench will hold some of it up too.

The visual impact is maximised by diorama style of construction: have a lighting valance above and a fascia on the front, both painted in matching dark tones, with most of the room lighting inside the box. Hang curtains below, at least when visitors come. You can even have vertical sections completing the visual frame around the modelled scene (see for example Flemming Örneholm's masterwork in the October 2006 Model Railroader - a real Exhibitor's layout).

Scenery

The deep scene in the back corner should rise up to be visible beyond the eye-level track. This is an excellent opportunity for forced perspective. Maybe an N scale farm on the hill behind town and Z scale trees in the distance.

The track is squeezed in amongst commercial and industrial buildings, increasingly cluttered and grungy towards the dockside area, with some street running.

The elevator is hidden under a car ferry. The elevator is as long as the biggest of ferries so I need to work out how to turn only half of it into a ferry or some other trickery to prevent the model dominating the room.

The railroad museum has a chain-link fence, with a ticket office, shop and café - and a carpark for your best car models. But the scenery is low-key here to let attention rest on the models. The backdrop can be flats of city buildings with their backs to the tracks.

The waterfront allows great modelling, of water and pilings and interesting old buildings, and all the clutter that seems to gather in these places. Consider a photo backdrop of an enormous ship at a dock on the other side of the mainline track.

If urban decay and commercial waterfronts are not your thing, redesign this area to be a container yard with cranes and trucks and stacks of forty-footers. Or a mining town in a "holler" with coal tipples crammed between forested hills. Or more museum...

Control and operations

Generally, there is nothing simpler than DCC wiring. However, here we have a small layout intended to run only one or two trains at a time. We have many locos sitting on display: I prefer to have them on a dead track where I can't accidentally select their address. So either DCC or dual-cab DC would be appropriate, depending on your collection. If it is full of old brass locos or tiny logging engines, you may not be keen to rewire them with decoders.

A little practice will be required to get trains on and off the elevator efficiently. A dual-track elevator helps here: lift train A up on the left track, run train B off the layout onto the right track, bring train A onto the layout from the left track, then take train B down to staging and get another train ready to come up. If you are an electronics wizard, you will want to automate the elevator and staging so the trains bring themselves on and off layout on demand. There is no turning of trains. Half the time they reverse onto or off the elevator. The elevator in its lower position doubles as a fiddle track for making up trains.

Personally I look forward to a little switching and genuine train operations (I am not a pure Exhibitor). So the waterfront has a runaround and a few interesting sidings, and the yard in town could be used to make up and break down trains not just display them. If you can accept a train re-appearing through the scene, then the elevator can act as both East and West staging. Certainly you can make up enough trains below to drive an interesting

operating session as yard-master, engineer of a waterfront local, or constantly changing engineer of the passing traffic.

Exhibiting

When people first enter the room there are three set pieces for them to “ooh and ah” over: the waterfront on the left, the deep scenery in the middle, and the engine terminal on their right.

If you are a modeller, a good ship is hard to beat as a feature. The waterfront might have your HO automobile collection recently unloaded; or your favourite truck models delivering at warehouses.

The yard in the town can be full of your best rolling stock collection, especially if you don't plan to use it for operations (real yards are generally fairly empty). The passing siding in the town allows you to hold one train while the other circles on show.

And of course the railroad museum in the engine terminal would be full of fine old machines: decapods, Shays and shark-noses. The yard also holds all the hangers-on these museums accumulate: passenger cars awaiting restoration, steam cranes and work trains, cabooses. Unconnected tracks would hold engines that the museum is preserving rather than restoring – those that will never roll again – perhaps with a roof over them to keep off the elements and some wooden stairs leading up to the footplate (this is a

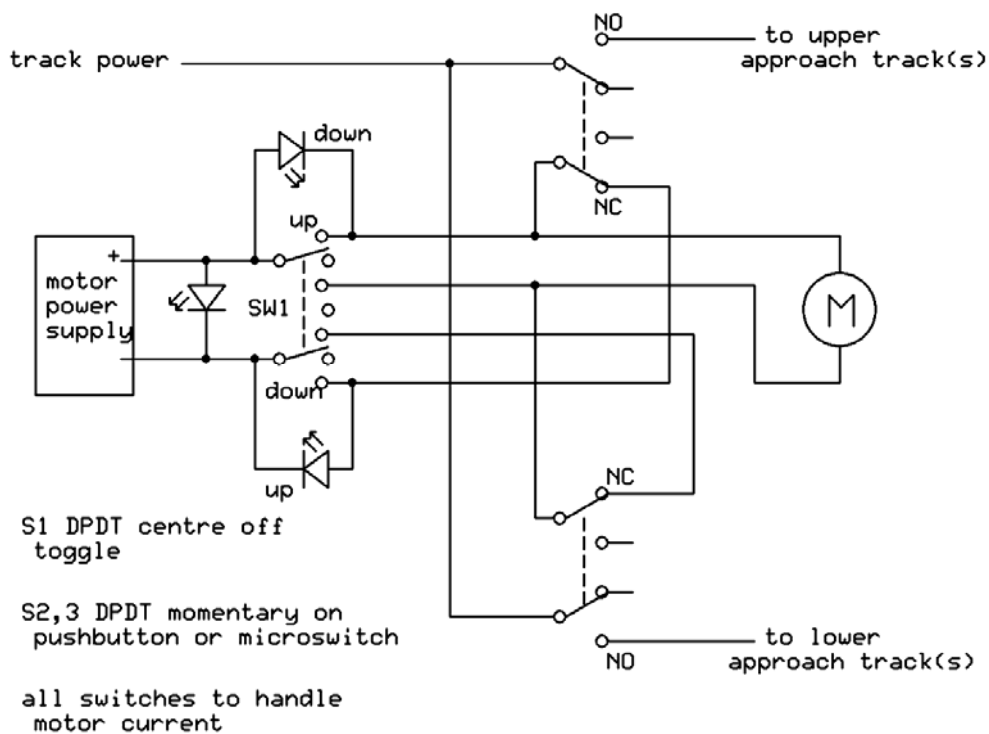
spot for some unpowered locomotive models). The grounds of the museum would also hold old boilers, speeders, logging machinery... even a miniature railway!

So there it is, the Exhibitor's Layout. Mine will be called Port Costa; how about yours?

Train elevators

They have been done successfully. See Model Railroad Planning January 2001 page 78, as well as the lifting wheel of Squirrel Valley <http://aglasshalfull.org/article-logging-train.html>, or the wonderfully eccentric Waldovia State Railways at <http://www.ospreyweb.pwp.blueyonder.co.uk/kmr/projects/trainlift-01.htm> which gave me my inspiration. If the engineering is not your thing, you can buy one such as RO-RO <http://ro-ro.net/>, or you may be able to get one custom engineered for you.

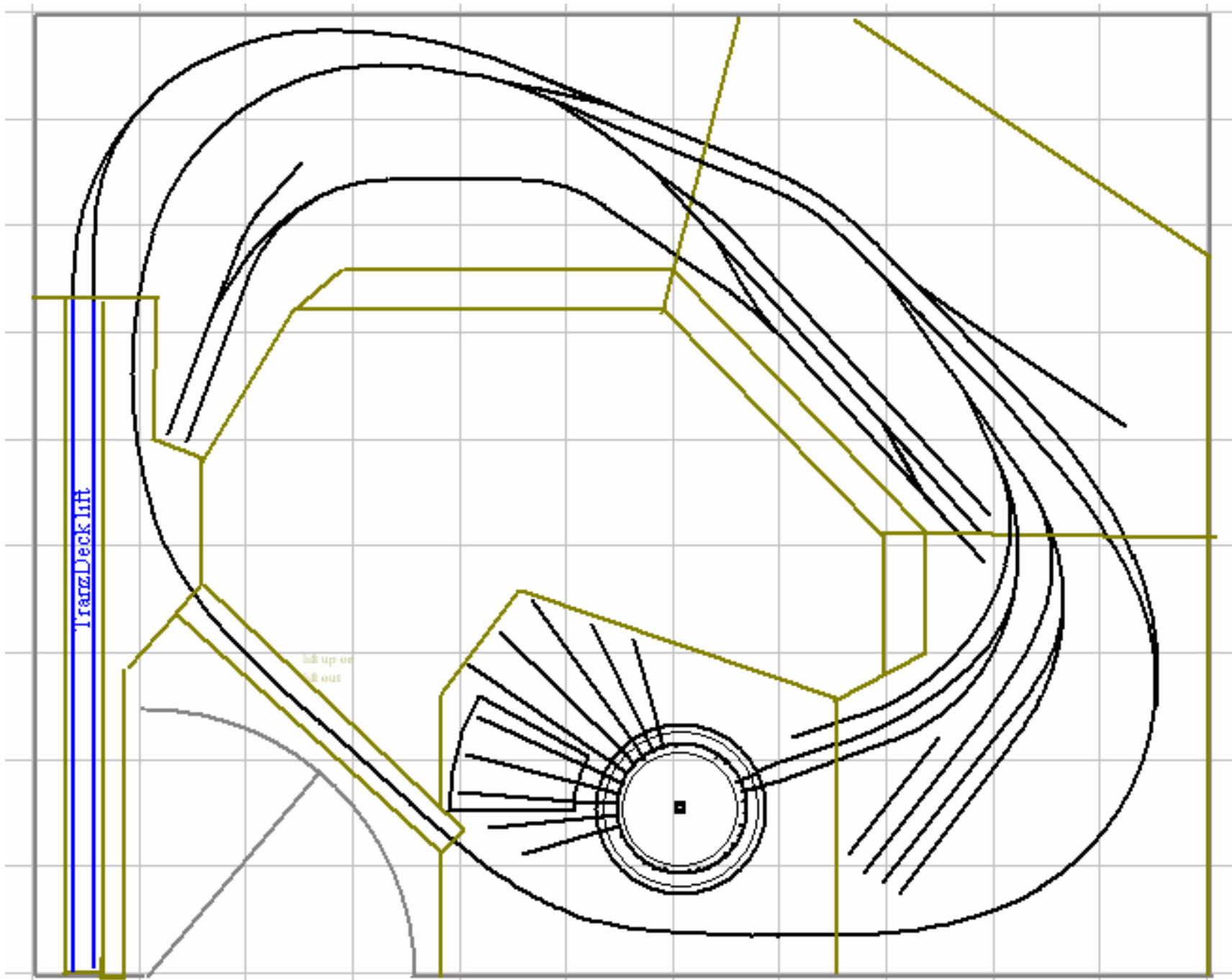
Here is a picture and diagram of my own lift, the TranzDeck, under construction. I chose to use two automotive scissor jacks. (Just because, that why.) The scissor jacks give 12" of travel. With a few losses in the mechanism, this set the track-to-track deck separation at 11". I would not recommend it as a mechanism: if starting again I would try a vertical threaded rod design (which can give even greater deck separation if you want it). For those who insist: the threaded rod of the jacks has been replaced by a longer rod of standard thread connecting the two, the motor is a cheap power drill, and the control mechanism is two DPDT momentary-on pushbuttons (that set the limits of up and down travel) and a DPDT panel toggle switch, wired as shown in the diagram.



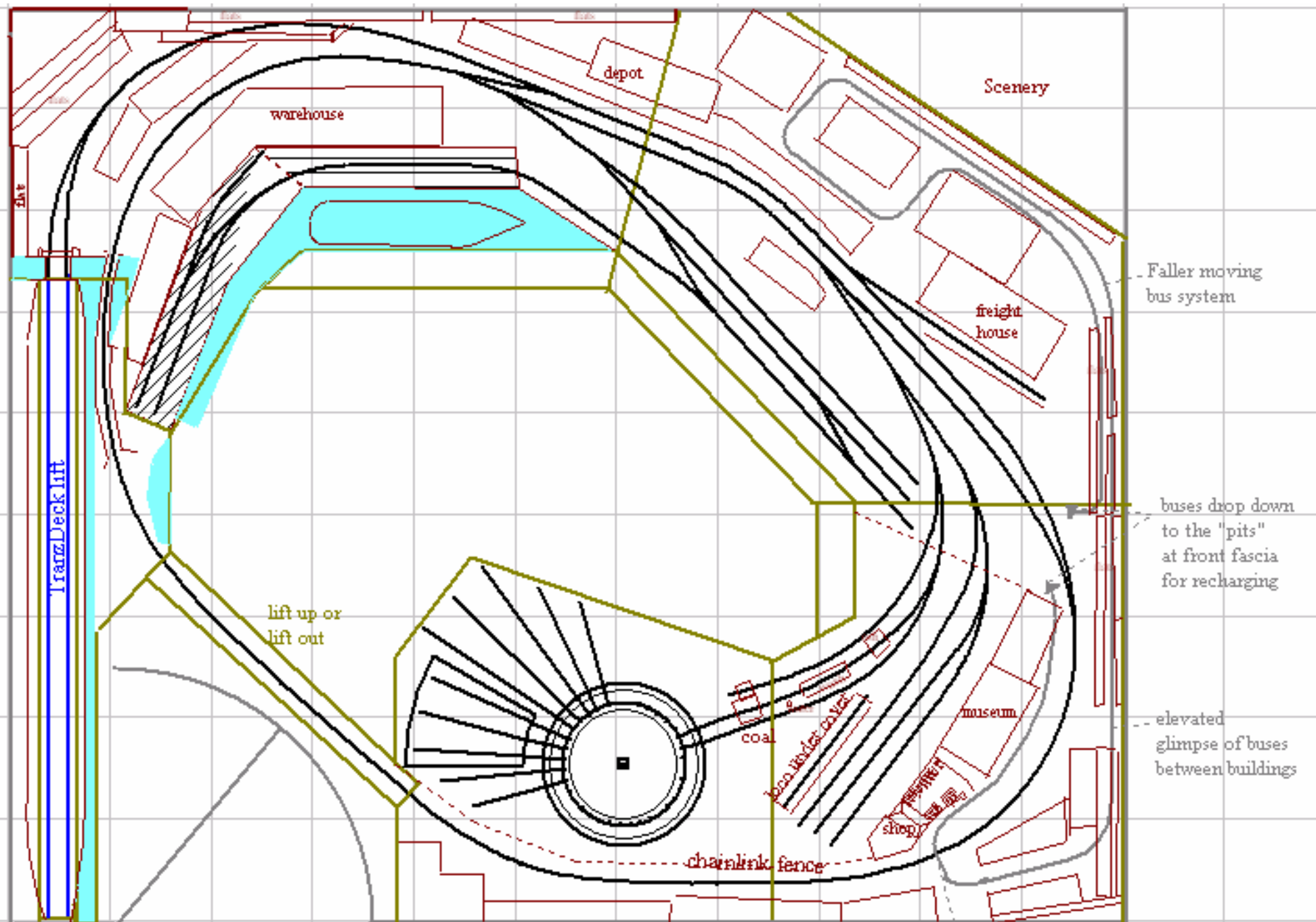
Rob England lives in Pukerua Bay, New Zealand with his wife Vee and son Jack (aged 7, with his own N scale layout in the closet and Märklin on the carpet). Rob works from home as an IT consultant and internet entrepreneur. Rob recently returned to the hobby after a thirty year break (as you do). He models Southern Pacific in 1970 in HO, but that hasn't stopped him collecting a number of steam locomotives including an old Tenshodo brass monster, a Shay and two Climaxes, among others. He also has plans (and stock) for a G-scale garden model of the Wellington and Manawatu Railway Company (an 1800s line that ran American equipment – how the Pacific class got its name). The garden overlooks the W&MR line.



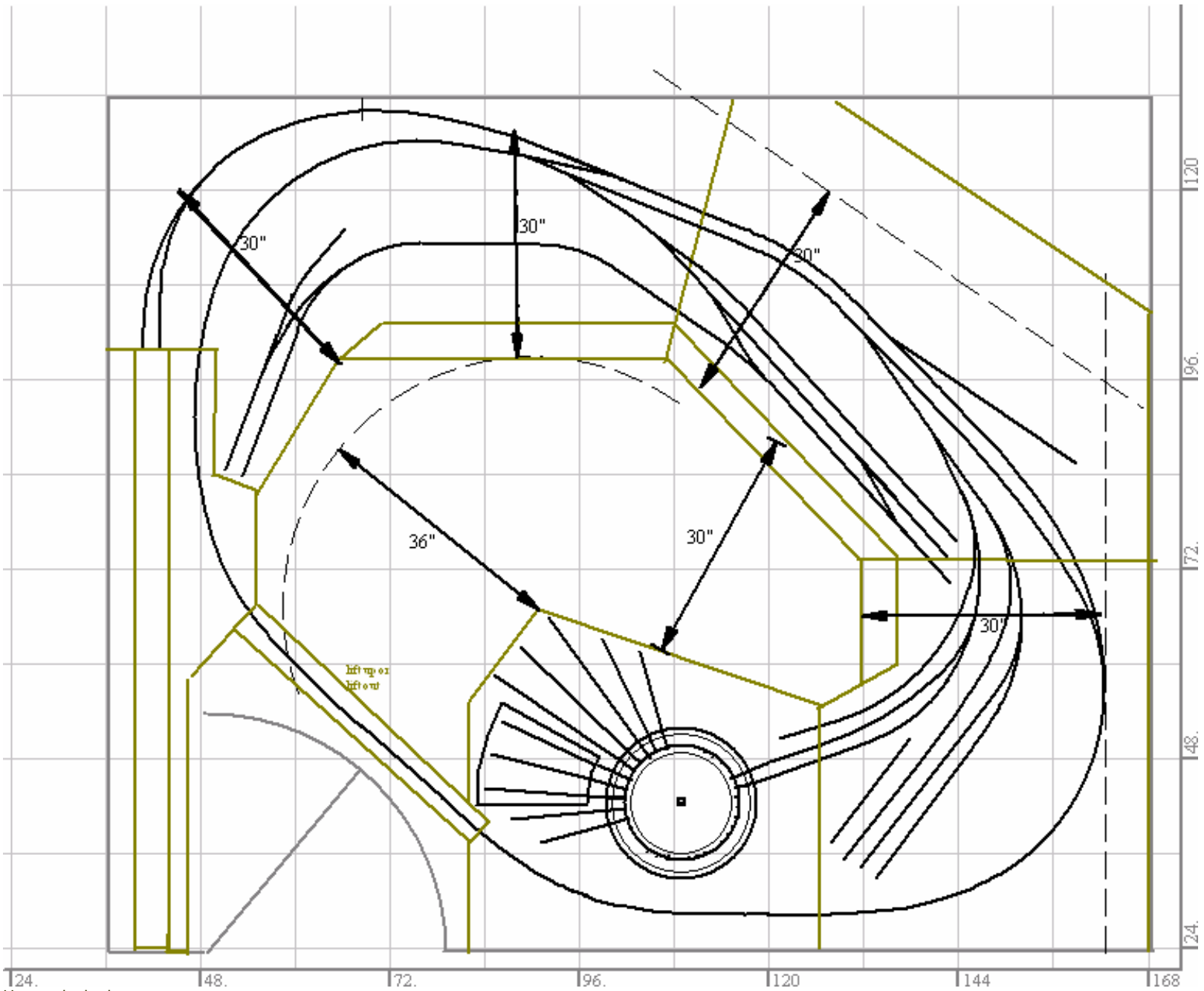
yes I'm driving



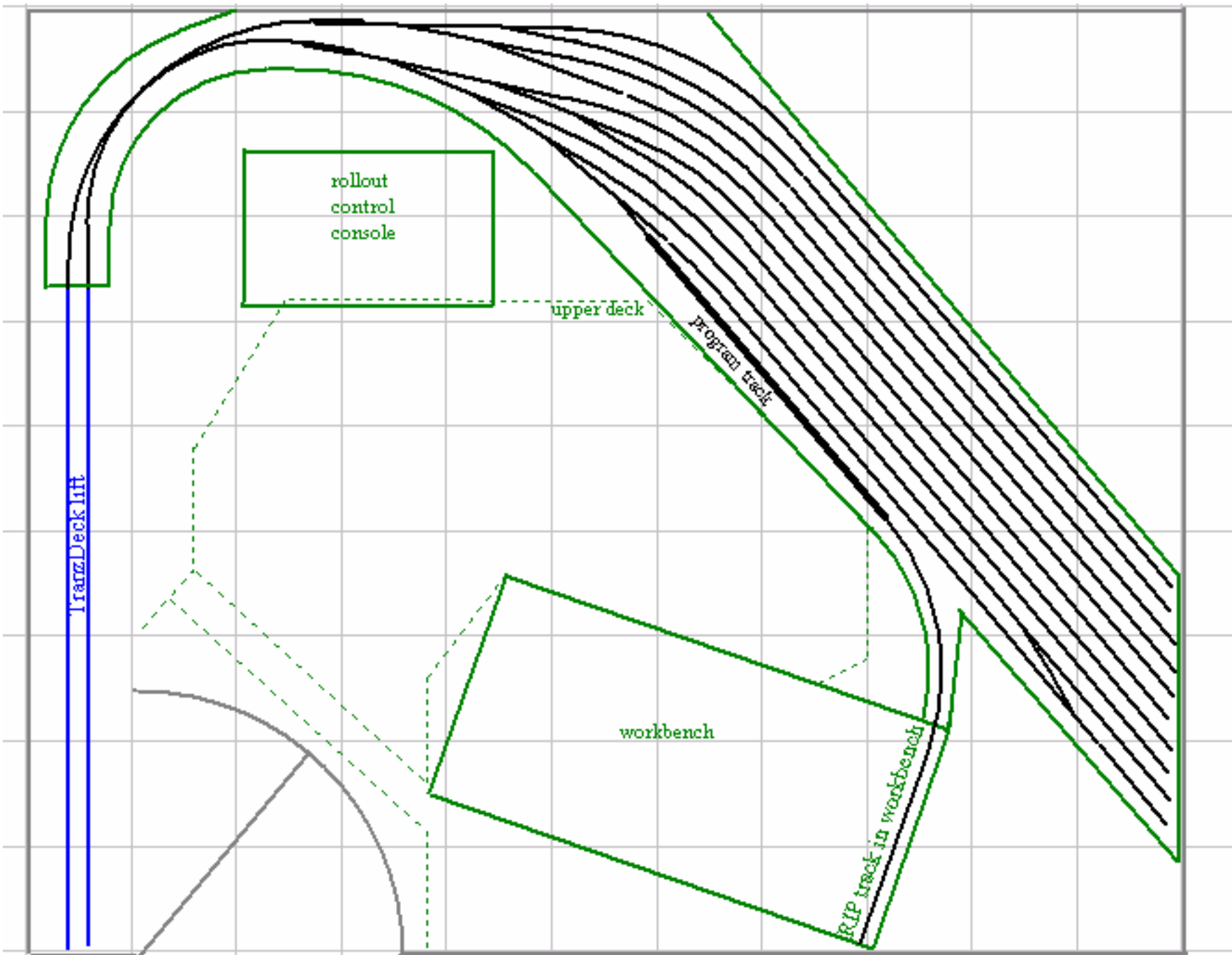
Upper deck trackplan. All drawings on CADDRail 8.02



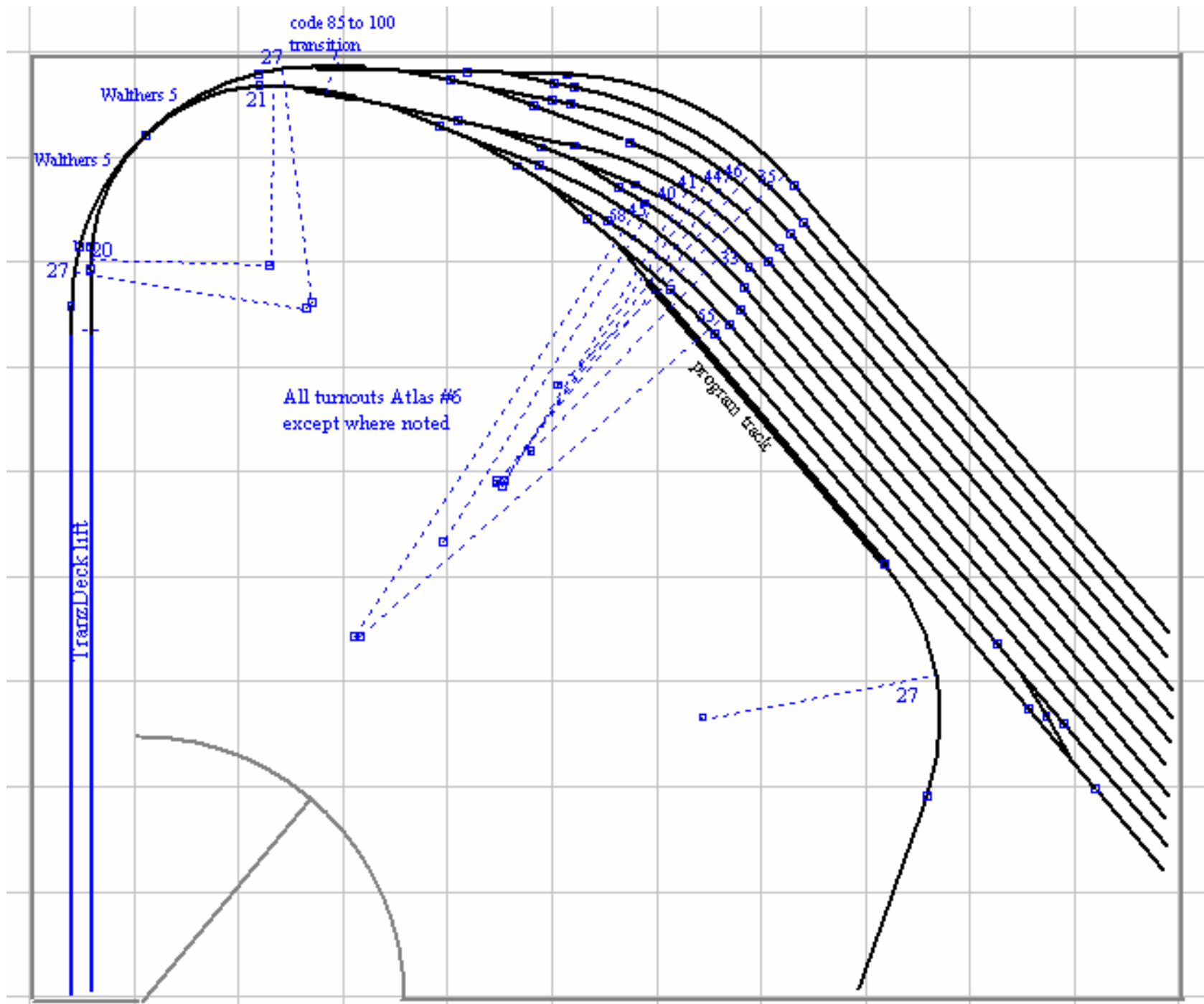
Upper deck detail



Upper deck clearances



Lower deck trackplan



Lower deck measurements



You can see one loco, ten cars and a caboose, or an A-B double header with four (could fit five) passenger cars. There is no practical limit to the length of the lift other than the size of your room. The footprint is about six inches wide (the base is a 4x2 but it overhangs that). The tunnel holes have yet to be cut in the end plate and the access tracks are not installed yet. The lift moves smoothly up and down, although speed is not linear – it is faster at the bottom of travel. The motor is a cheap power drill with the handle cut off – it is noisier than I would like. The motor pops my 3A power supply so for now I am still running on the drill battery. The alignment rail at the head comes out of a dumped ink-jet printer. The jacks are also cheap imports. Threaded rod and fittings from an engineering supply. All the timber came from our house renovations.



It moves pretty quickly, about ten seconds full travel. Sharp eyes will spot the switch is in centre position where I stopped the TranzDeck for the photo.

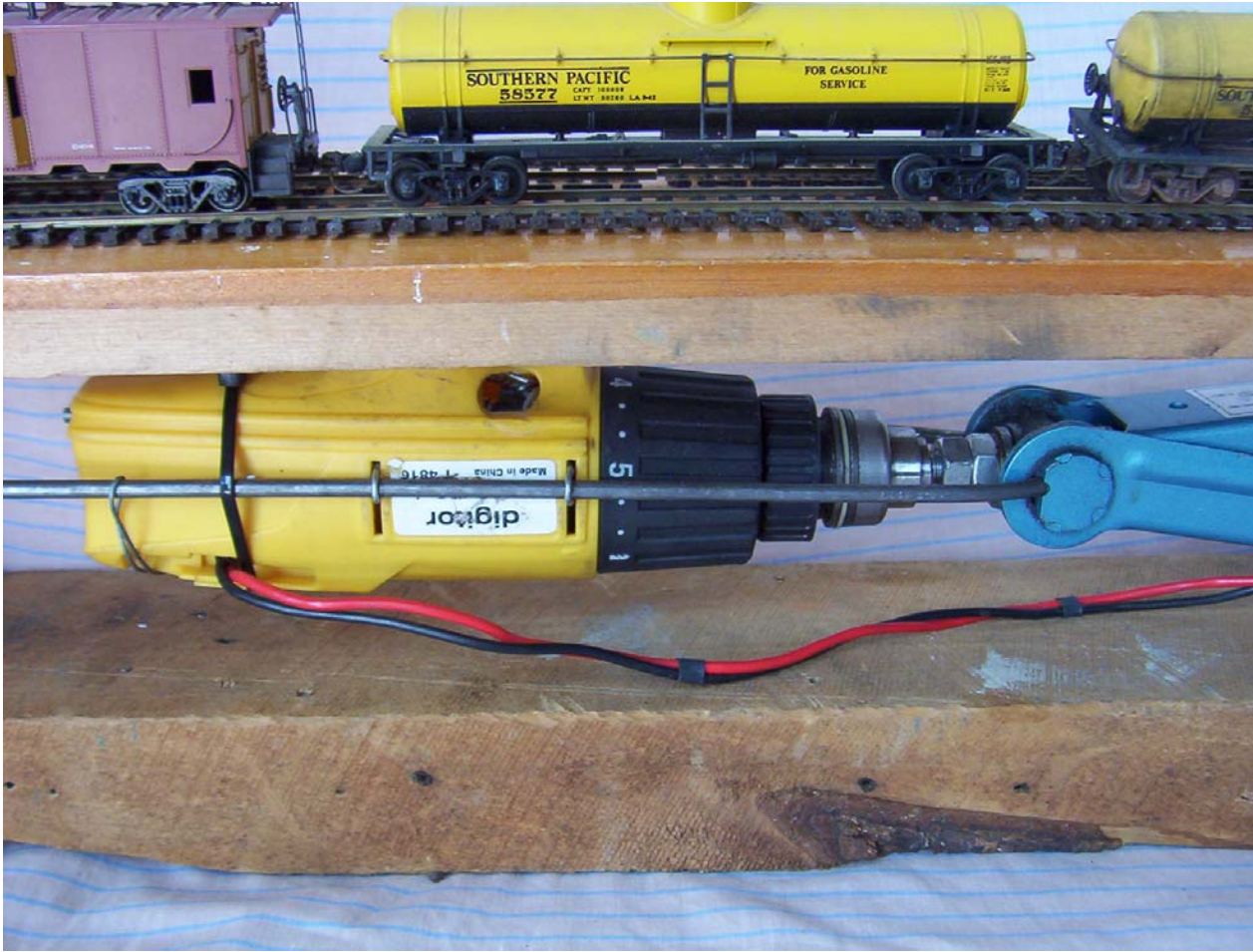


Nothing derails when it reaches the bottom. 11.5" of travel, limited by the reach of the jacks.



Homemade control panel is printed on an inkjet printer, laminated between a sheet of acrylic and a sheet of styrene, and the edges dust-sealed with epoxy.

TranzRail was a previous incarnation of the New Zealand Railways, now TollRail. The original logo is here <http://www.answers.com/topic/tranzrail-gif>



Thanks to Chinese imports, the motor was US\$20 including spare battery and torch.



The contact switch is a momentary-on pushbutton with the button removed, on an adjustable bracket. The motion stop is a bolt and locking nut threaded into a T-nut in the end of a block. What I forgot to do was mount the limit switch on the motion stop (the bolt could thread through a wooden block) so that adjusting the motion stop does not throw out the limit switch adjustment, i.e. the switch should adjust relative to the stop not to the frame.

I used mains wiring because it carries motor amperage.

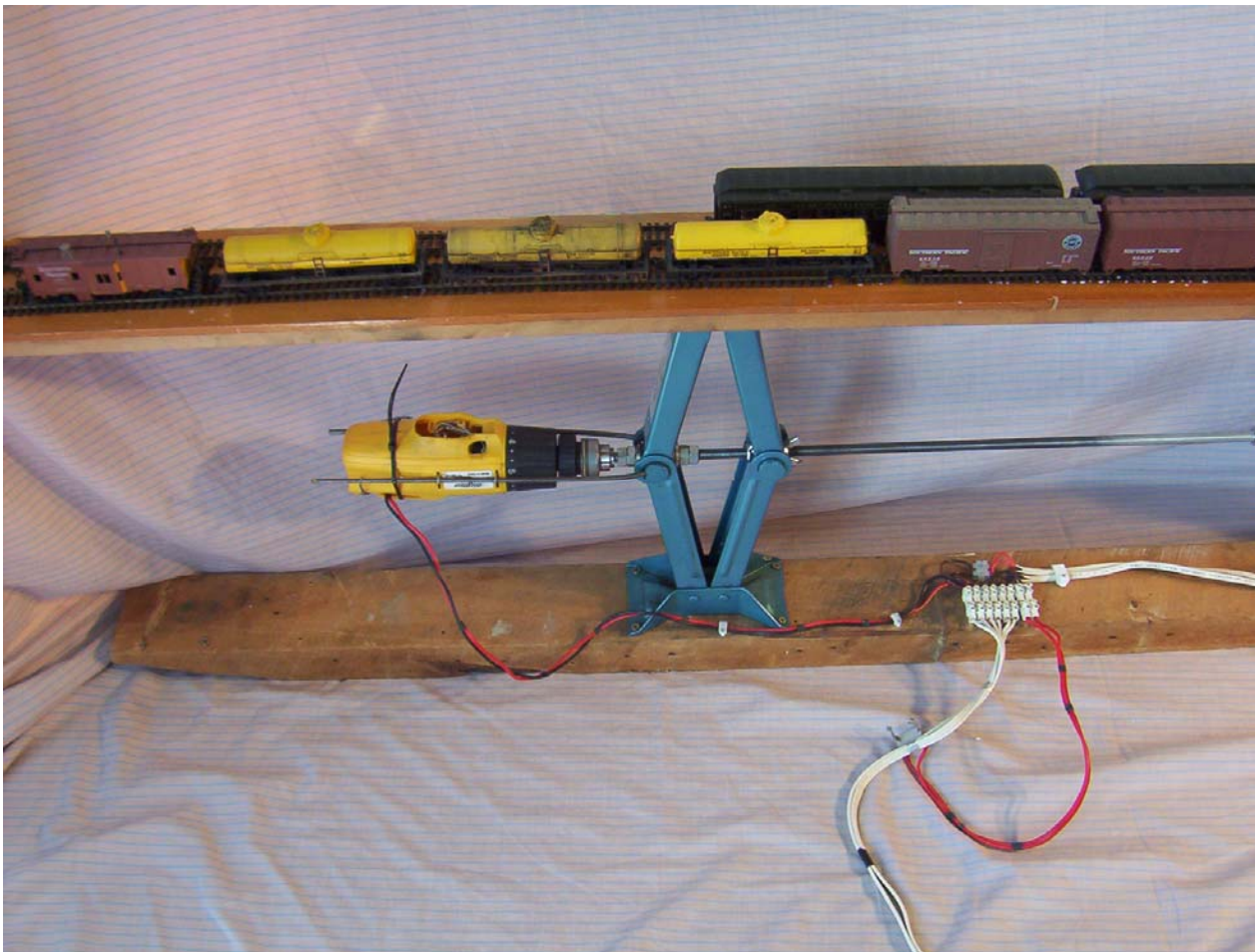
The strange stainless-steel catch for the alignment guide is what came out of the printer.



The locos can't go anywhere until I cut the holes in the end plate. The alignment rail holds things within half a millimetre so I think it will all work.

The rails will be soldered to a PCB plate which will be screwed through adjustment slots in the PCB for minor alignment. Contacts on the PCB will mate with contacts at each end of travel to power the deck from the approach rails. The approach rails in turn are powered from the limit switches. No deck, no power to approach rails or deck. I may also need a physical gate to stop someone backing a train into space...

P.S. For the nitpickers: SP are head-ending the ATSF car back to its home road. All the SP stock is up the back for local switching. And before you ask: the left and right tracks are not in the same decade.





The frame on top of the workbench is a second desk, from the dump, cut down and spray painted and shelves installed.

The "section" on top is a slab of 2" Styrofoam.



Just to demonstrate the eclectic mix an Exhibitor can fill a museum with, except I don't have the photo gear on hand to make it come out. You have to visualise my Diamond Scale turntable is in the middle (and I thought you would like the MR boxcar).