



Routed Images

What makes for a “Good” Track Design?

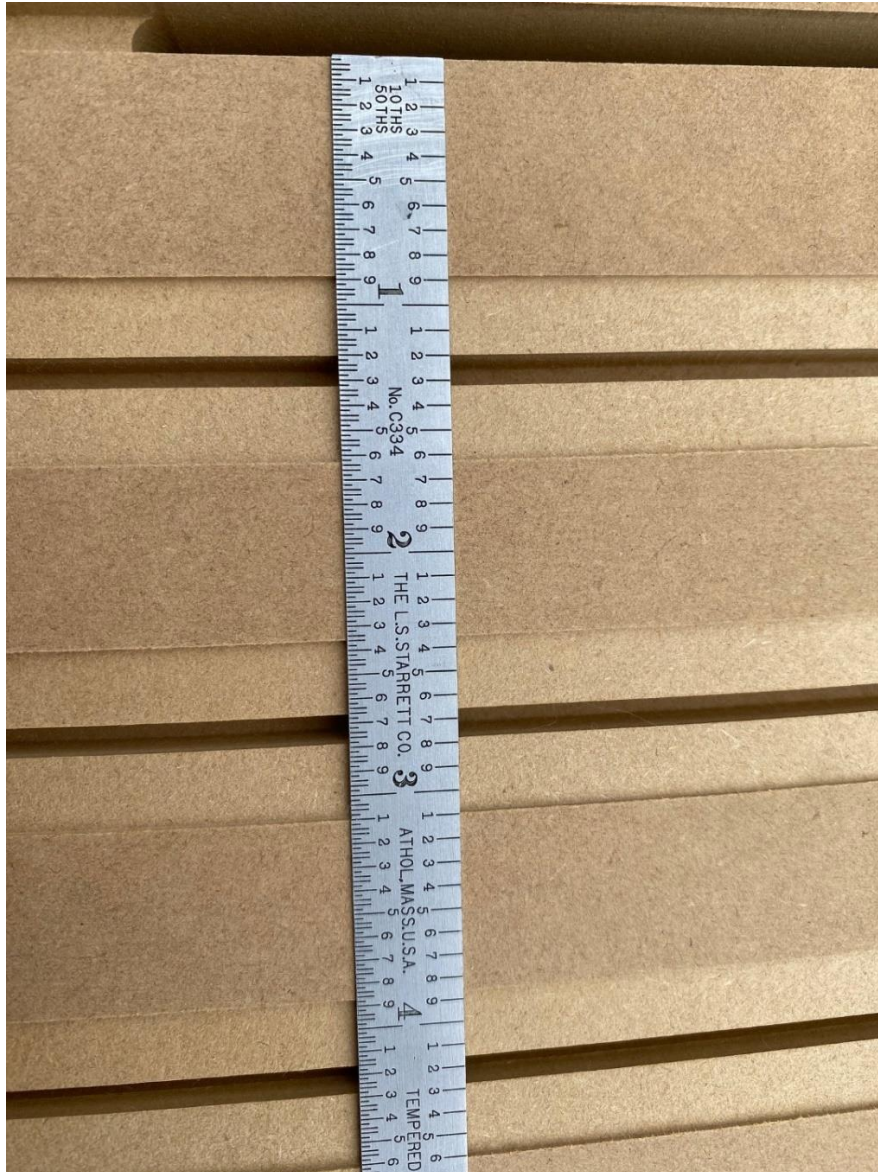
A fair amount of space is required for a “good” or enjoyable 1/32 scale slot car track. Does not matter if it is made from plastic track (Carrera) or is routed from MDF. I mentioned in the FAQ that a 4’ x 8’ layout is “not your friend”, and I’m not going to make one. It would not even make a “good” HO car layout, unless you were running very slow cars like original Aurora vibrator or Thunderslots on low voltage. 4’ x 10’ doesn’t cut it either, 4’ x 16’ is starting to get there. 8’ x 16’ is decent and 20’ of linear distance is “good”. 20’ x 30’ is great, and once you get beyond 40’ it starts becoming difficult to gauge breaking points, car drift and rotation at the far ends of the track. There is a “sweet spot” for the footprint of a 1/32 scale slot car layout, and it is pretty large by most people’s standards.

Reason why I bring this up is that the following images are from good sized layouts. The whole reason to have a CNC routed track is to have some very large radius, sweeping turns that can’t be duplicated in plastic track. If you don’t have much space, stick with Carrera plastic track.

All of the following images were taken while the track sections were still captured within a 4’ x 8’ sheet of MDF. That will give you some sense of scale or size. I’m NOT going to show you complete track layouts. I would rather you think and plan what you want for your space, than copy what has been done for someone else.

Design Limits

Let's start with limits. What is the least amount of lane spacing, how close can a car come to the edge of the layout, or the braid on an adjacent lane, or what looks too narrow or tight?



This is the absolute tightest that we have ever designed. The groove to edge of track (top of image) is 1.25", and the lane spacing is a whisker under 1.5". After routing the groove for the gains (step where the braid shoulders), there is just enough roadway where most 1/32 scale race cars will not be running on the braid.

3-Lane "Squeeze" example.



Thunder Slot Can-Am cars in the outer lanes of a 1.5" lane spacing "Squeeze" section. You can see there is a chance that these two cars could pass in a straight or gently curved section. A car in the center lane would be blocked by a car in either outer lane. The edge of the rear tires are right to the edge of the routed gain. This 3-Lane track section was wider than the 5.5" implied.

On most layouts we design a 2" minimum outer lane to edge of track. The majority of the layouts we design are 3-Lanes. In the "old" days, a 3" lane spacing was pretty standard. Now our standard is typically 3.5", and it may vary +/- 0.5" on a variable lane spacing layout. Thus, 3-Lanes have a total width of 7", 2" apron at apex, leaves a 5" apron on a 14" wide track section. This gives us some room to play with the "Racing Line" which forms the perimeter of the track. A narrow roadway leaves us less room to create the Racing Line. Most Customers really like the Racing Line look of their circuit.

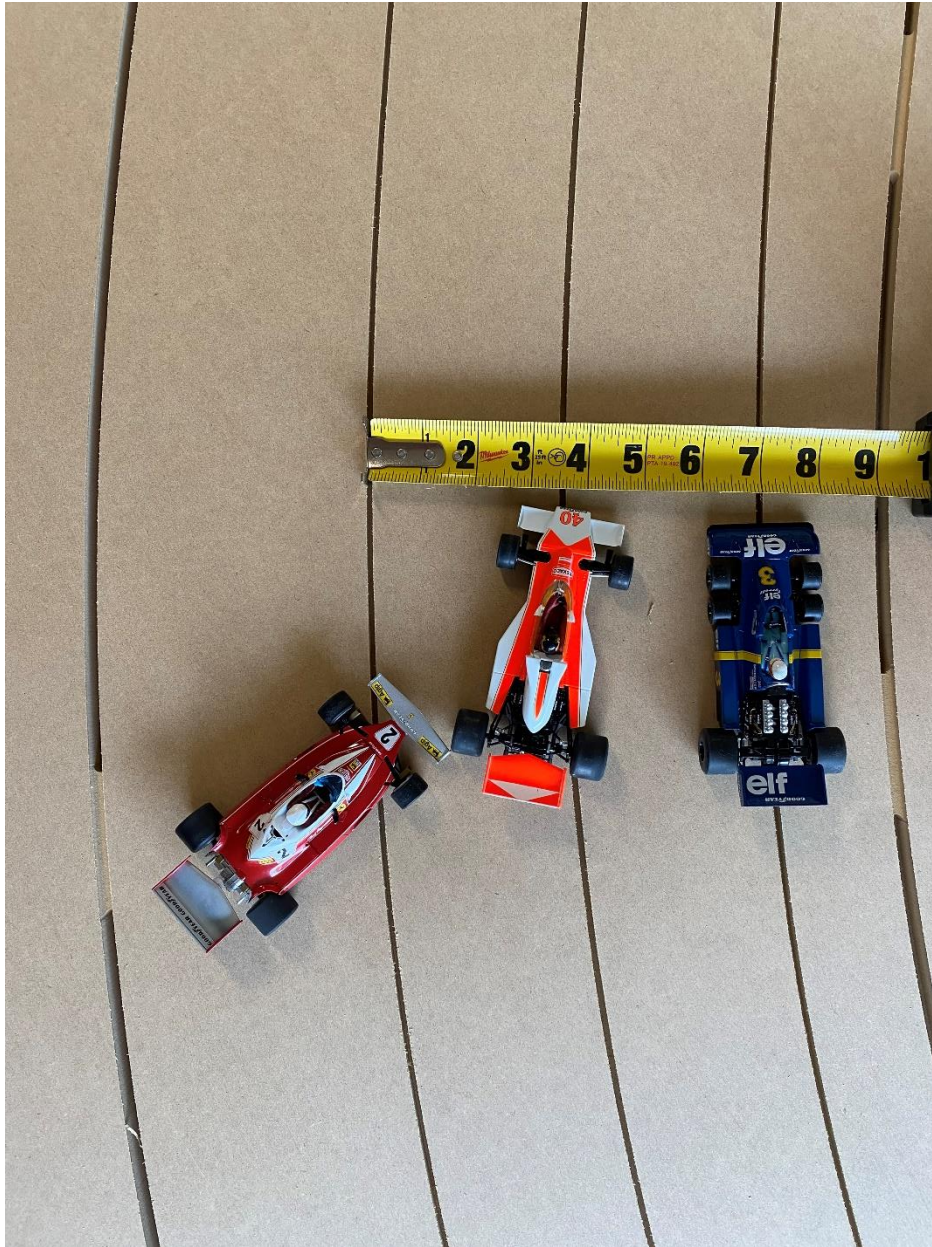
3-Lane with 3" Lane Spacing



On gentle curves or straight sections we often use 3" lane spacing to "pull" the cars together. That allows us to create more realistic Racing Lines with the perimeter of the layout. You can see that even with late-1970's era Scalextric F1 cars there is some room to drift.

A friend has a routed layout with slightly less than 3" lane spacing for the entire layout! You would think that it is a total crash fest, but we have had some great/close racing. However, if you think you may have a range of (less experienced) folks racing on your layout, you would be better off with a 3.5" lane spacing.

3-Lane with 3.5" Lane Spacing



Same 3 late-1970's era Scalextric F1 cars on a 14" wide track section with 3.5" lane spacing. This leaves more room for drifting and when paired with a 2" apron at the apex, a very wide 5" outer skid apron.

3-Lane with 4" Lane Spacing



As you can imagine, 4" lane spacing allows room for quite a bit more drift before cars contact those in the adjacent lane. We generally use this on tight radius turns. We have designed complete layouts with 4" lane spacing, in both 3 and 4-Lanes. Which brings me to another point, and that is a 4-Lane layout with 4" lane spacing starts to get pretty wide. We have made tracks with roadways as wide as 24", but you need a really big layout so the aspect ratio of track width to length doesn't look out of place. Plus, the MDF usage with a 24" wide roadway gets excessive, and the premium MDF that I use is expensive. So, you are talking about a mighty expensive track.

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Recommended track widths

Roadway
Width, (in)

3-Lane with 3.5" lane spacing, variable Racing Line border 14

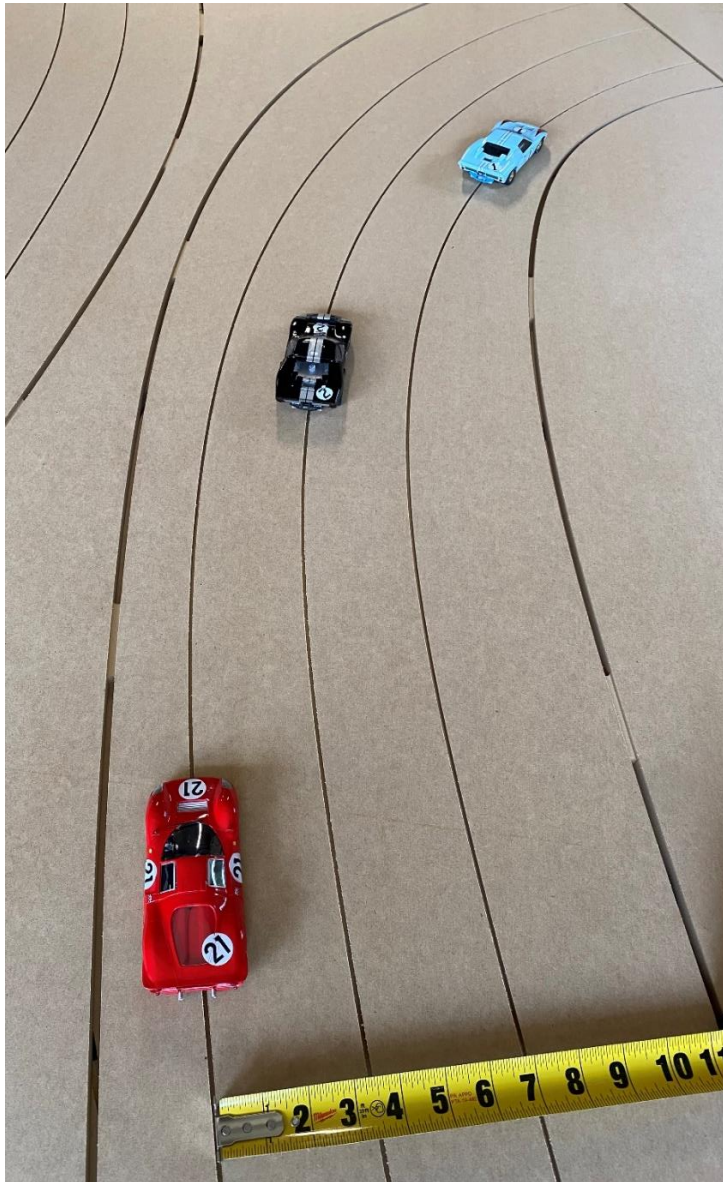
4-Lane with 3.5" lane spacing, variable Racing Line border 18



OK, so I lied a little bit and I like a 4-Lane with 3.5" spacing to have an 18.5" width, like in the image shown above. That allows us to get even more *RACY* with the Racing Line. Scalextric Vintage Trans Am shown above with 2" apex border and 6" outer skid apron.

3-Lane with Variable Lane Spacing

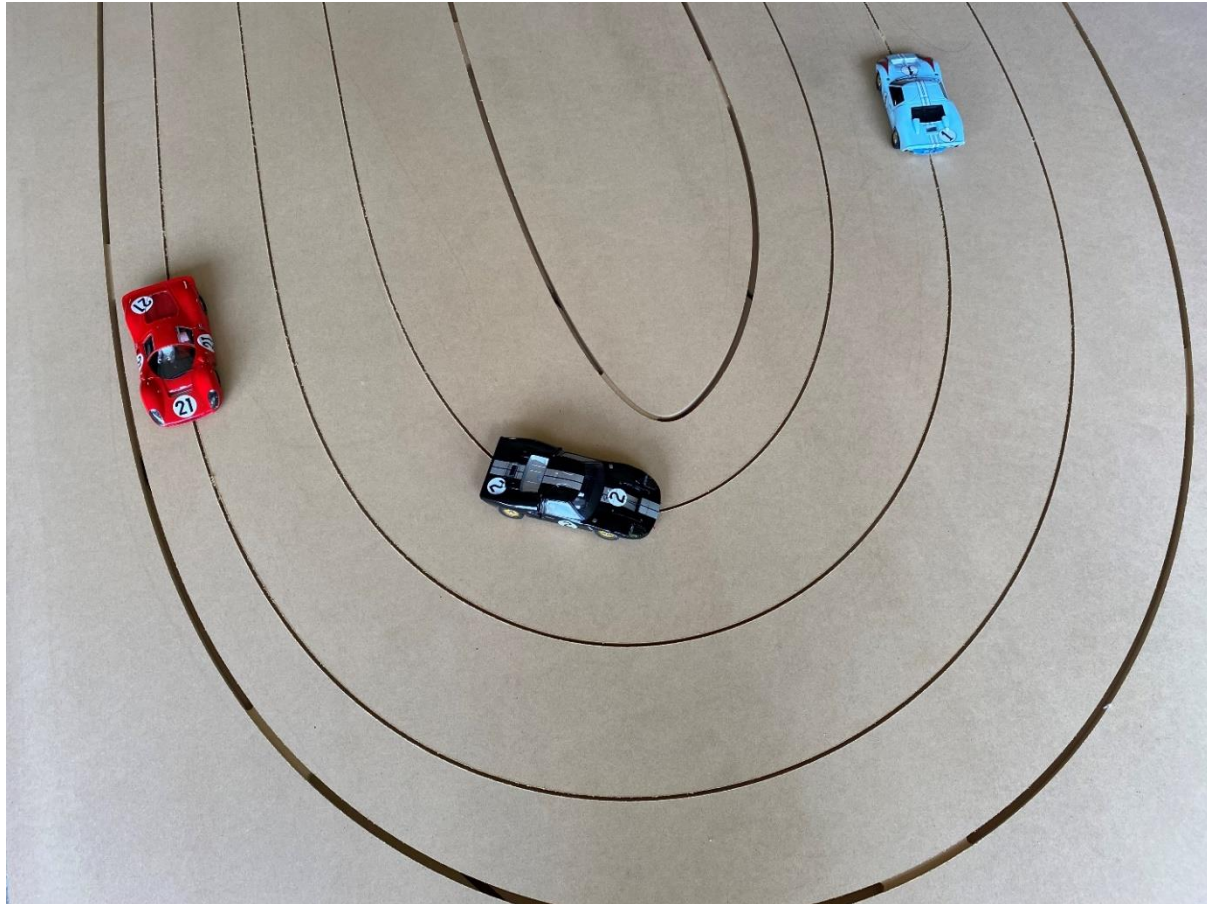
Variable lane spacing adds quite a bit of design time, but the cost is manageable on a 2 or 3-Lane layout. It makes for fantastic racing!



Slot.it Ford MKII's and Policar Ferrari 330 P4 on a 14" wide roadway. Lane spacing starts at 3.5" and expands as the turn tightens into the apex to 4" lane spacing. Inner edge of roadway at apex is 2", and with the 4" lane spacing leaves a 4" outer apron. Change of rate of curvature is imperceptibly smooth, as are the expanding lane spacings. It is subtle, which I think is nice and we design a typical Racing Line perimeter to the layout to augment the effect.

3-Lane with Variable Lane Spacing

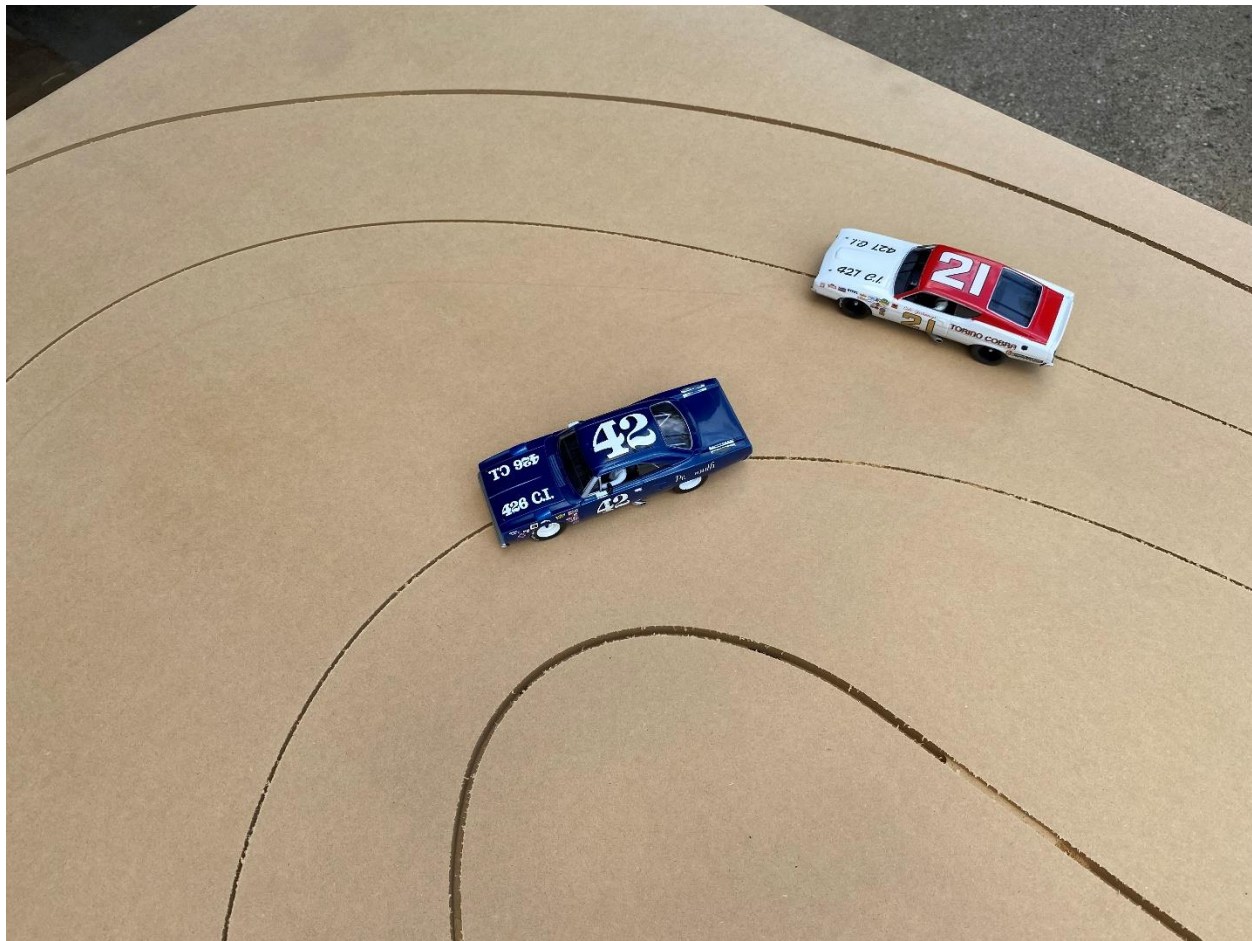
We have done some pretty complex variable lane spacing. The example below has 3.5" lane spacing before the Hairpin, expands to 4" thru the turn, and eventually reduces to 3" ahead of Ken Miles blue Ford MK II.



We are careful to provide sufficient outer skid apron width for the red Ferrari 330 P4 in the example Hairpin turn shown above. Sometimes we cheat the track width slightly to make everything scale properly. Each turn above is mathematically smoothed, so if you ask me what the radius is for Bruce McLaren in the black Ford MKII, I can tell you what it is at that point, but it will be different an inch on either side of that. In reality, that turn is made up of hundreds of tiny facets which are seamlessly sewn together and CNC routed to within 0.001" of the cutter path file. **There is absolutely NO WAY a human hand can create/replicate what we do!** If you push the car through that turn, it will feel smooth as silk... Cars on a CNC Track Design layout require very little voltage to run fast, because they go through the corners so well. Low voltage means your cars will last a long, long time.

2-Lane with Variable Lane Spacing

Mentioned that 2-Lane with fully variable lane spacing is a cost-effective consideration. We have done some crazy stuff!

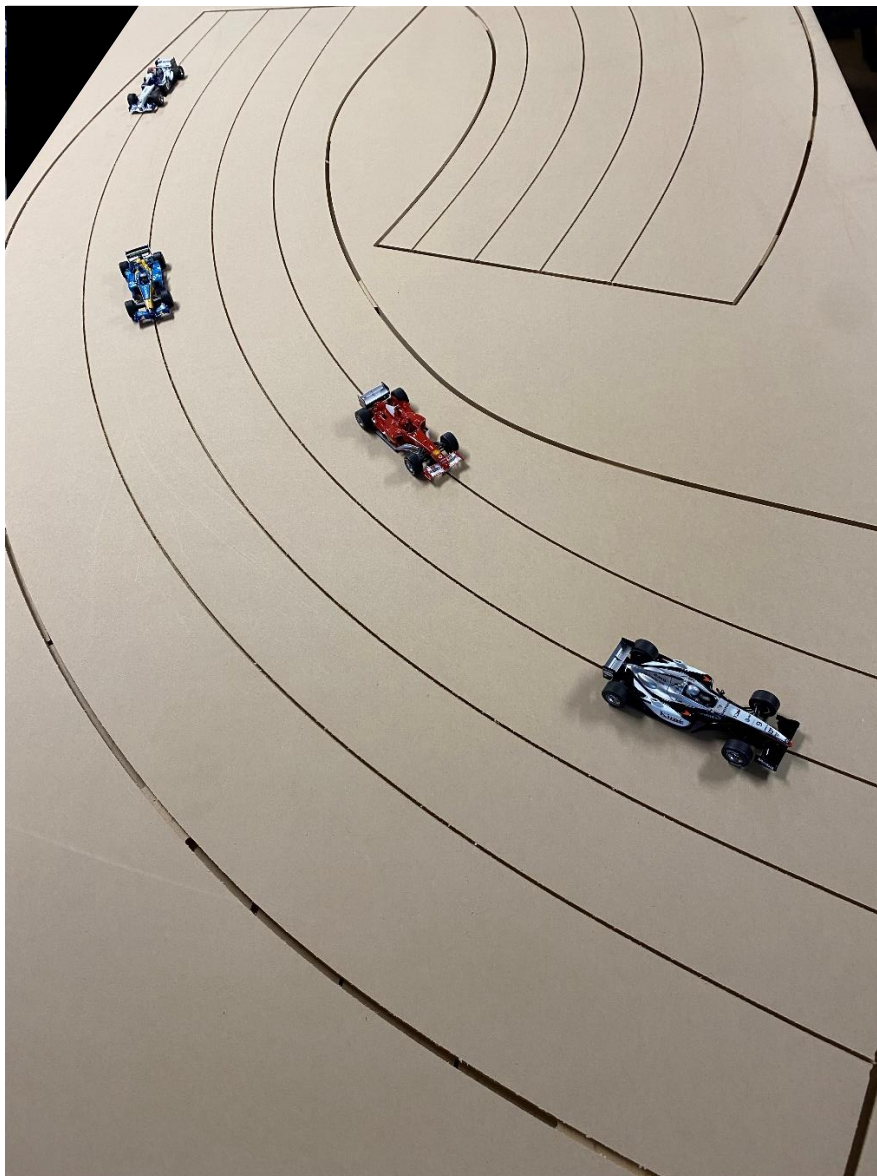


Whoops! Cale Yarborough in the Wood Brothers #21 Ford Torino missed his breaking point and went wide on this turn.

We can do things like make one lane longer but have a couple of better momentum corners so that the racing lap times are equivalent. We can have the cars weave from side-to-side down a long straightaway, (which looks really cool!), setting up for the next corner. We can take a "Real" circuit design that has segmented turns and create a sweeping racing line corner through them. Whatever you can imagine, we can incorporate into a slot car layout!

Basic Layout Comments

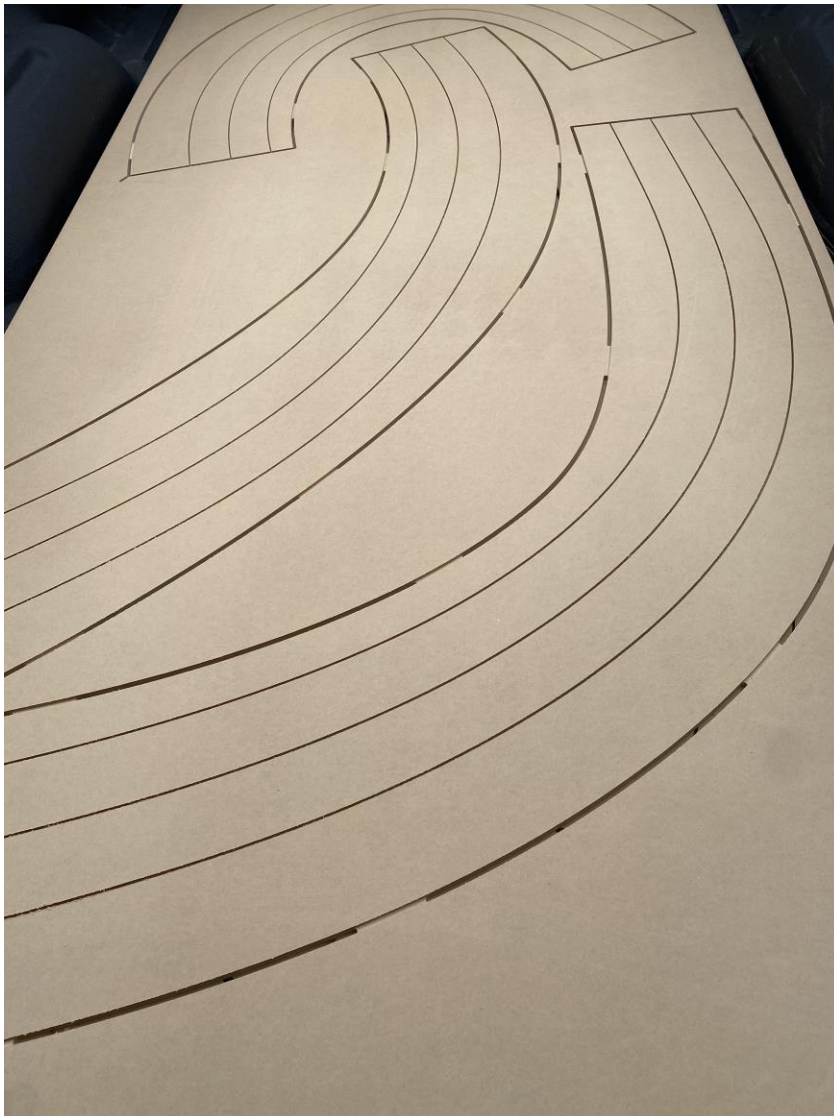
One thing I want to note is that most people's sketches start with a layout that runs around the perimeter of their available space. The layout has a series of RH turns; one RH into another RH turn, long straight into another RH turn, and then we start turning left. Well, by this time the person on the outside lane is so far behind the car on the inside lane, the outside lane car has crashed trying to keep up. A lot of "Real" racing circuits are like this, thus they don't make the best slot car track. Generally, we are better off designing something unique to fit your space.



We want some big, sweeping corners, esses, maybe some technical elements like a large decreasing radius and hairpin to keep people on their toes!

Basic Layout Comments

If a person is unsure whether to go 3 or 4 -Lanes, I tell them that we can pack more racing into the available space with 3-Lanes, and typically the MDF utilization is better, so cost is lower. 3-Lanes is a nice compromise, especially if you don't plan on hosting big "Club" events.



Example of MDF usage with a 3-Lane using 3" lane spacing and 12" total track width. You can see we were still able to design some nice looking Racing Line features. Usually we can only get 2 track sections on each 4' x 8' piece of MDF, but in this case could fit 3. We try to break the layout into as large of track sections as possible to minimize the number of joints.