

Kart Krew™'s Checkpoint and Waypoint Tutorial

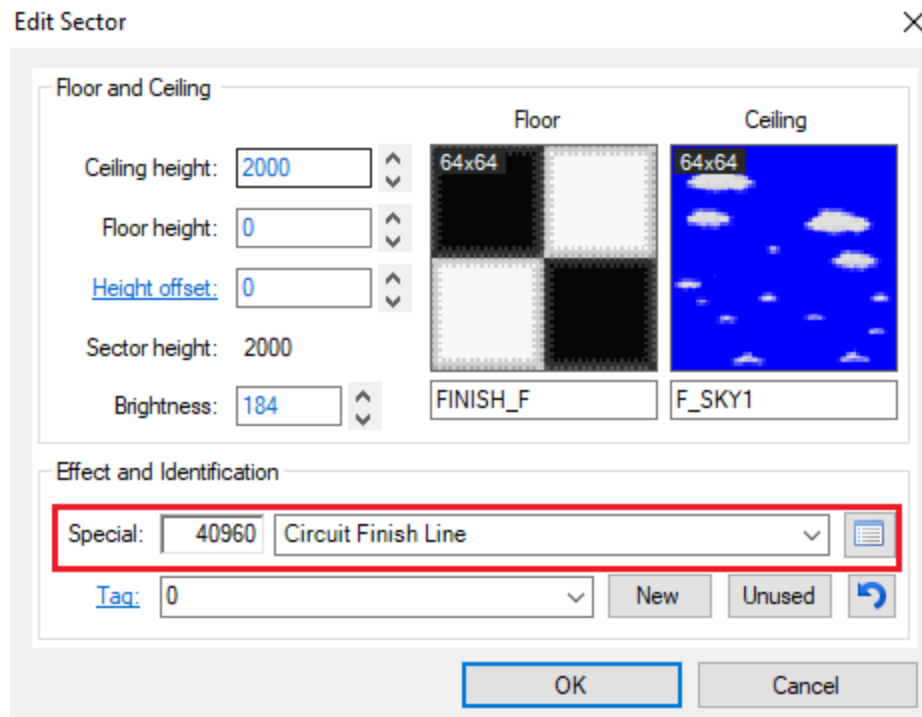
How goes it? Chromatian here,

I'm going to go over what you need to have functional checkpoints in a Kart map. It's pretty simple stuff, but it's easy to mess up. Don't worry, I've got plenty of pictures to make this easy to follow.

For starters, keep in mind that a Kart map needs at least 5 checkpoints in order to function normally. Without 5, you'll instantly finish the race upon crossing the finish line. I'm also not going to go over the basics of Level Design for SRB2 or Course Design for Kart here. If I have some more time later, I'll make another guide for course design, but until then check out <https://wiki.srb2.org/> for all of the information you'll need on general mapping.

The Finish Line

As I said earlier, you'll need 5 checkpoints before this will function properly, so I'd hold off placing it in your map until then. That said, the setup for it is trivial:



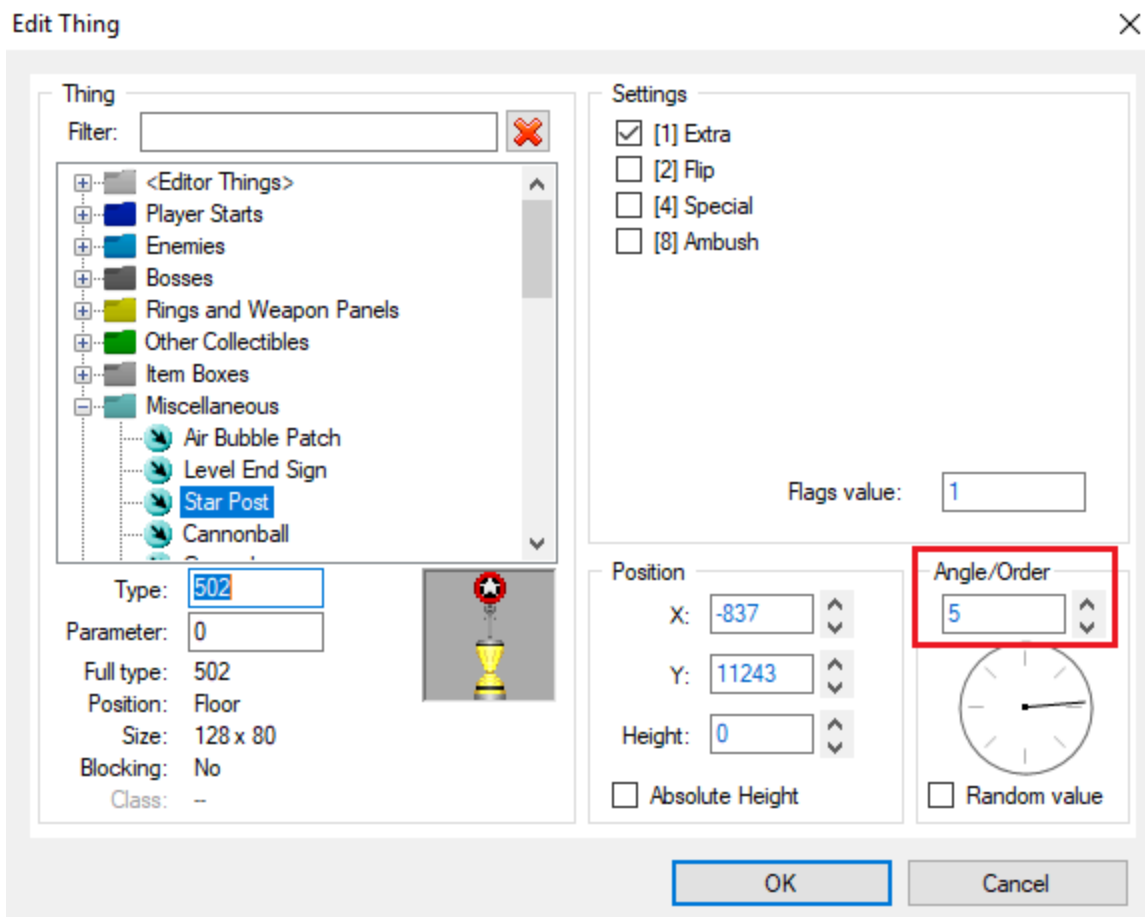
-General size for Finish Line's is usually 96-128 fracunits wide. you're free to experiment with the size, but keep in mind that Giants move fast enough to pass over thin Finish lines without the game counting it as a lap!

Checkpoints

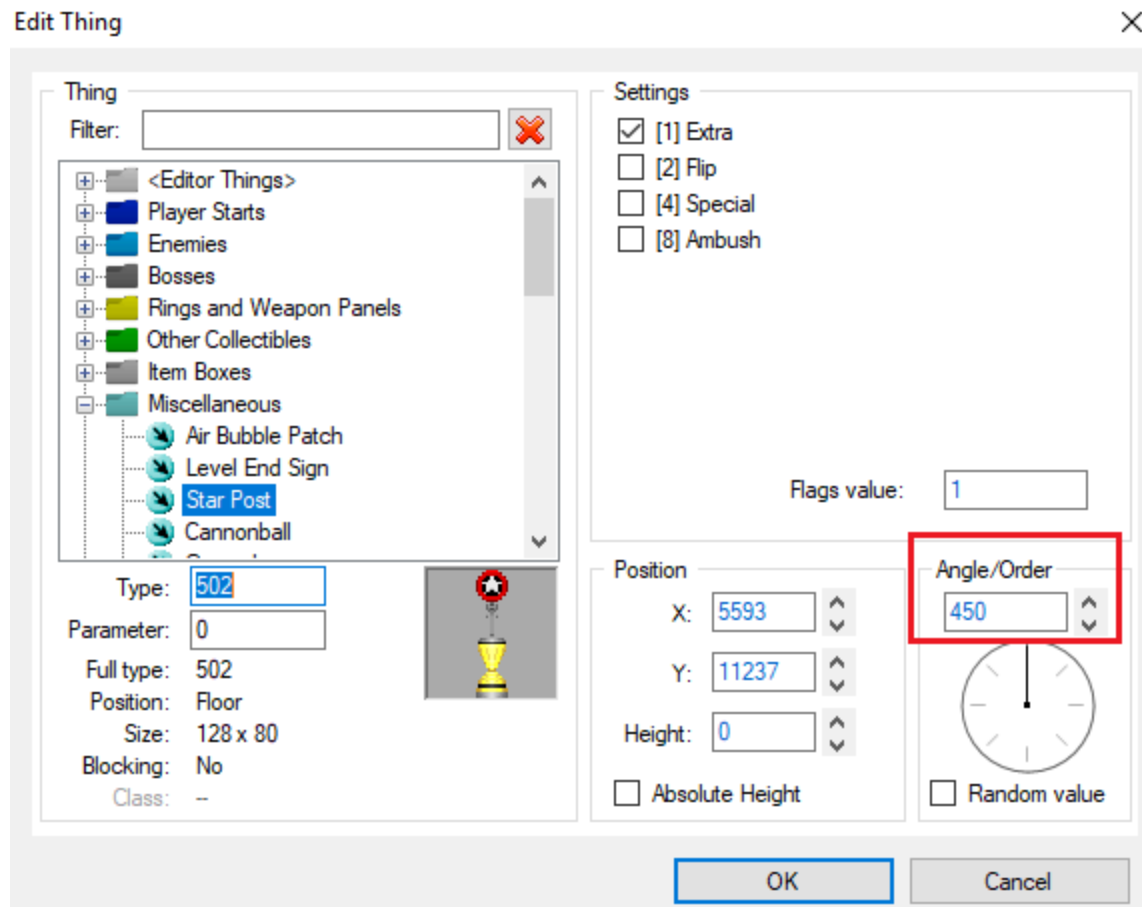
- Necessary to have a raceable track
- Too few and players can turn around halfway and drive backwards to complete a lap
- Half of the total checkpoints in a given course can be skipped before the game penalizes you.
- Players respawn 128 fracunits above a checkpoint after they die.

Setup:

The order of the Star Posts in a level is determined by their Angle. For each successive Star Post, 360 must be added to that Star Post's Angle. For example, the first Star Post in a level must have an Angle between 0 and 359:



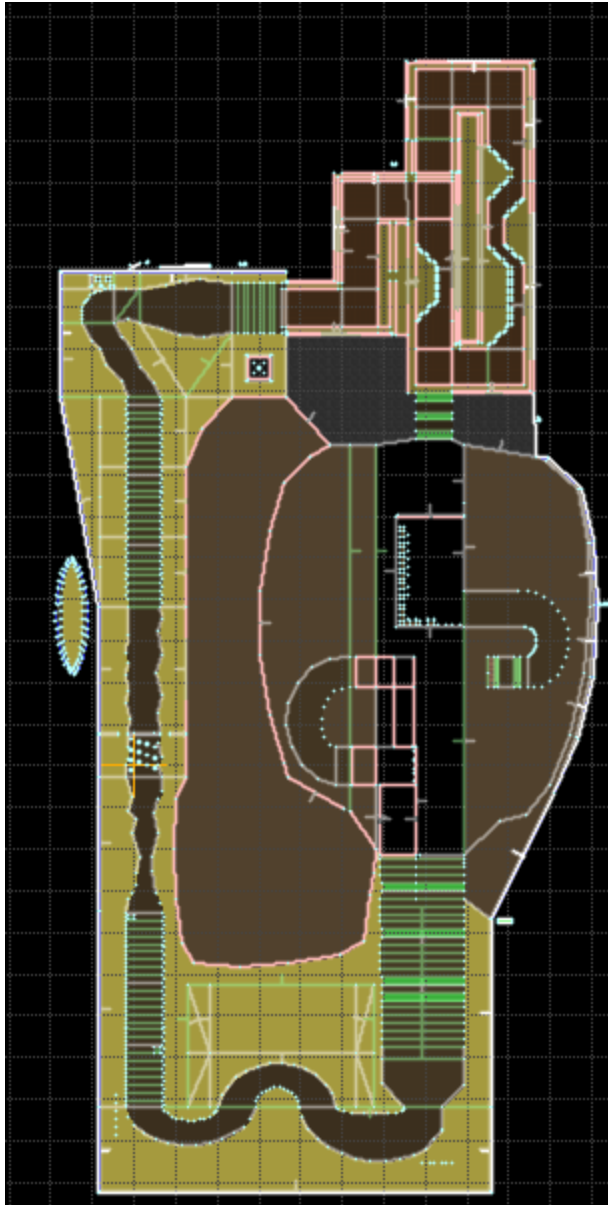
The second Star Post must have an Angle between 360 and 719:



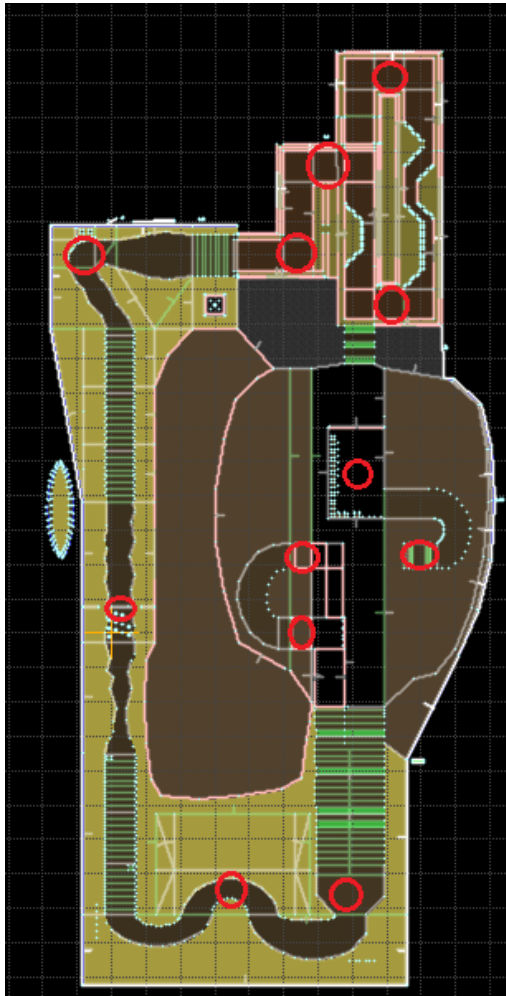
...and so forth.

Placement:

Using my own map, Sand Valley, as an example:

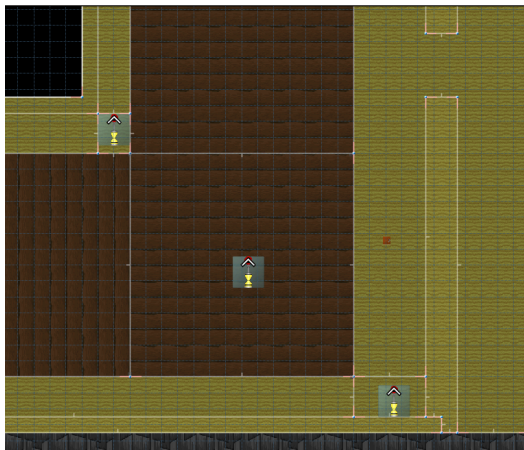


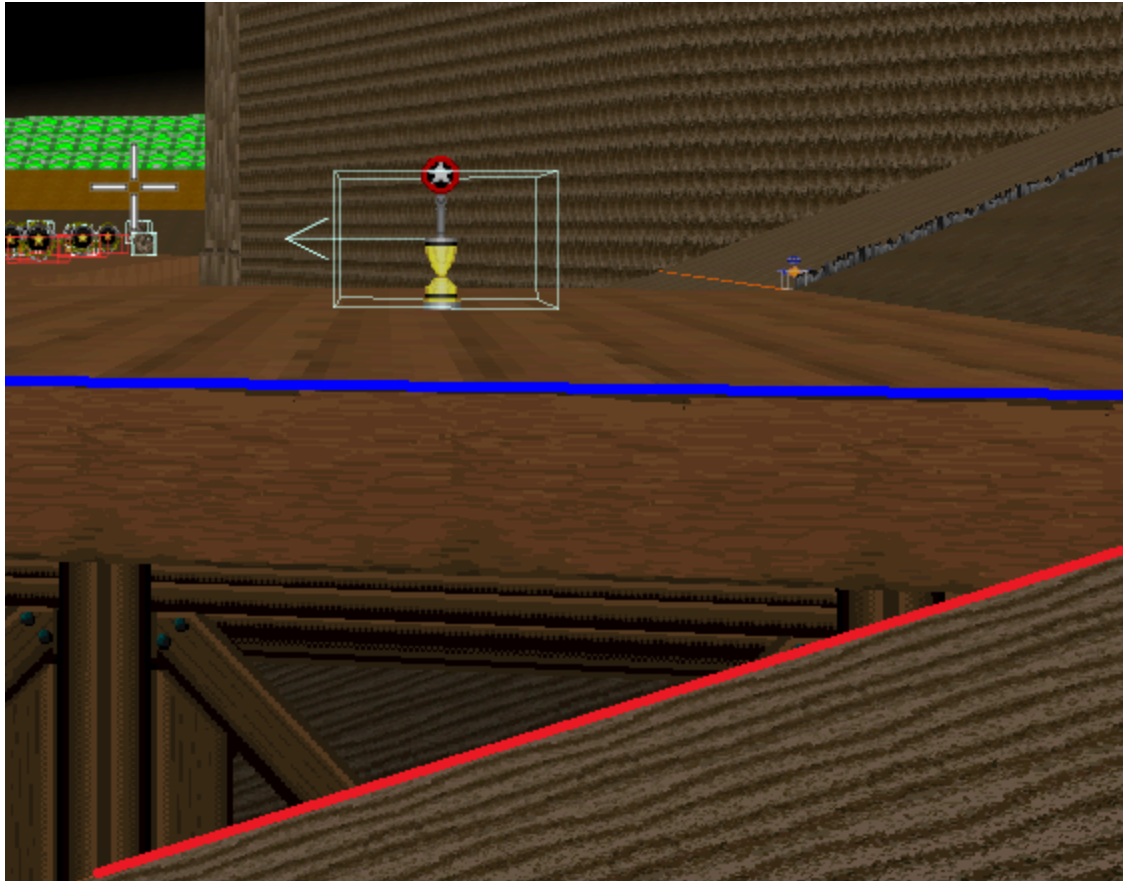
Here are the checkpoint locations:



Remember that the finish line counts as checkpoint 0.

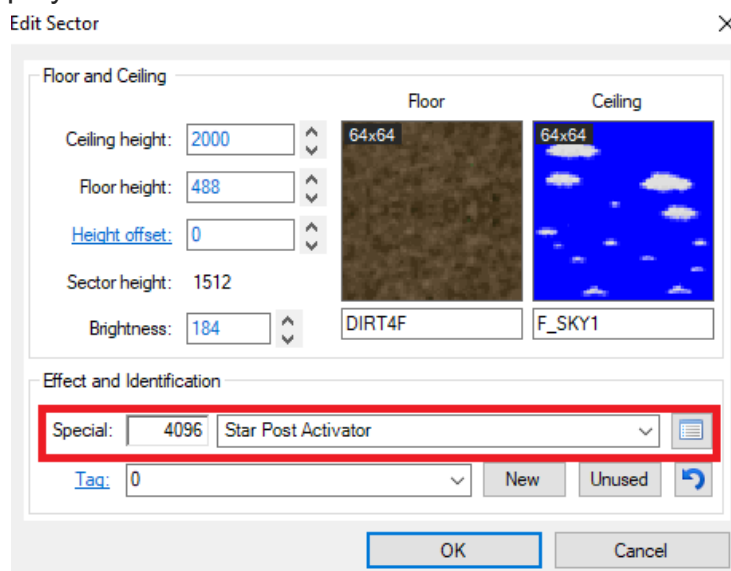
You'll need a checkpoint for every sector nearby to ensure that the player can't miss it:



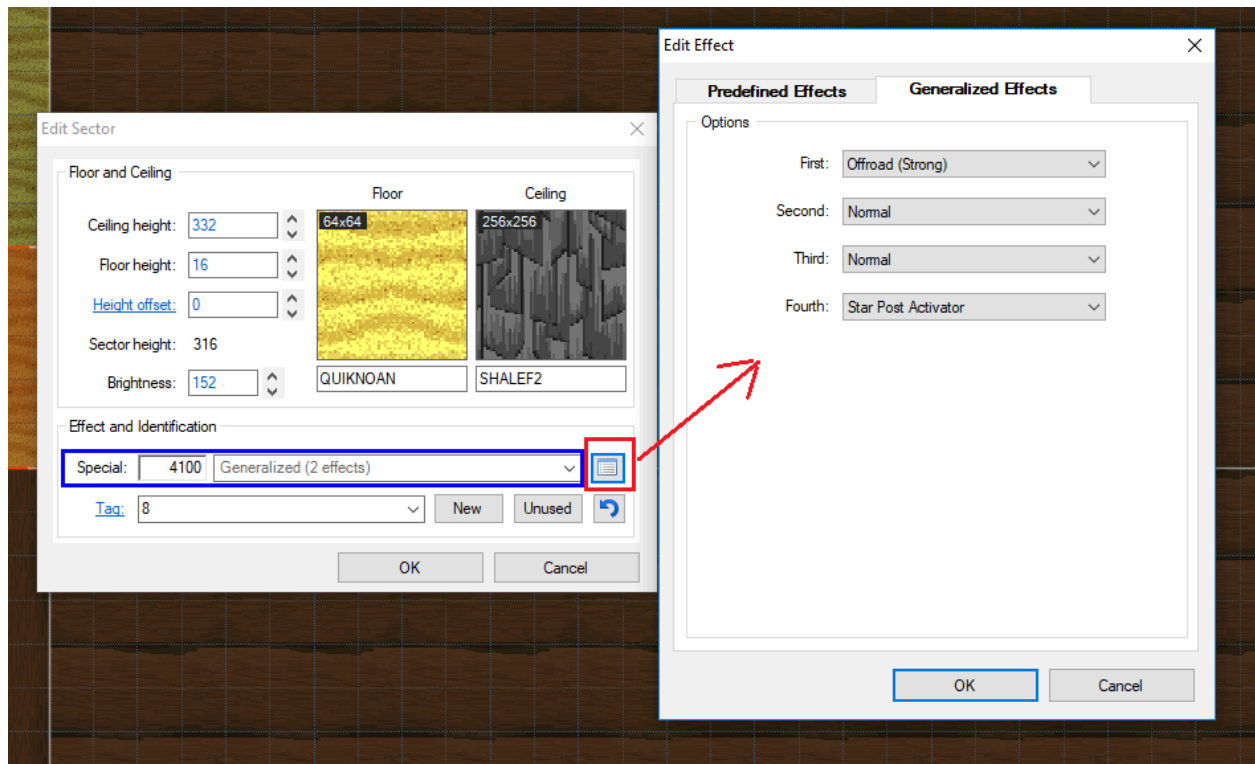


(In red is the normal sector floor (sloped obviously). In blue is the fof ceiling above it. Things don't spawn on top of fofs by default, so you need to manually set their Z-Height to match the fof to spawn in the right location.)

Tag Sectors with this special to make the checkpoint search the entire sector for a player:



What if your checkpoint is in off road? Or that sector has multiple effects? Just add the values together:



(Clicking the box highlighted in red will show you the effects you added in more detail)

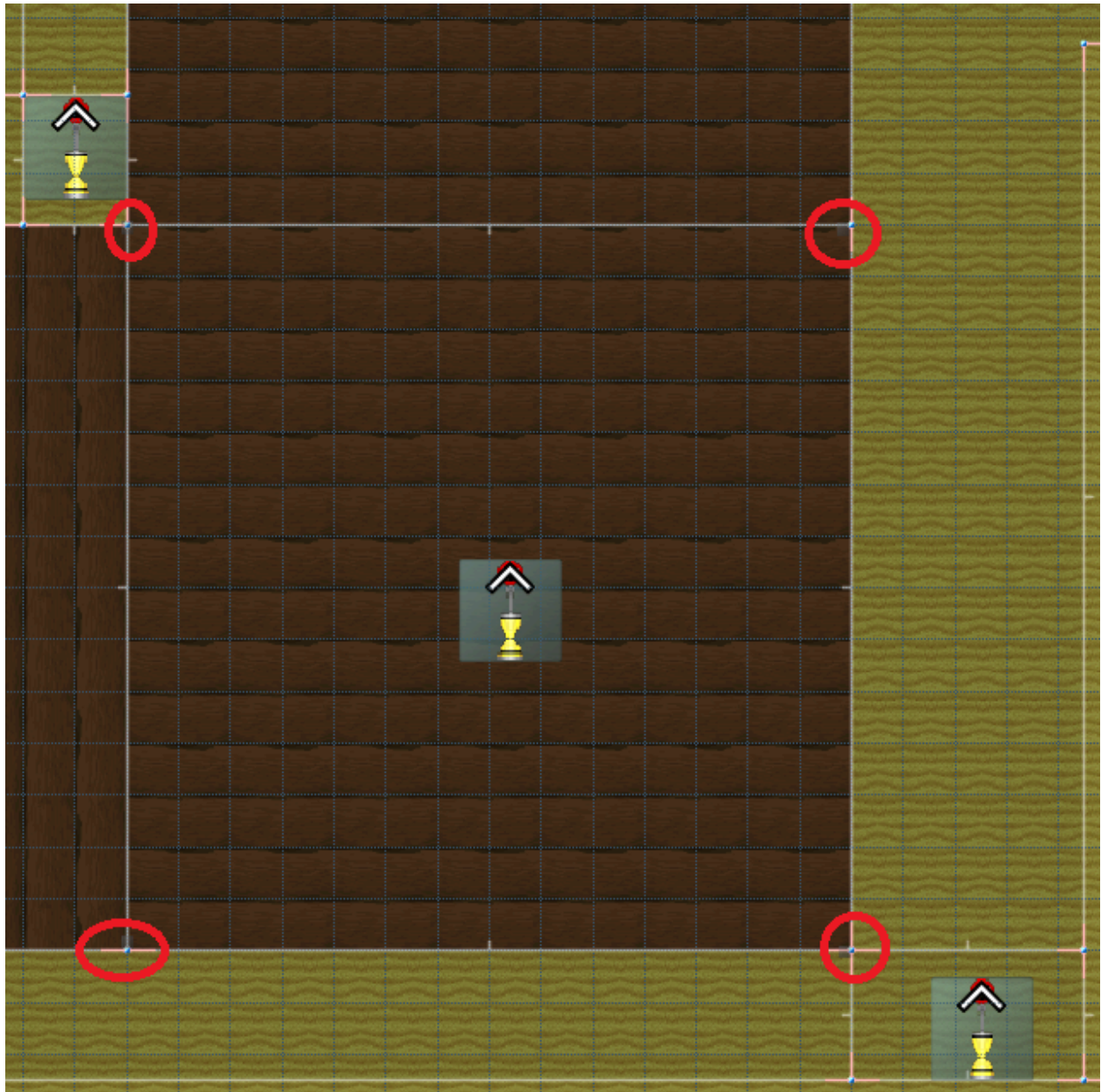
Boss Waypoints

- Determine the dynamic placing during a race
- Help determine the items given to the player

Setup:

(Here's how I do it)

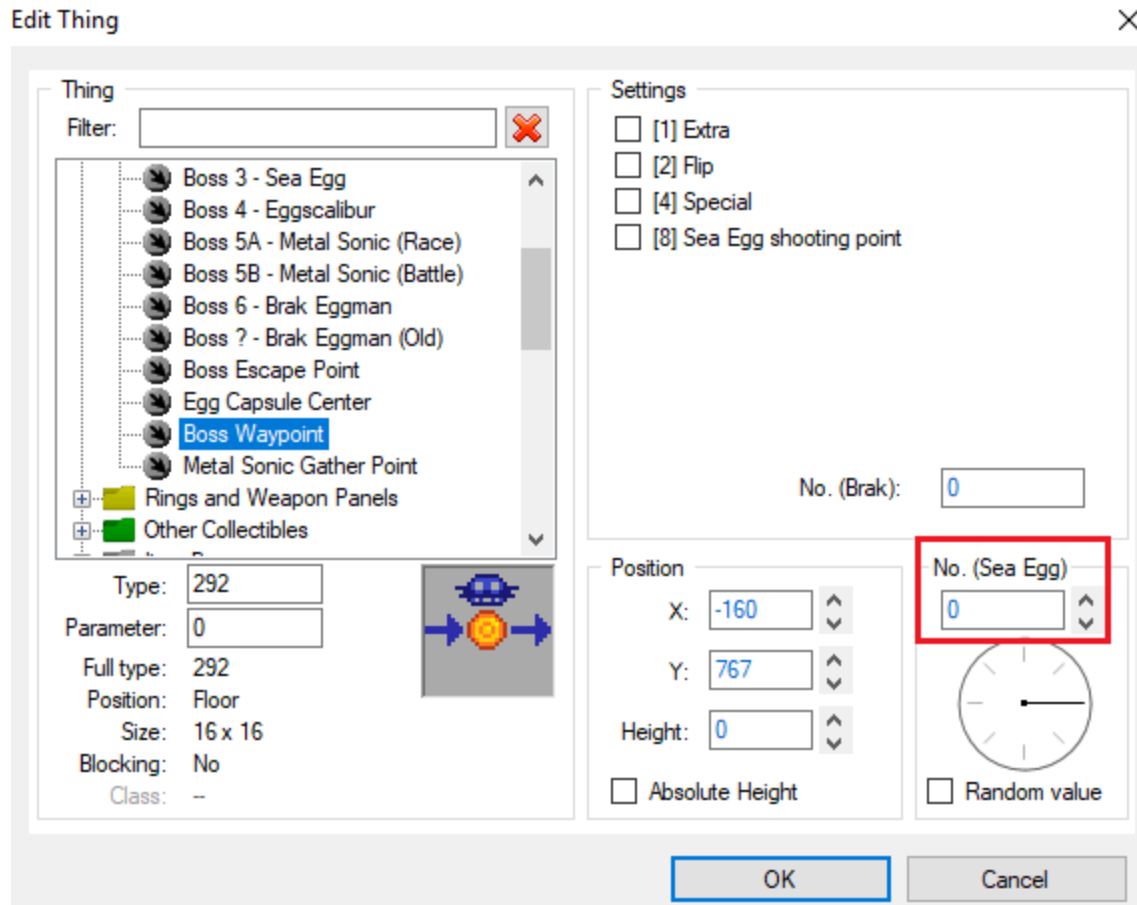
Find the vertices of the on-road sector that contains the checkpoint and place a boss waypoint on each one (4 is the number I typically go for, you can add more, but you don't have to waste time adding 50 to a curved linedef or something):



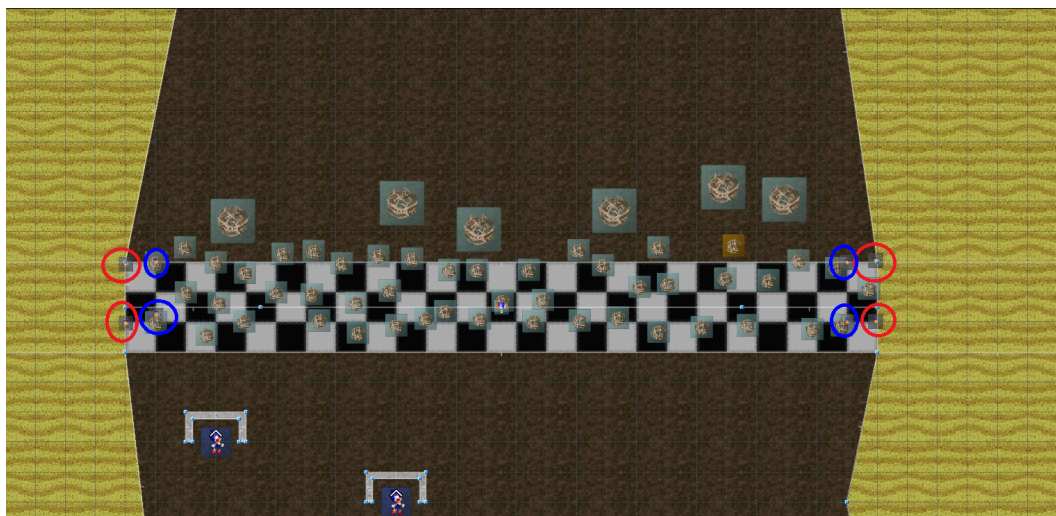
Note: Zonebuilder makes them really small :V



The Boss Waypoint's angle determines the order. These **ARE NOT** 0-360 like checkpoints. 0 is the first Waypoint, 1 is the 2nd, 2 is the 3rd, etc:



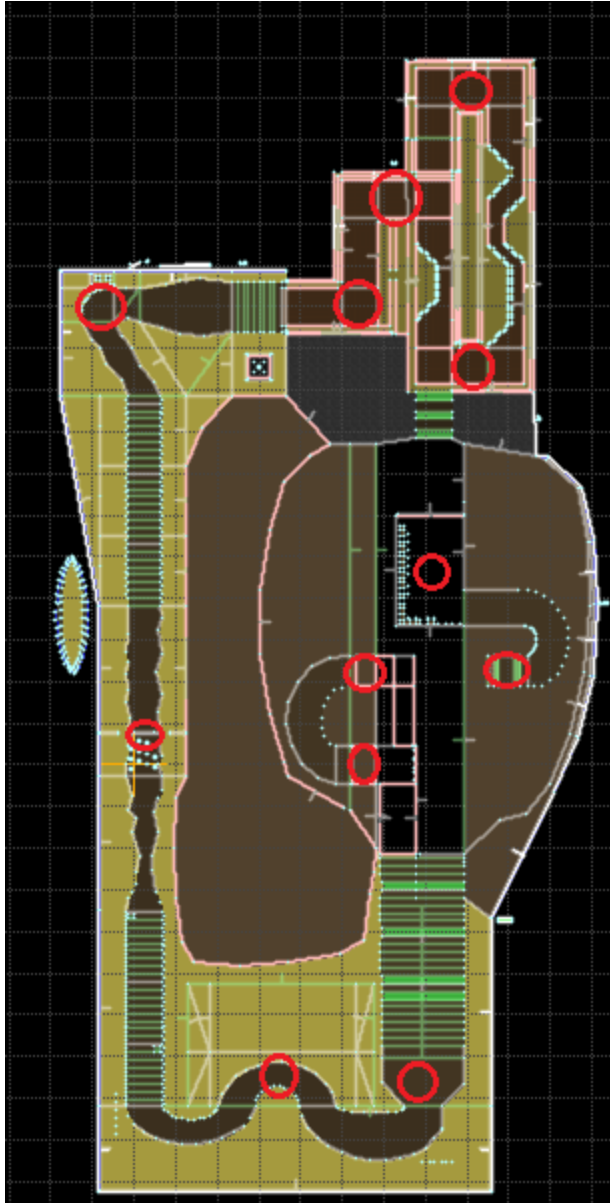
The Finish Line needs two sets, the first waypoints (in Red) and the last waypoints (in blue)



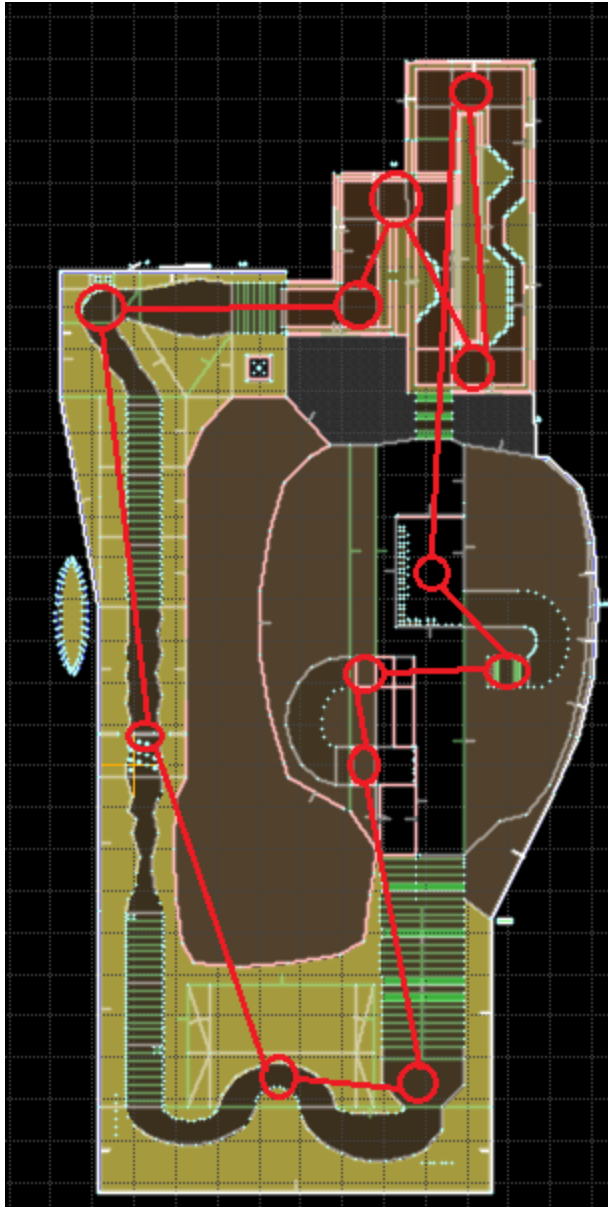
Checkpoint Placement Tips:

You generally want checkpoints to divide turns so that you will always travel **in one direction from checkpoint to checkpoint**.

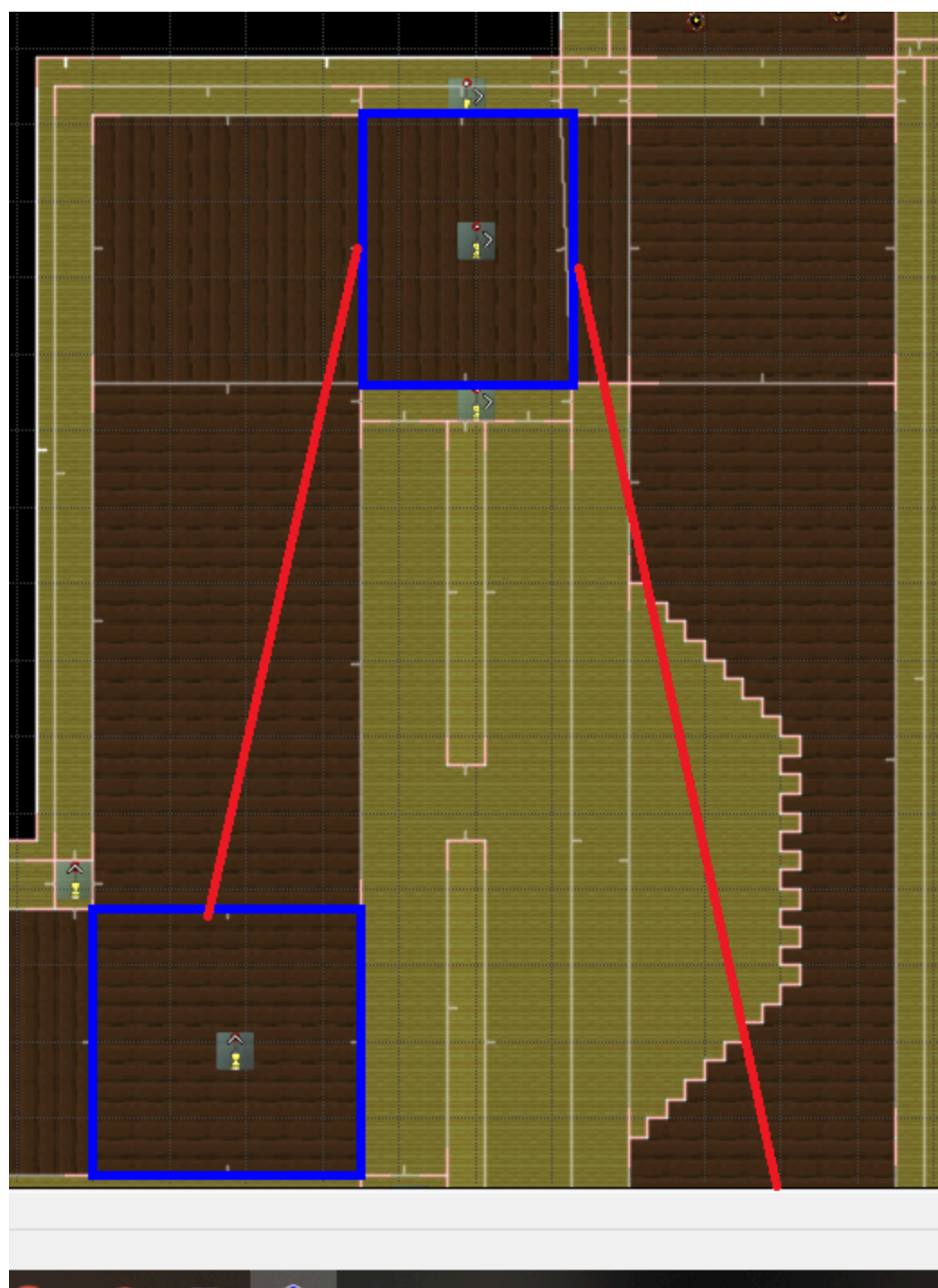
Let's look at Sand Valley's Checkpoints again:



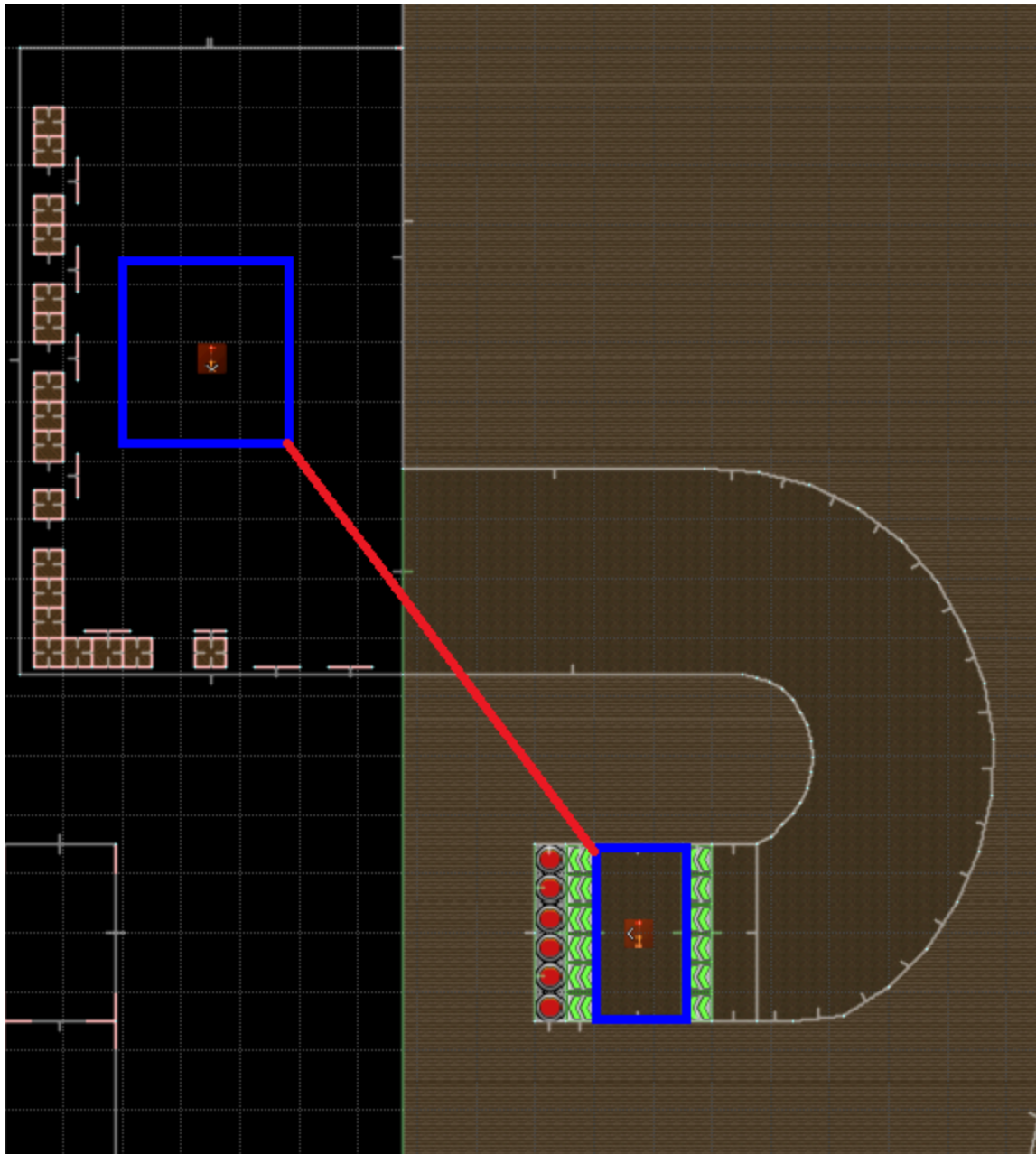
Now, let's draw straight lines from each checkpoint and connect the dots:



For the most part here, everything checks out as good! That area in the cave has a checkpoint that breaks up your turn so that you **never drive away from your next checkpoint**:



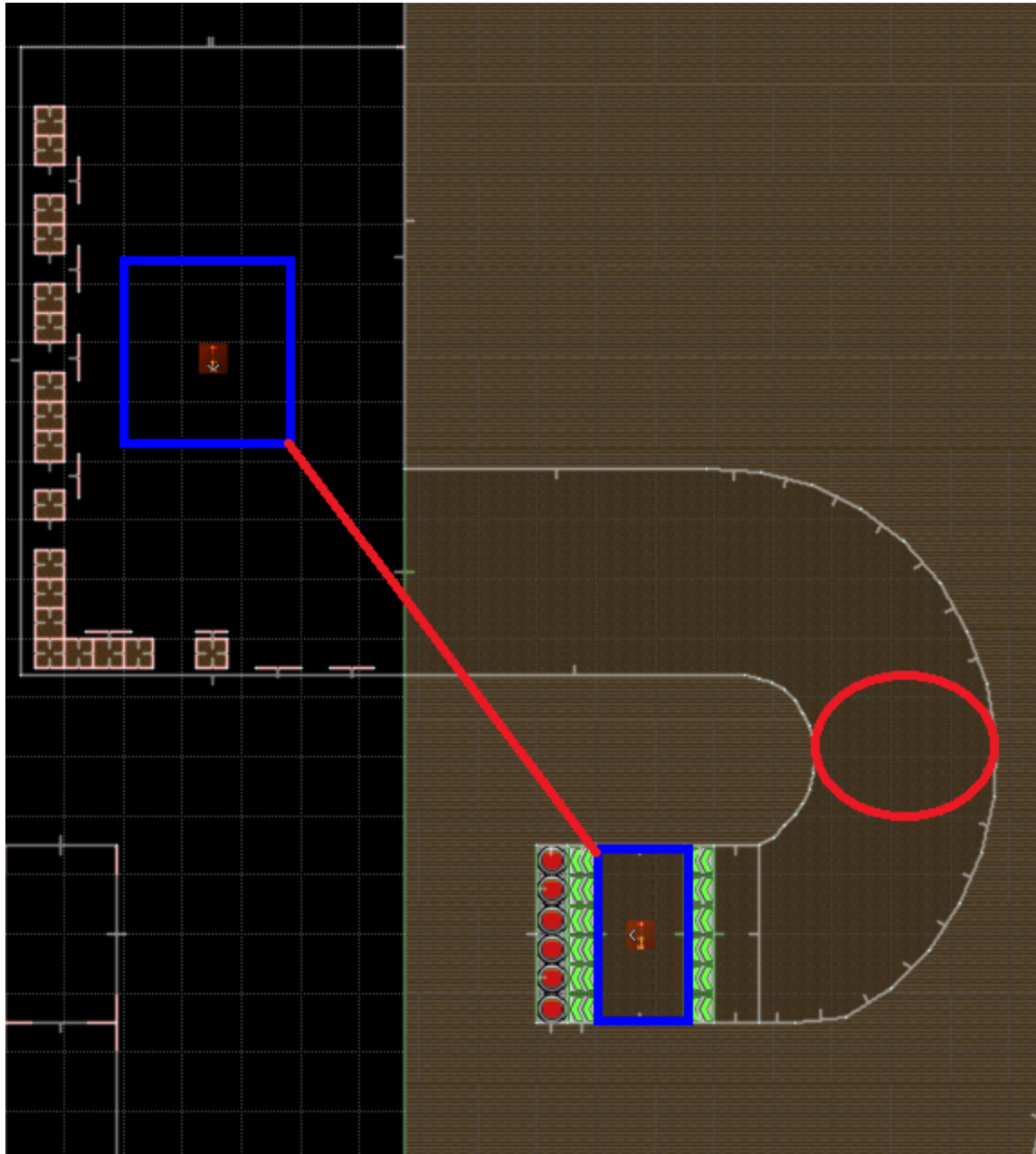
However, and this is probably me being lazy here:



This is actually poor placement. Notice how the turn forces you to drive **away** from the checkpoint, then turn around and come back to it? This causes a few things to happen:

- Players neck and neck to each other will have their positions rapidly swap between them.
- This can cause Self-Propelled Bomb to attack the wrong target (*like you!*)
- Jaws will rapidly swap between targets(*which could also be you!*)

Ideally, you would want a checkpoint **here** as well:



Adding another checkpoint here would prevent players from moving **away** from their next target checkpoint.

Conclusion:

Always keep in mind the line you'll be going from one checkpoint to the next. They're tedious, but the end result is a fun and enjoyable course, so it's worth the effort!