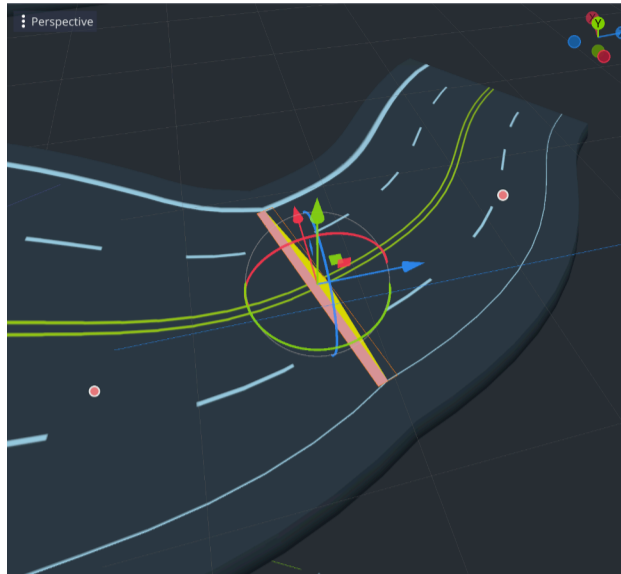# Road Generator
Widget Mockup

Notes

This document is written to plan for the UI interactions of the primary road widget. The goal is to make it easy and intuitive to make subtle changes to your road design.

The actions we want to support via widgets:

Ease in/out magnitude: Already implemented, how much the road eases into the roadpoint itself. Each point can smoothly slide forward and backwards (Z axis) individually.

Lane divider position: Defines the line separating the forward vs reverse traffic lanes, ie the double yellow line. Can slide left and right (X axis), constrained to the number of lanes which exist already. This must be placed discreetly and thus must snap into place (jumping to the closest line between two lanes). This widget CAN be dragged all the way to the left or right side, which is the same as creating a one-way street.

Add/subtract lanes: Control points on the outside edges of the road which can slide left and right (X axis) to add or subtract new lanes. These are also to be placed discreetly and thus must snap into place. Care must be made so that this widget doesn't conflict or overlap with the lane divider widget when in its furtherest left/right position.

As for how these widgets will function: Most users will likely want to work "macroscopically" and then later on the details. This means that by default, some road interactions should be global for the entire chained link of a road (ie between intersections, once those exist). The number of lanes and the lane divider should be global to the entire lane, unless a modifier key is pressed. However the ease in/out magnitude should always be local to the specific road point selected.
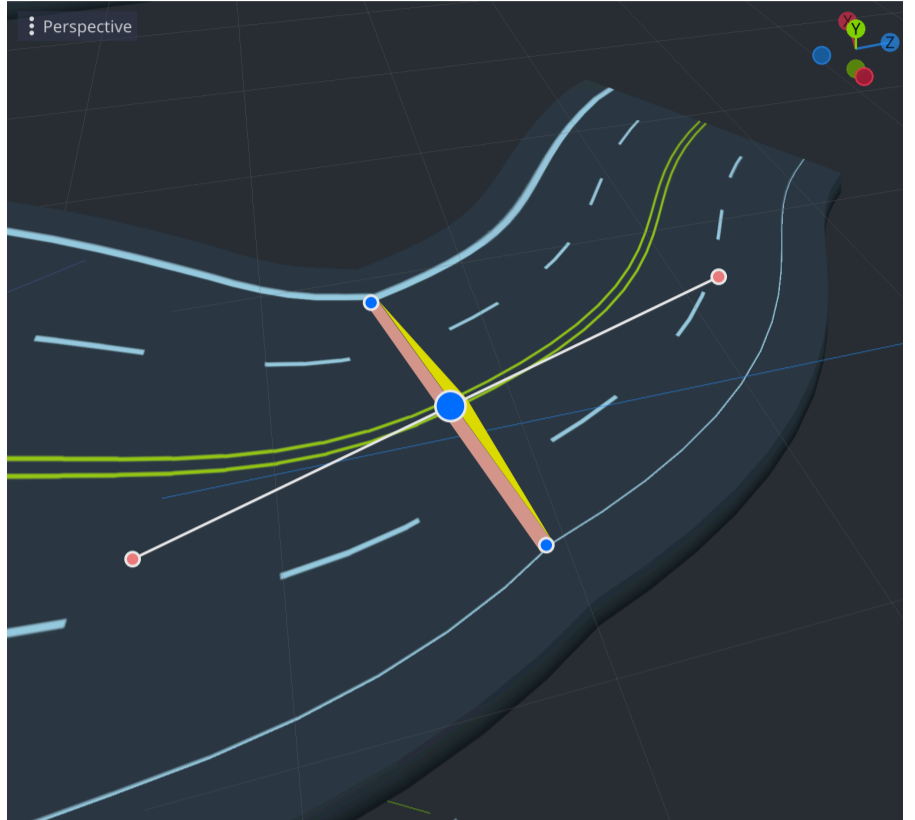
Road Generator
## Widget Mockup

Current Implementation
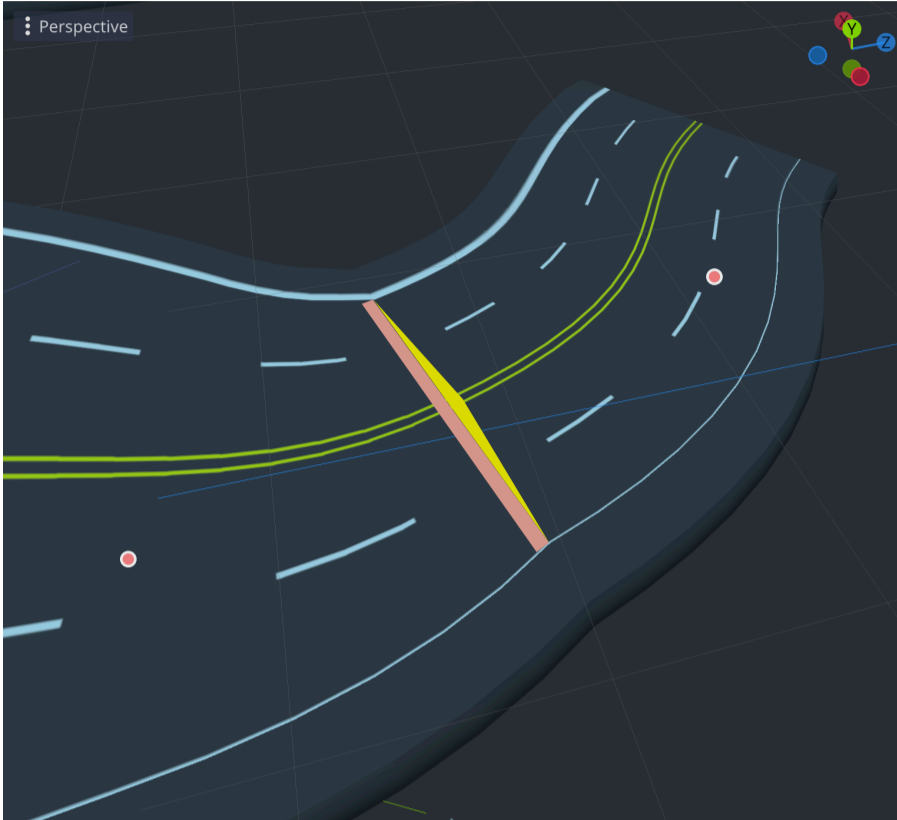
This represents the current state, as-is interactive widget. Only a visual indicator of where the road point is, and the ability to drag the magnitude handlers.
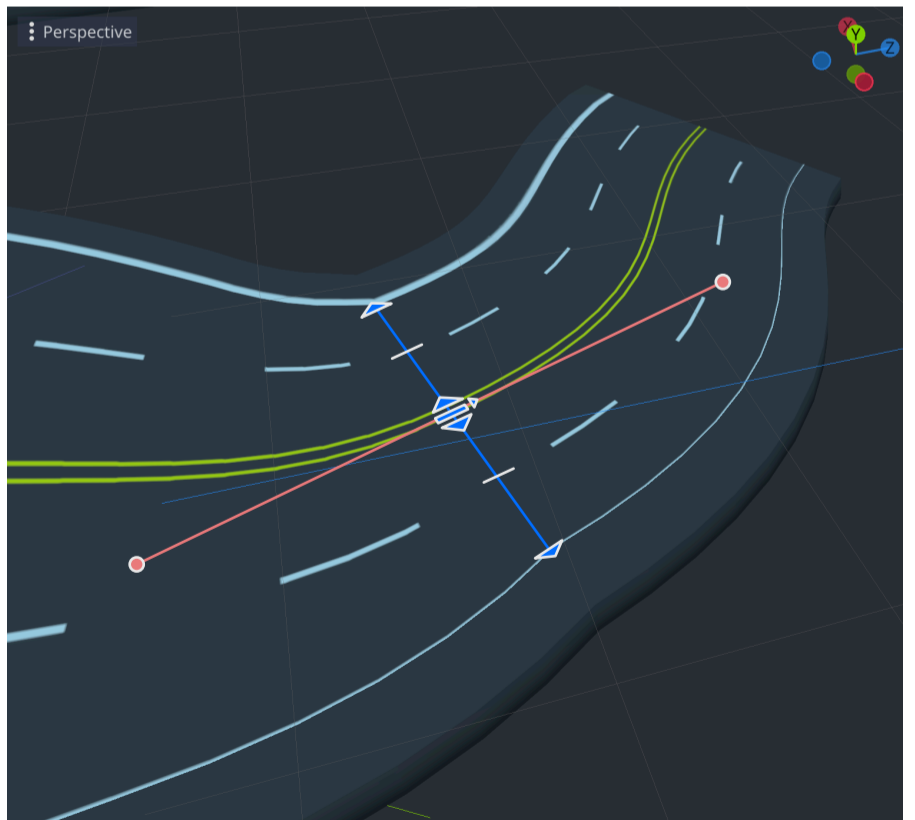
Only Circle widgets

Same as the current state, but we add an extra instant geometry draw to create a subtle line from the two magnitude handlers, and we add 3 control widgets colored blue. The middle controller sets where the yellow divider is and can be dragged left/right. The outside two are used to add/sub lanes.

Circles with dashes, + subtle arrow
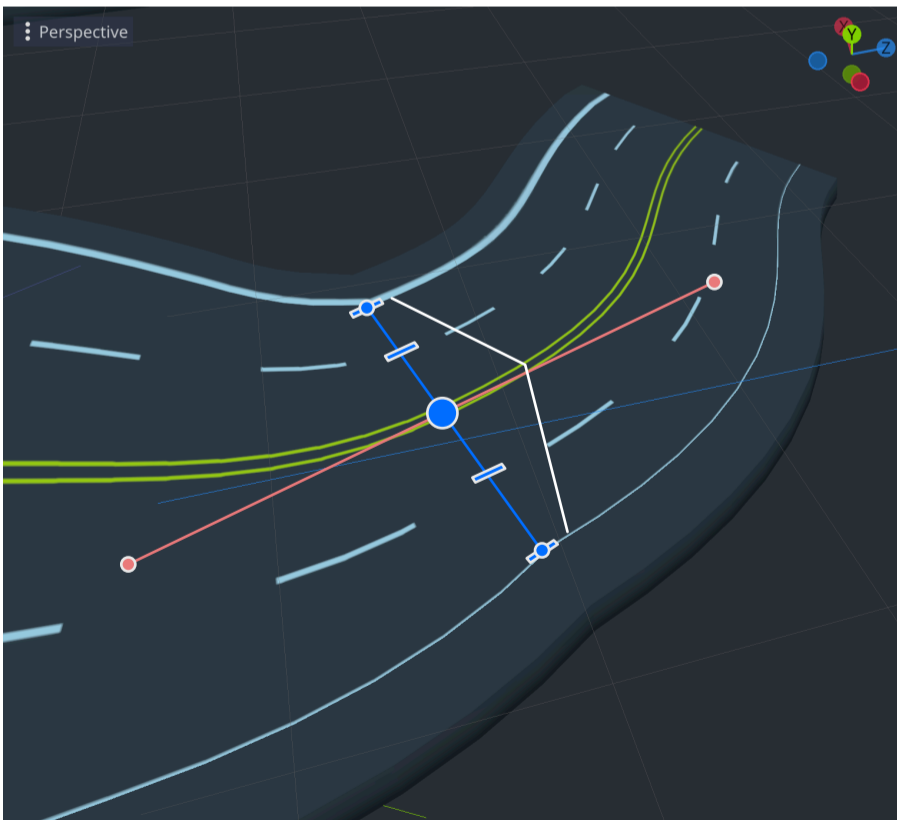
Here we assume we can only have the circle widget handles, but that we can still at least do our own instant geometry drawing to help accentuate them. In this case, extra drawing is used to draw a simpler, subtle, but more useful layout of the lane widths and lane separations (very useful if you have a multi lane, untextured road), as well as visually connecting the points of the magnitude handlers. There is also a subtle line outline arrow to indicate the direction of the road point, as to which way is "forward".
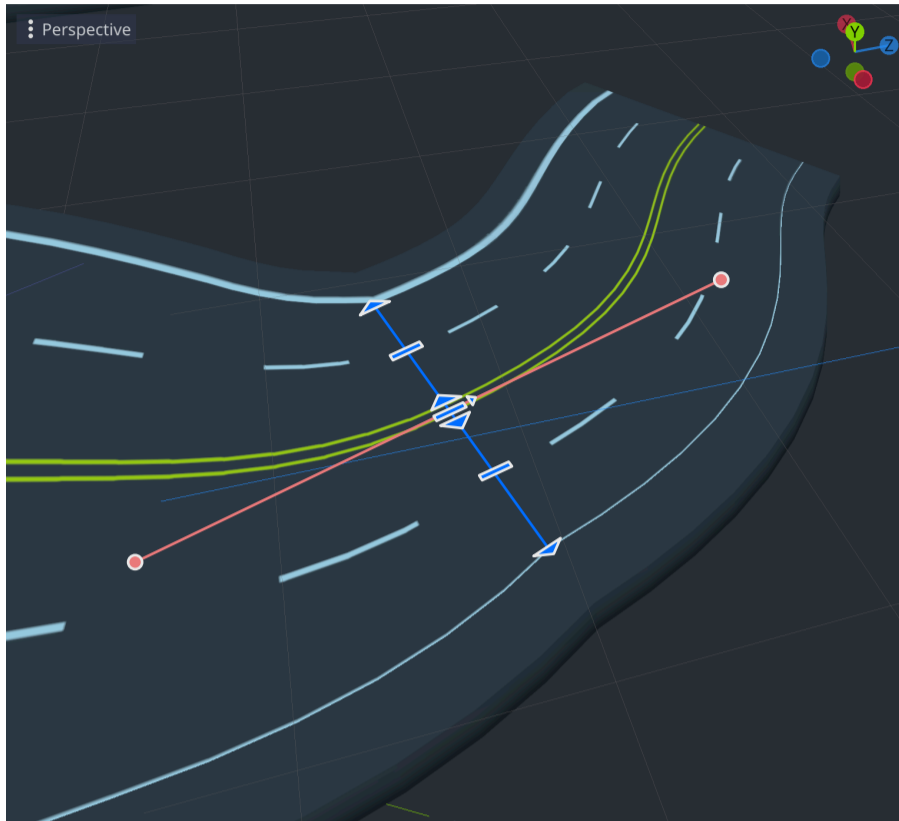
Full custom handle shapes

Here, the blue filled in areas and the red circles are all directly selectable and draggable widgets. The lane line indicators between the edges of the road are just visual aides.

Road Generator
## Widget Mockup

Initial position

Consider this the initial starting state. The middle most widget is the divider controller, with a much more subtle triangle indicating the direction of "forward". The idea is that eventually, the user won't really need to pay attention to fwd vs rev, as it'll be abstracted, but is useful for us developers on the repo.

## Slide left lane out (add Rev. lane)
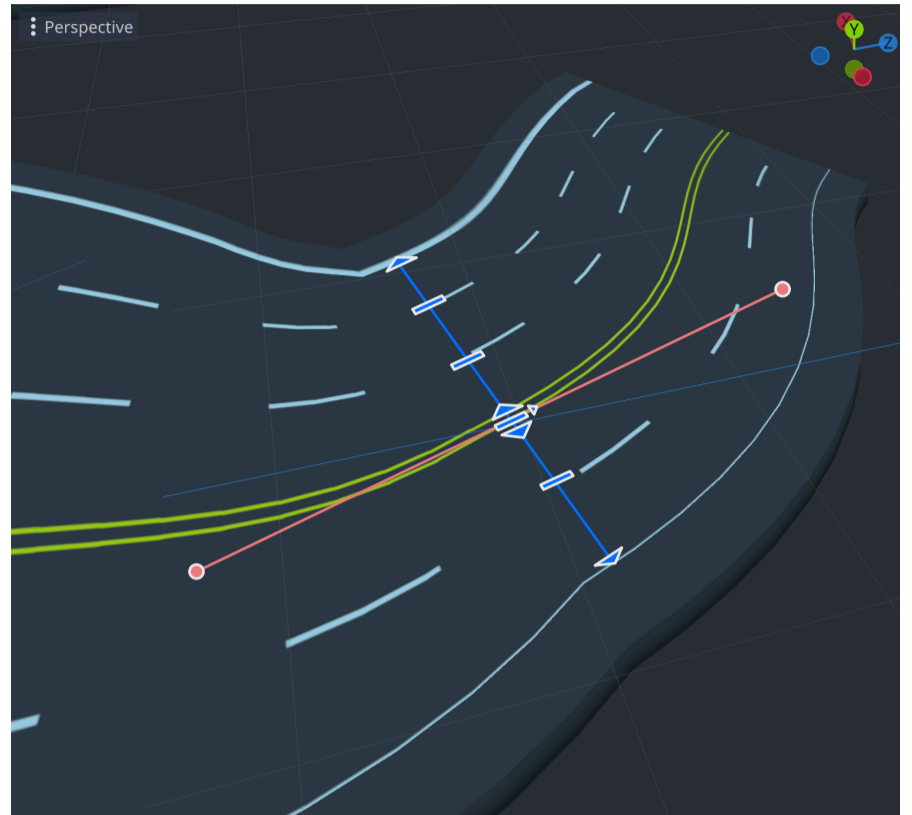
In this state, the user has clicked and dragged the top left outside blue triangle outwards, to thus create a new lane. As the user is dragging, the actual handle only moves in discrete jumps (or, it moves smoothly, but will snap to a discrete location on release). Some concerns how this will work if the road center aligns around overall geometry.

After sliding the divider (discreet)
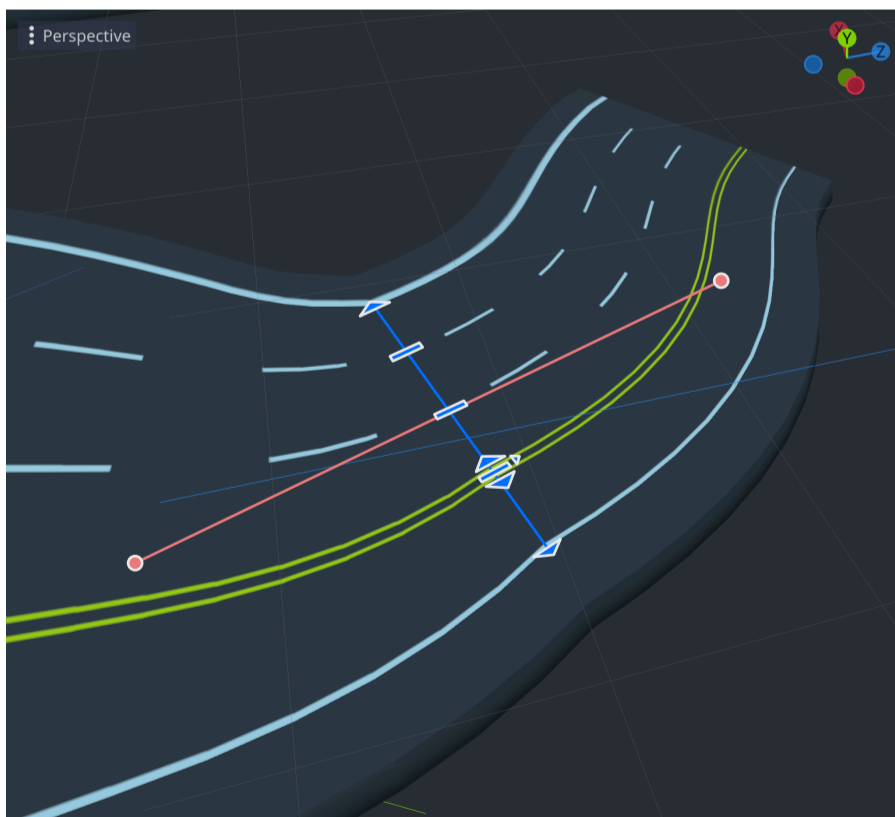
In this state, the central blue divider moved to the right, thus removing one forward lane, and adding one reverse lane. All lanes had to have their textures adjusted, though only one lane had any functional change (flipped forward to reverse).

Slid divider all the way to side
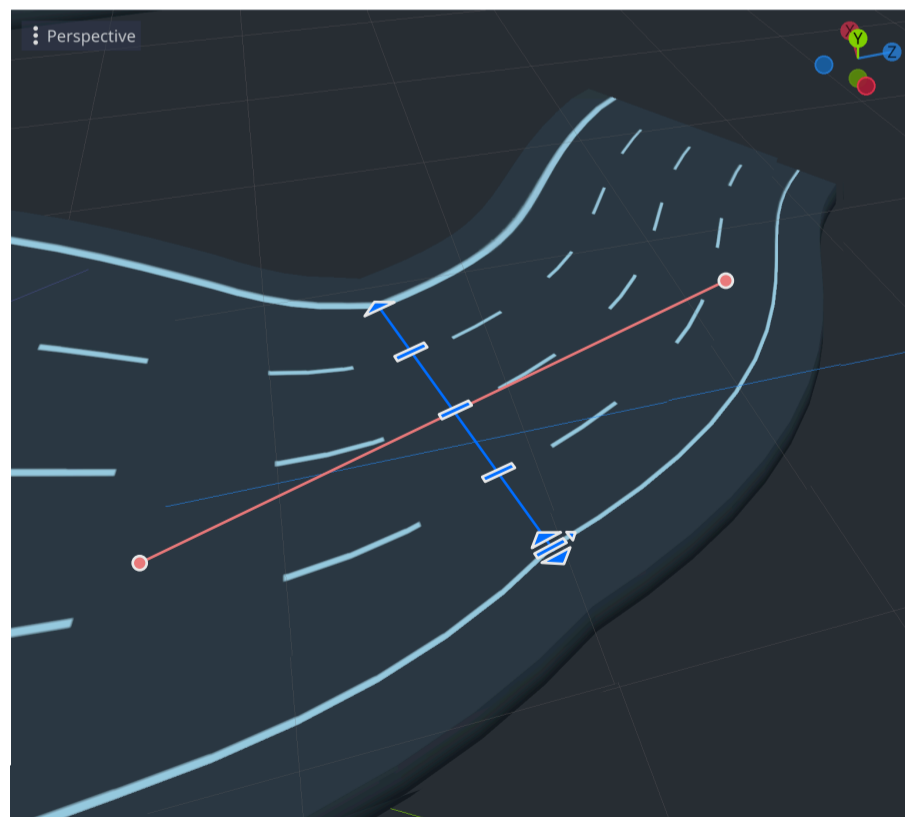
In this state, the central blue divider marker actually eclipses the "add forward" lane indicator, and all lanes are now "reverse", with the divider line being in the "inside".

If user drags the center aligner to the right further, it won't move. They can only add new lanes on the left side. The divider slider only changes which lanes are forward vs reverse lanes.