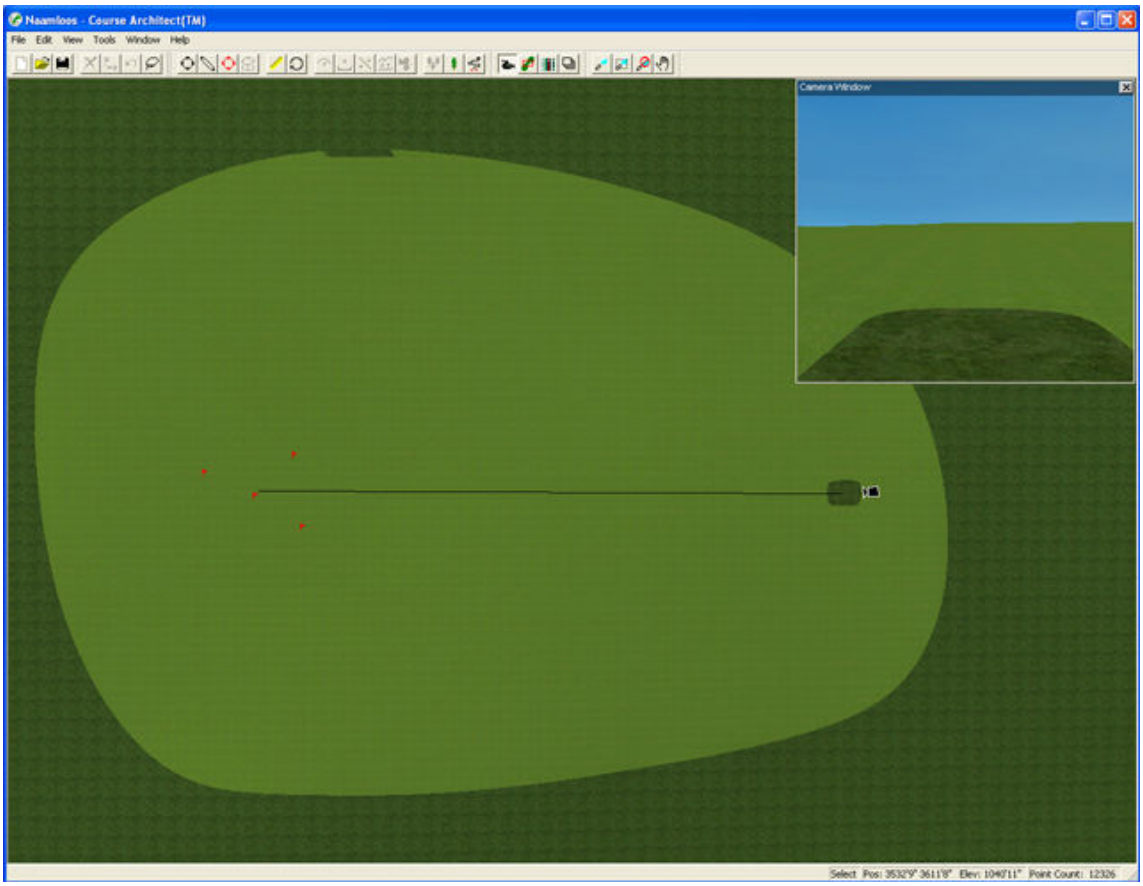
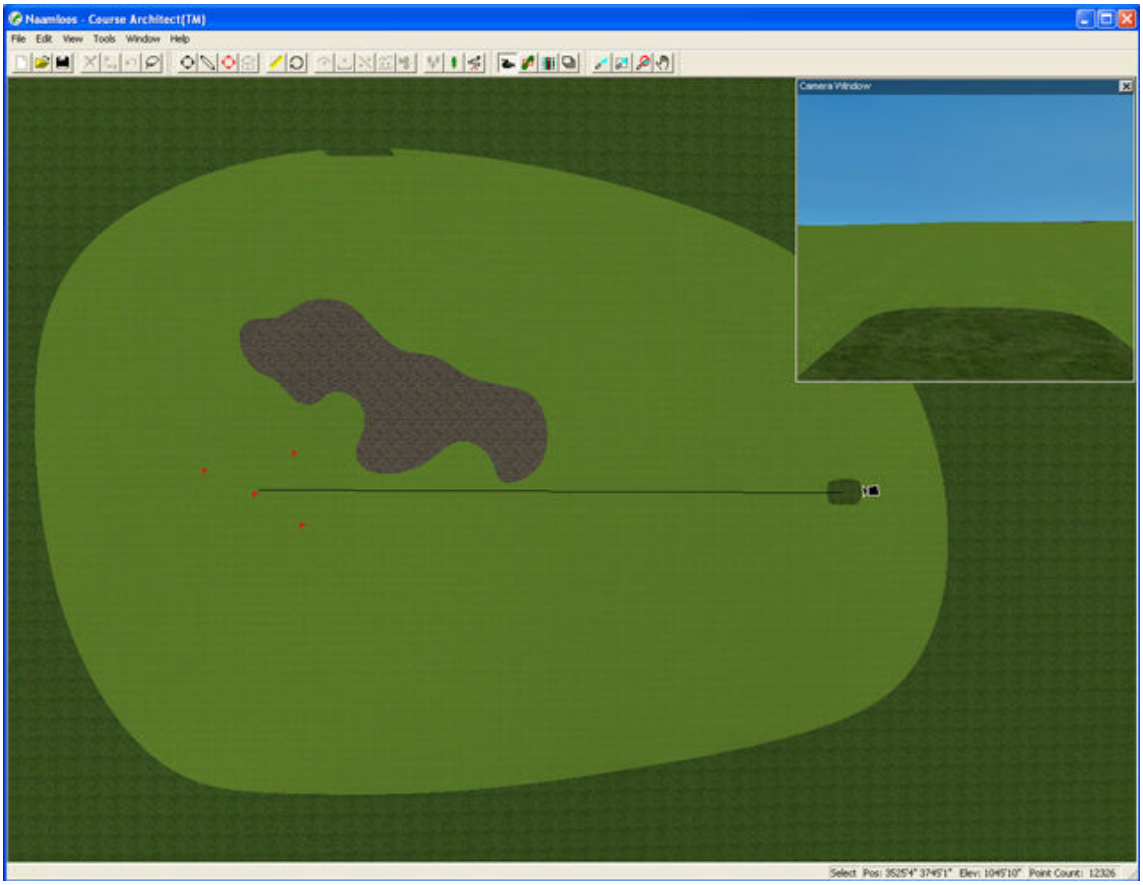
Basic Flat Water Tutorial

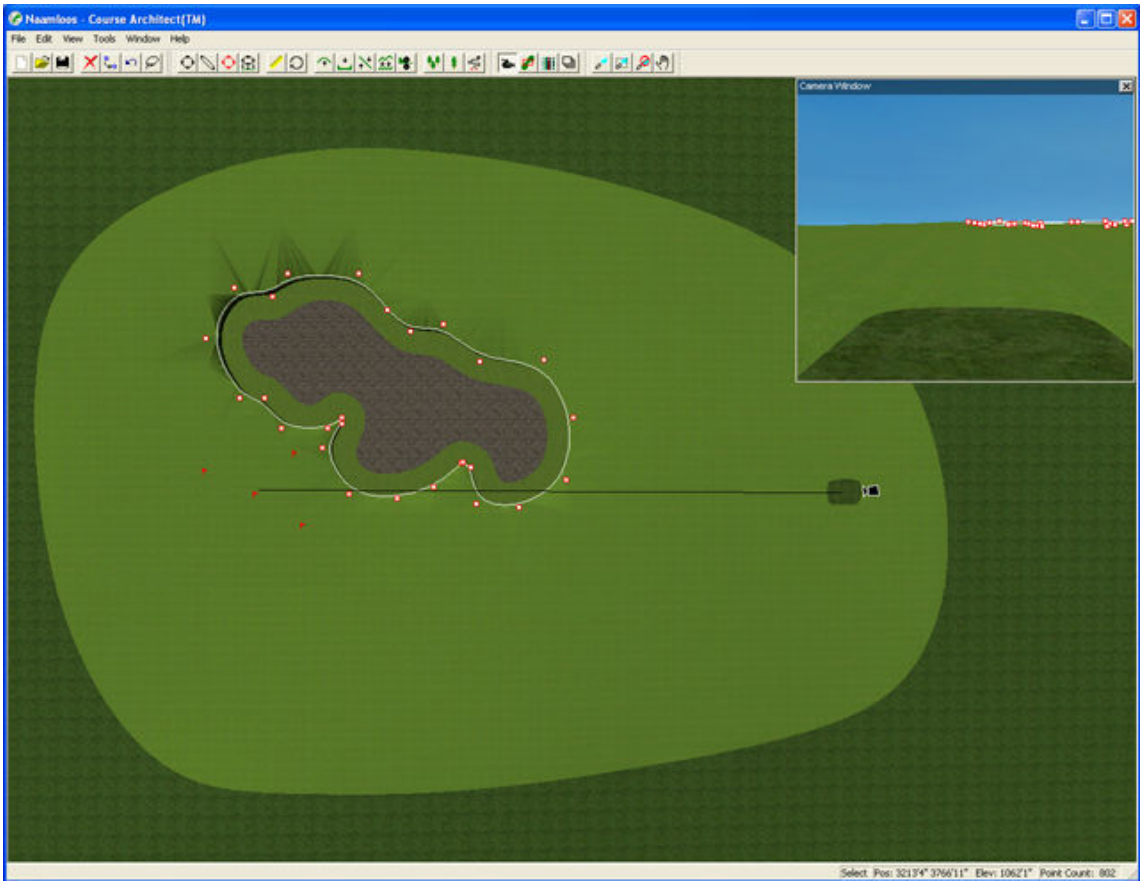
One thing many beginning course designers are obviously having problems with is to get water surfaces to turn out dead flat, as they are in real life. (I won't be drawn into discussions about the curvature of the earth or the way small streams run downhill. The first point is irrelevant for our purpose and the second is relatively easily achieved by first flattening your stream and then carefully raising it in sections.)
For this tutorial I'll pretend that I have just begun work on a new course that I want to start with a par 3 with a pond in front and to one side of the green. I have created a new plot set for 'small undulations'. The first thing I do (as always) is create a buffer shape for my flattening, elevating and smoothing to prevent points from 'bleeding' into the surrounding texture. I then put in my shot path and pin positions:



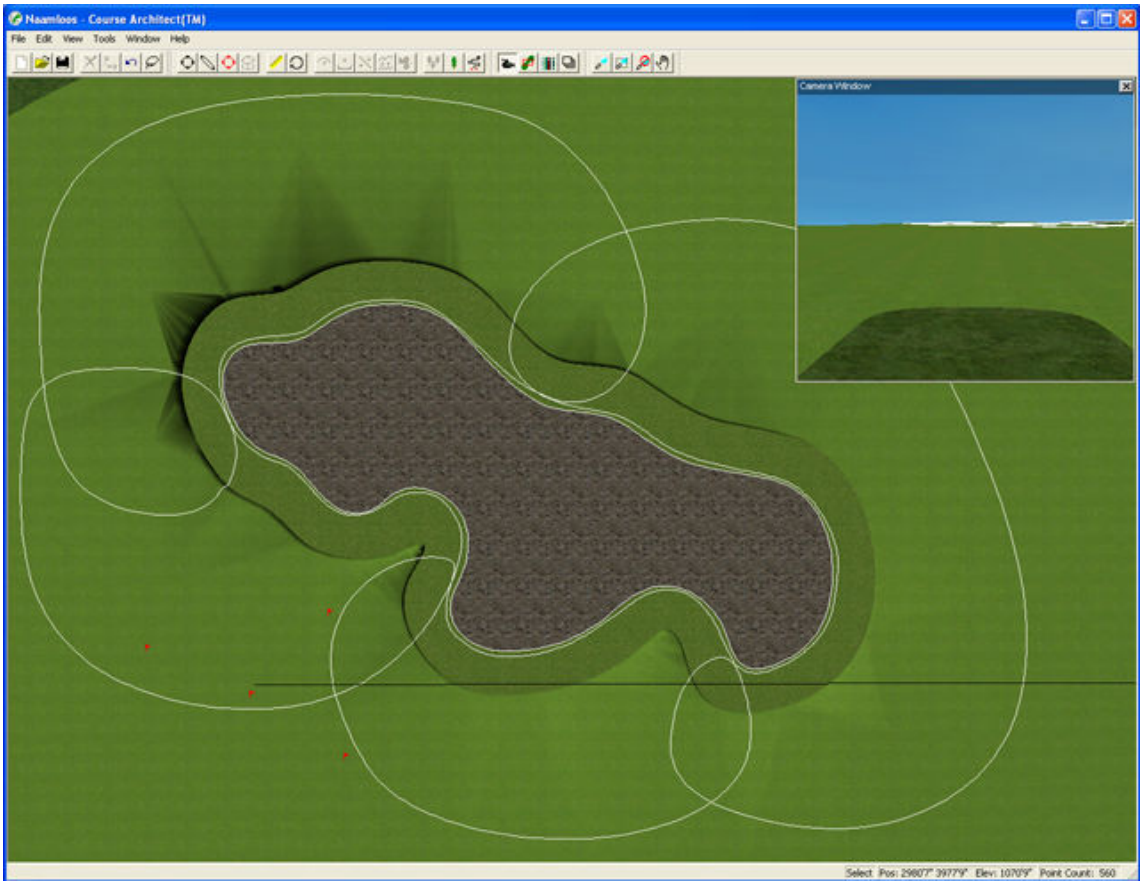
Now I draw the shape for my pond. It's a short par 3 (160 yds), but I still want some bail-out area so I'll draw my pond in such a way that it will only block one half of the green:



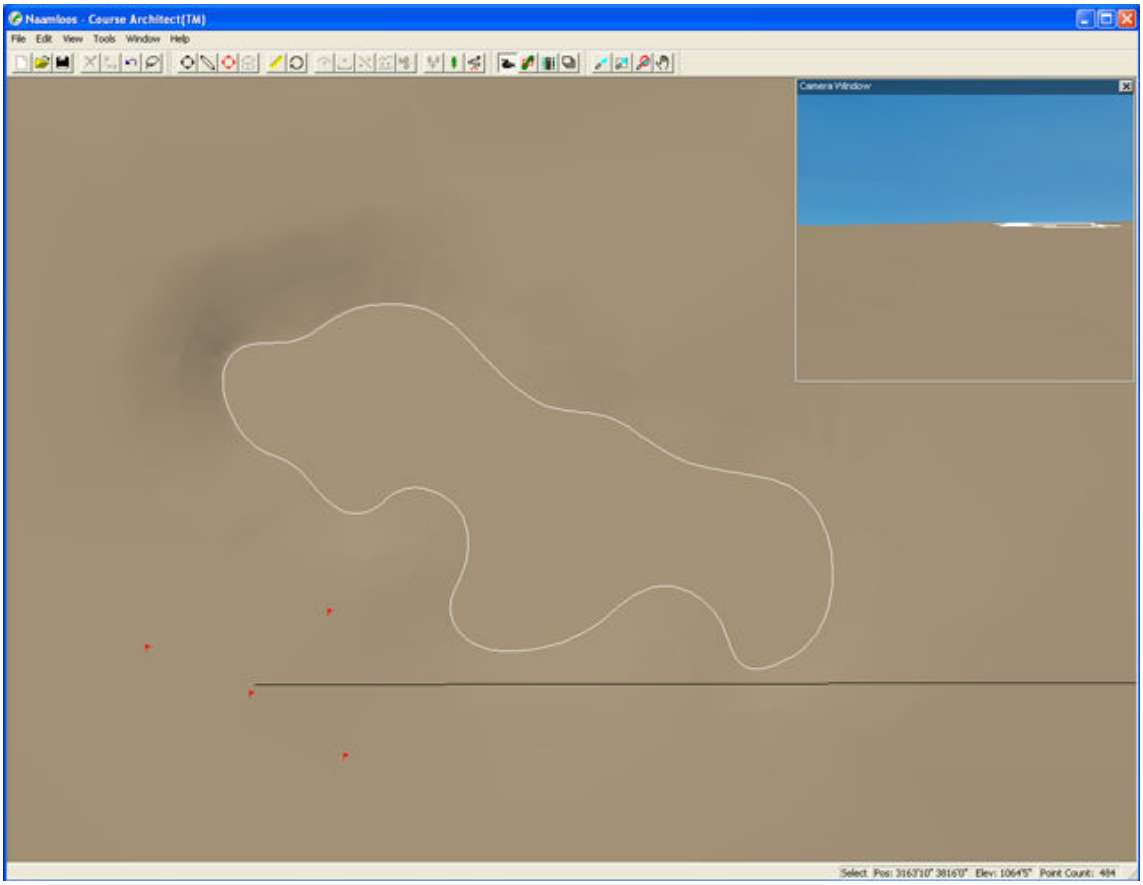
Next for another buffer shape. I use the pond shape, enlarge it by 6 yards (you may have to delete some points along your shape yo get it to drop; try and keep it as much paralel to your original shape as possible) and drop it. I then select that shape, enlarge it by 1’ and flatten to minimum:



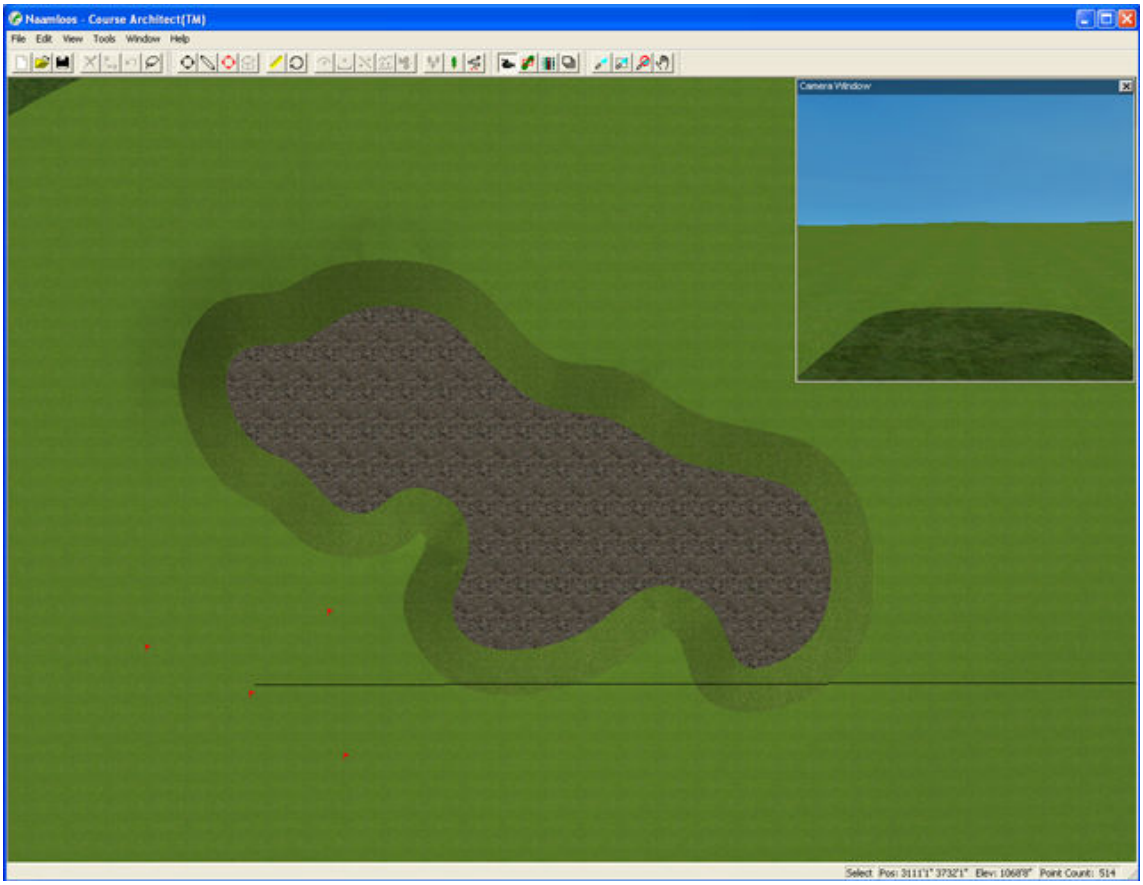
Delete the shape and optimize all textures in the buffer shape at the 3rd click. (I always optimize from the inside out, but I think that's optional.)
Now for the tricky bit. Select the pond shape. (This is just to give me a clear edge to work against.) Now I draw shapes around the pond as close to the edge as I can, including the creased areas that were created when I flattened the area:



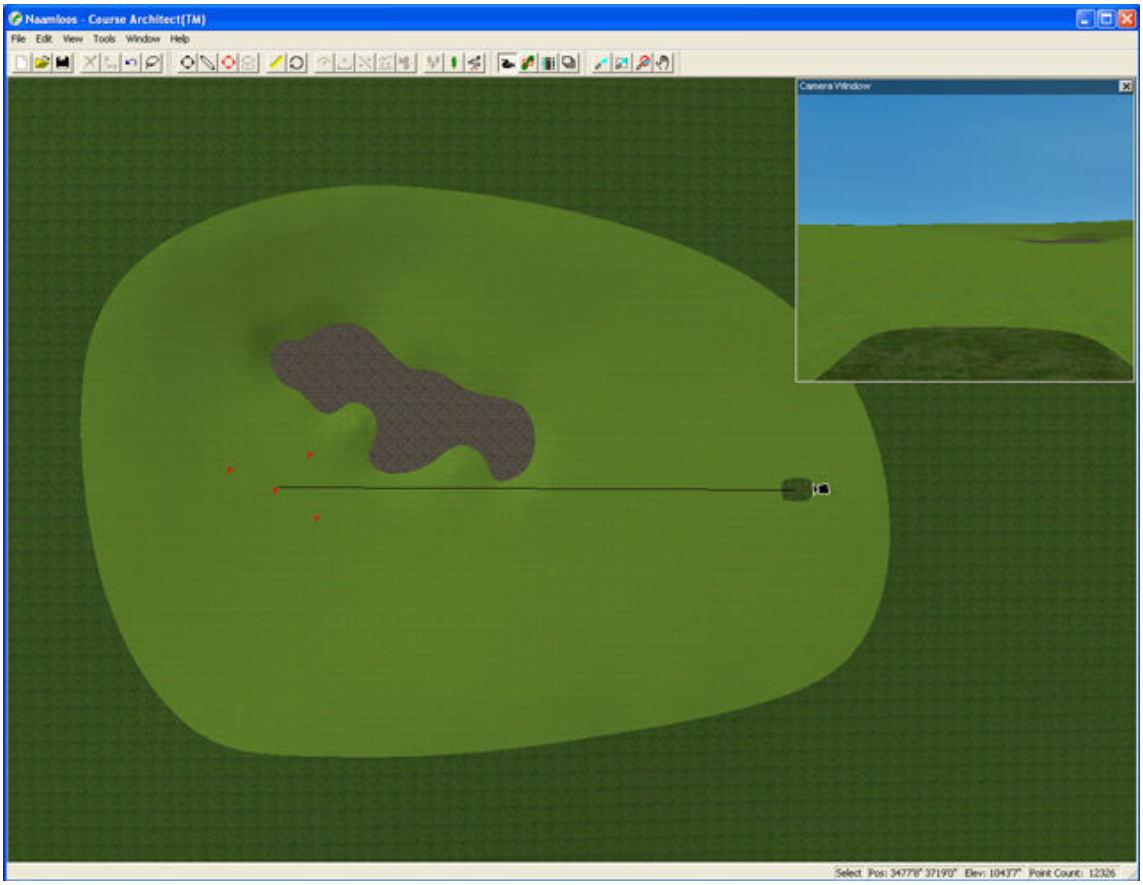
I select each shape I have just drawn in turn and smooth at the halfway setting until it al starts to blend nicely. As always, I do my smoothing the modeling clay (shift+M). After I'm satisfied (just 5 clicks required here), I'll optimize all shapes once more at the 3rd click.
(I can't stress enoug how important this optimizing is. If you don't optimize regularly, your design will encounter all kinds of problems. The CA being what it is, it probably still will, but they will be relatively minor.)
This is what it's supposed to look like:



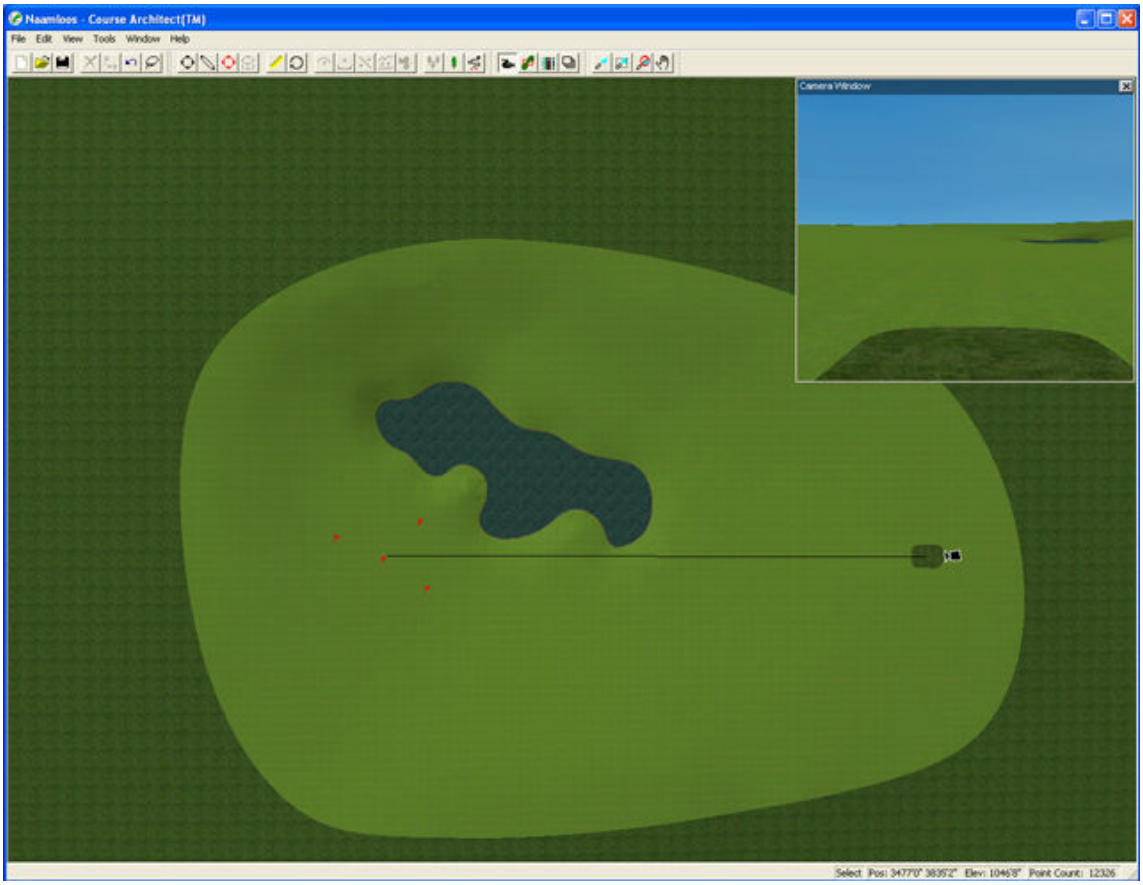
My pond area is now dead flat, with gentle slopes leading to its surface. There is of course one problem left: Although I flattened my pond to minimum, that was only within the defined area. In other words: The CA looked for the lowest point within the shape that I selected and made all points within the shape level with that point. It entirely possible, even probable, that points within playing distance of the water surface will actually be lower. For reasons of physics we can't have that. So the first thing that I do next is select both the pond shape and its immediate buffer and lower them by half the number of feet than the difference between the edges of the shapes in yards. In this case that is 6 yards, divided by 2, which gives me 3 feet. Thus I lower by 3 feet using the sloping tool. (Afterwards, don't forget to optimize. You can actually optimize the buffer shape immedately around your pond at the highest setting; this will remove most creasing, if any has occurred.)



Usint the measuring tool, I have noticed that my pond surface at this stage is still actually 11 feet higher than the level of my tee box. So I'll have to either lower my pond or raise my tee box. As the pond has to be not only lower than the tee box but beneath the level of the entire surrounding terrain, in this case the first option is the most obvious. So what I do now is select both my pond buffer and the surrounding buffer shape and lower by 15', using the 2 shape method. After deleting my pond buffer and optimizing the remaining buffer shape at the 3rd click, I am left with a nice gentle downward slope all around:



All that's left to do now is use my pond surface, which now has a dirt texture, deflate by 1' and drop as a pond texture. In case some smoothing has bled into the pond, I now select the pond shape, enlarge by 3" and flatten to minimum. I then select both the pond water shape and the 1' dirt lip surrounding it and lower by 0.5', using the 2 shape method. Optimize my dirt lip texture at maximum setting and all other textures at the 3rd click, run repair course and I'm done:



Now obviously this hole still needs a lot of work. There will be a pretty severe slope in the green area which will have to be rectified. I might want to add a bunker or two. The slope around the pond may need some light extra smoothing. For all this I will create new buffer shapes that will exclude the pond that I have just created. I won't touch the water anymore.

Of course everybody has their own way of going around the CA. Many believe that their first priority is in laying out their playing areas, like fairways, bunkers and greens. There are those who argue that water's unimportant as it isn't a playing area. Having just seen a Scandinavian player stripped to his shorts to get his ball out of one on tv, I'm not so sure. :-D

But I think there are objective arguments for laying out your water hazards first. Anyway, for me, at least, the visual distractions of water that isn't flat or properly placed are just too much to ignore. So from a visual point of view I hope this little tutorial can be of assistance to beginning designers. Either way, have fun.