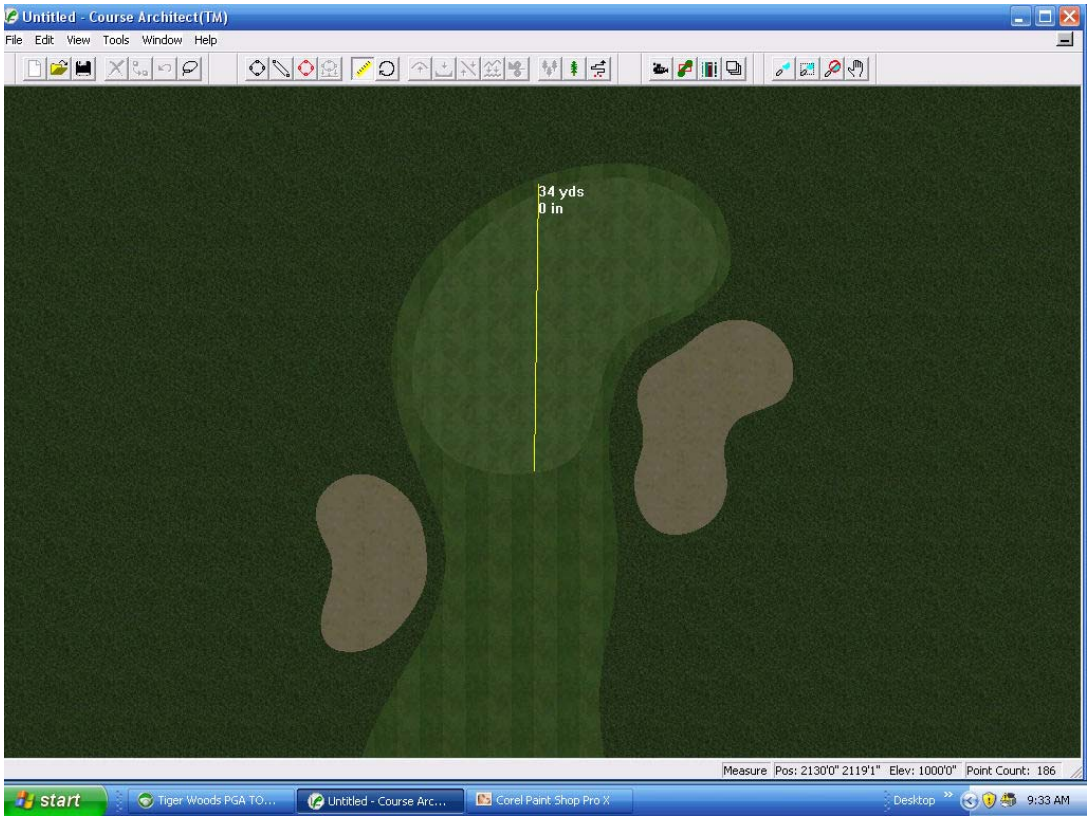
GREEN COMPLEX DESIGN
BY HOMEBOY

I get a lot of questions on my design techniques for my greens and bunkers, so I thought that I would put together a quick tutorial running through my design process. When I design a hole, I always work tee to green, but here I will focus only on the green complex. I know that everyone has their own style and techniques -- I'm not suggesting mine are the right way at all -- but this is what I do.

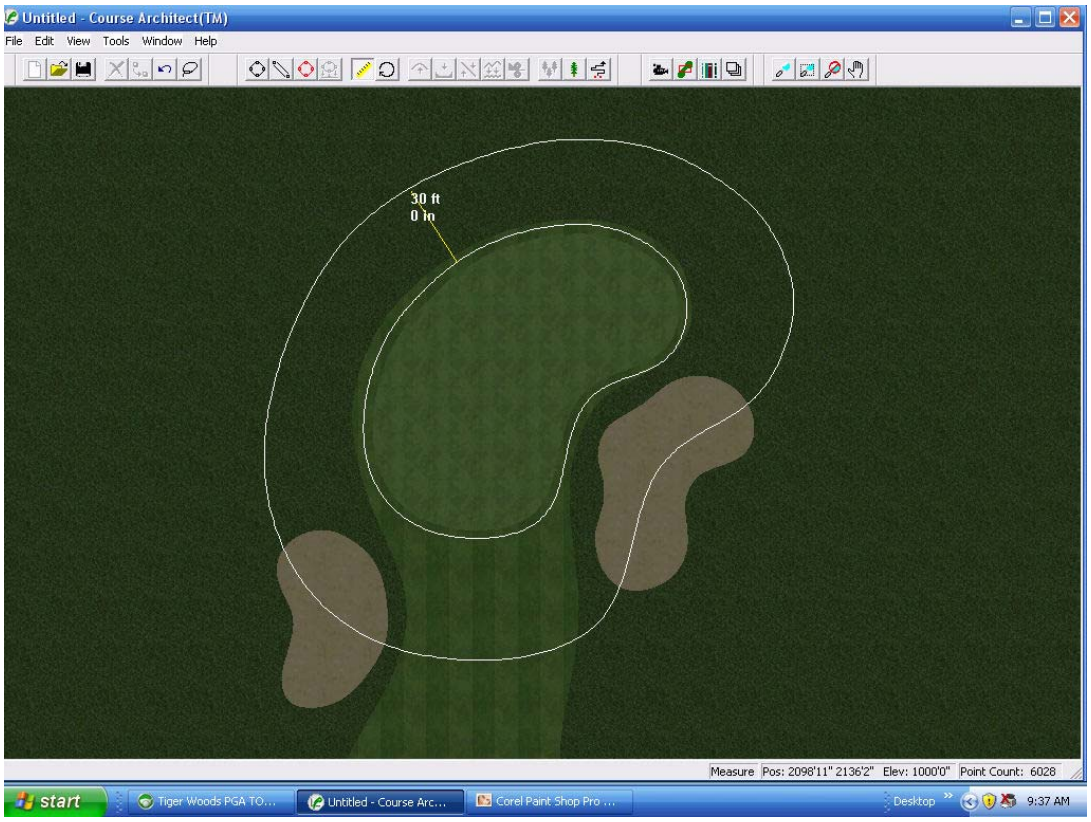
Here I am starting from a flat plot. The concept is the same when designing from a Terrain Assist plot except when I use a TA plot, I am always focusing on playability of the greens and checking to see if there are excessive slopes that would make a pin unplayable. I never want to manipulate the green by having to flatten or bunker down around pins, which tends to create creases or unnatural rolls. When I design a green, I always envision where I want the pin placements to be so that each pin is playable and fair. Of course, the other key is having a lot of testers try out the greens to be sure they are fair in all conditions.

For this hole, I have in mind a kidney-shaped green with two tiers and two bunkers protecting the front left and the right sides of the green.

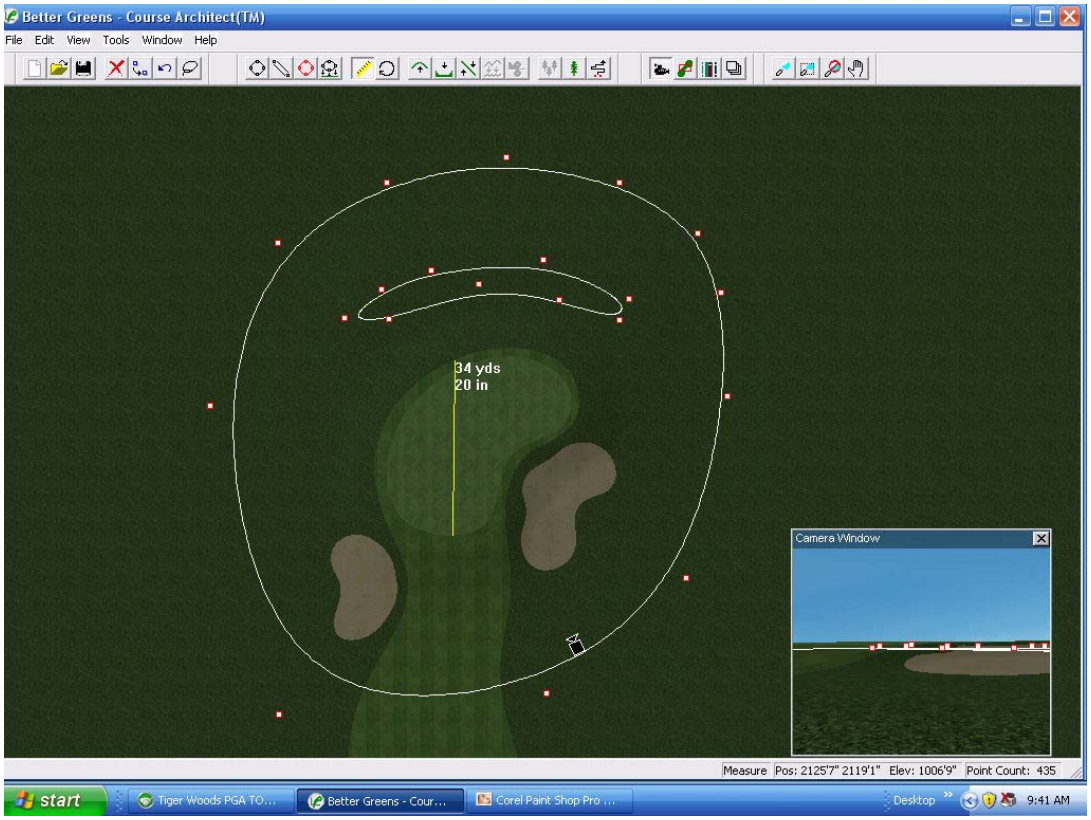
Here is the basic shape ... a green that is 34 yards deep.



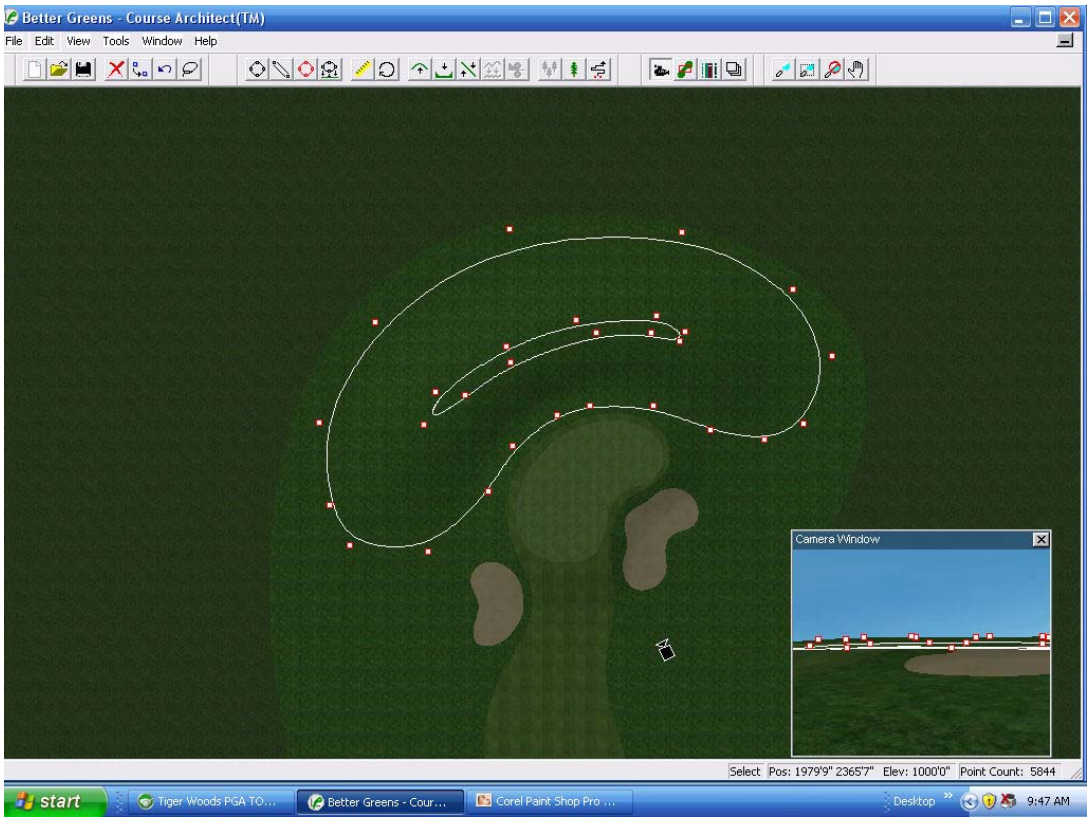
First I want to raise the green about 4 feet, so I use the green shape and increase it by about 3 feet and then add a second shape about 30 feet or so larger. I flare the shape out slightly at the bottom so that the elevation change is more subtle from fairway to green. Raise both 4 feet using the hill tool.



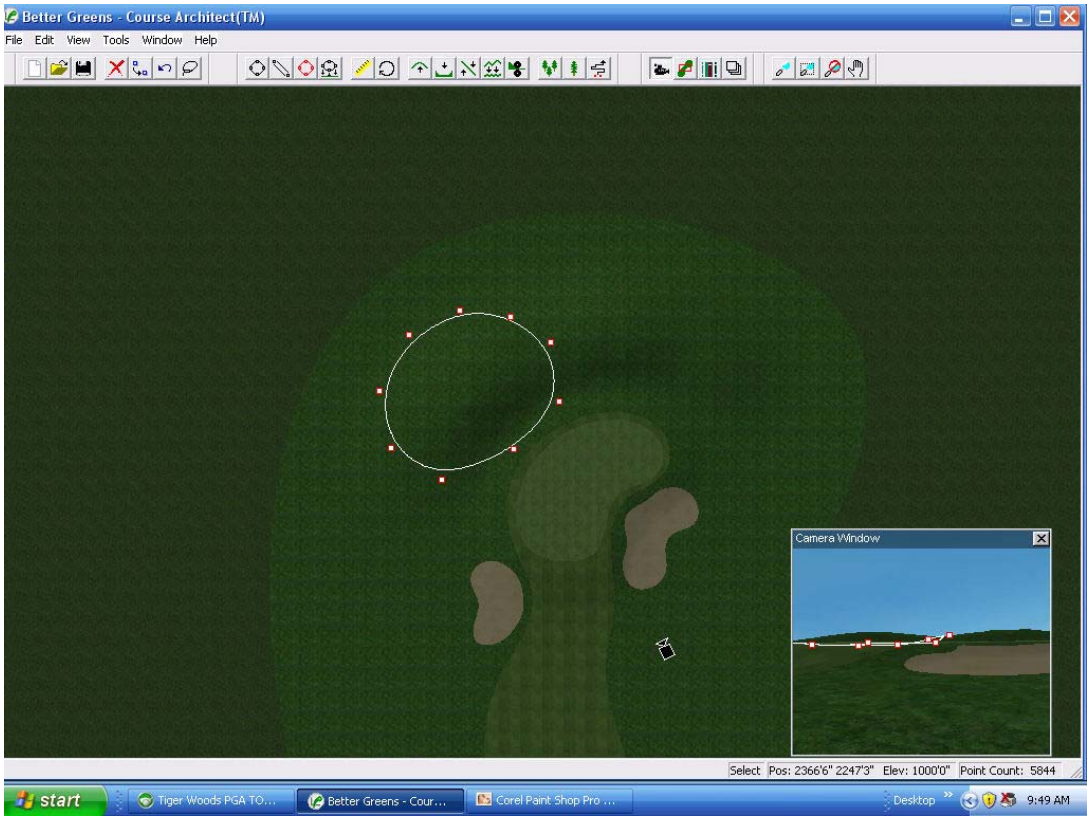
Next I use the 2 shape method to elevate the area behind the green so that I have about a 2 foot incline from the front of the green to the back.



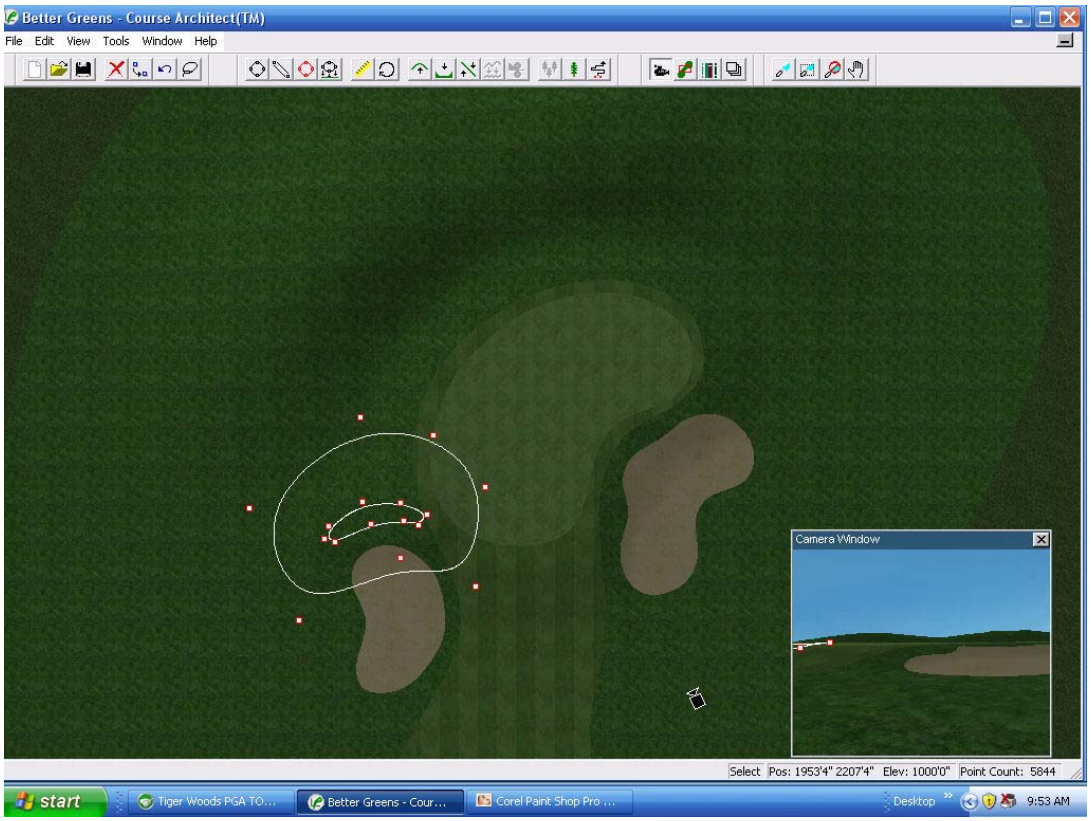
I want to add some elevation behind the green as a backdrop. I use the 2 shape method and raise 8 feet to create a large mound.

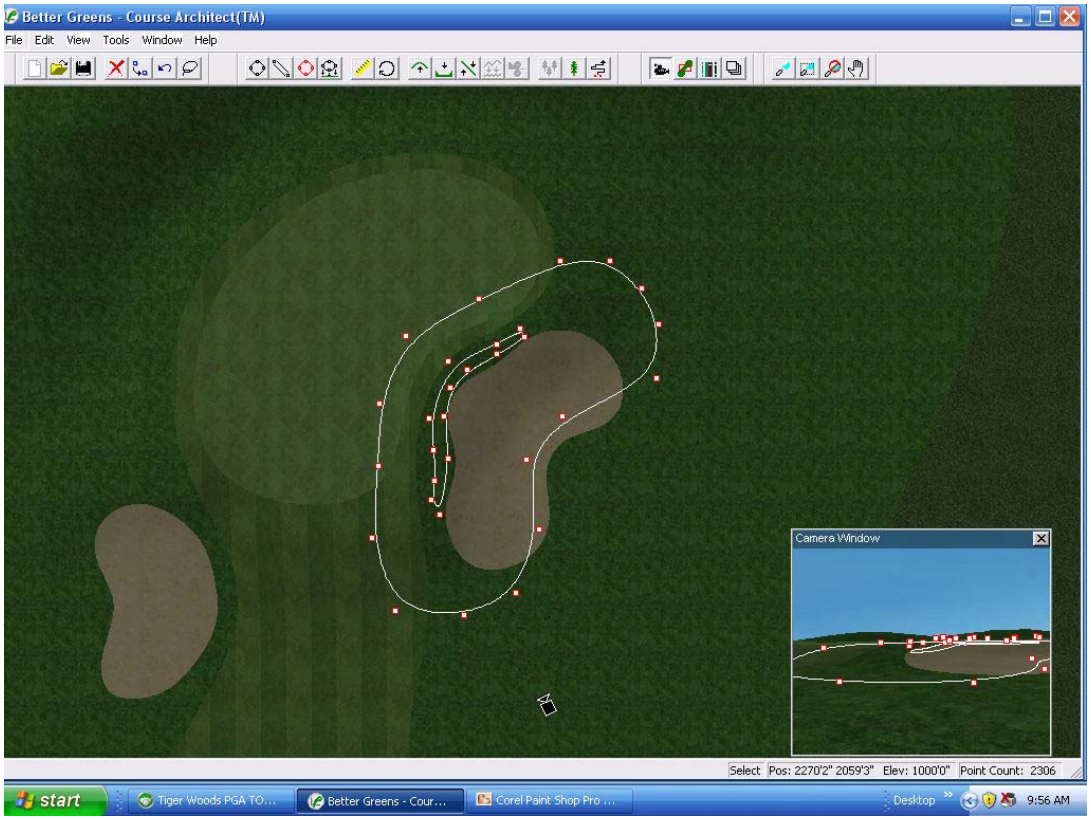


Then I create 2 hills on top of that large mound -- one raised 4 feet and another raised 6 feet. This gives the raised area behind the green a more natural look, so that the entire mound is not the same height.

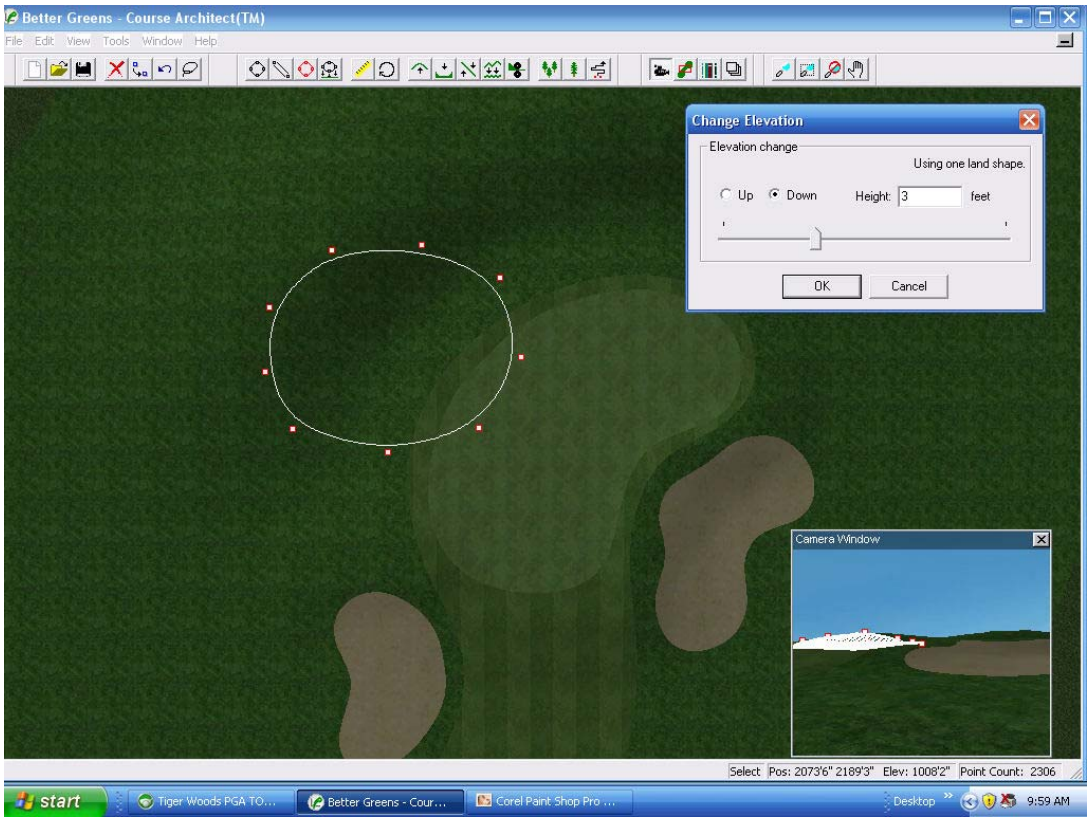


Next I want to create elevations around the bunkers so that they flow naturally into the green. I use the 2 shape method to raise the backsides of the bunkers 2 feet. The key to making these look natural is to flare out the sides so that there is a flowing (and less abrupt) elevation change. Note how the outside shape includes part of the green ... this will create some contours on the green.

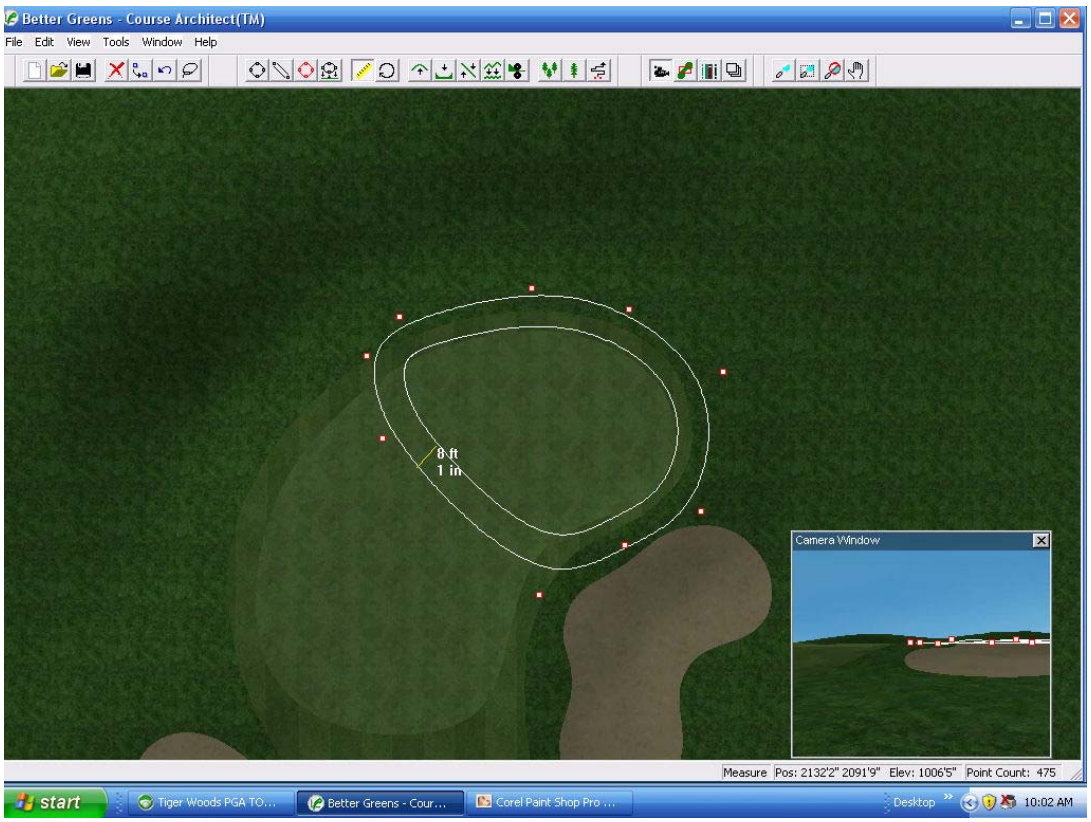




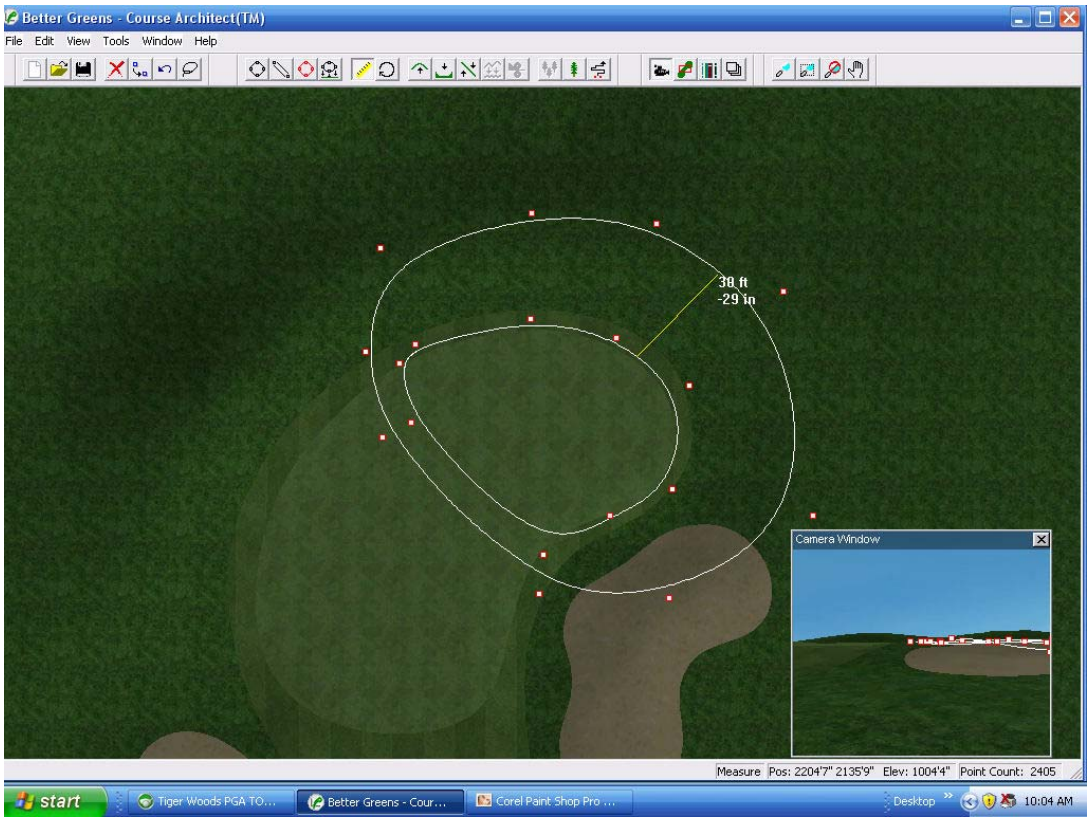
I add a 3 foot swale at the back of the green, which will punish errant approach shots to the back of the green.



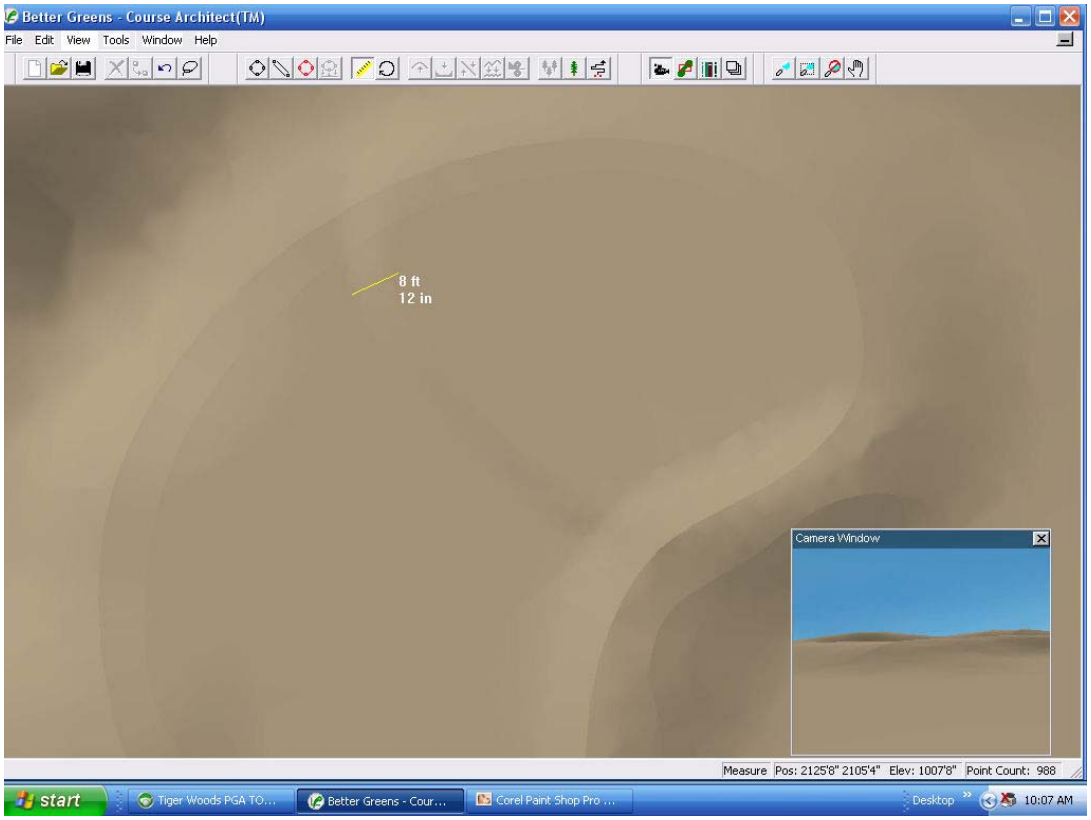
Next I work on the tier on the back rightside of the green. First, I select the green shape and "use as shape" and increase by 3 inches. Whenever I "use as shape", I always vary the size slightly so that I do not get creases, wrinkles or other anomalies. I manipulate the shape so that I have the area of the green where I want the tier to be. Then I duplicate the shape and increase by 8 feet.



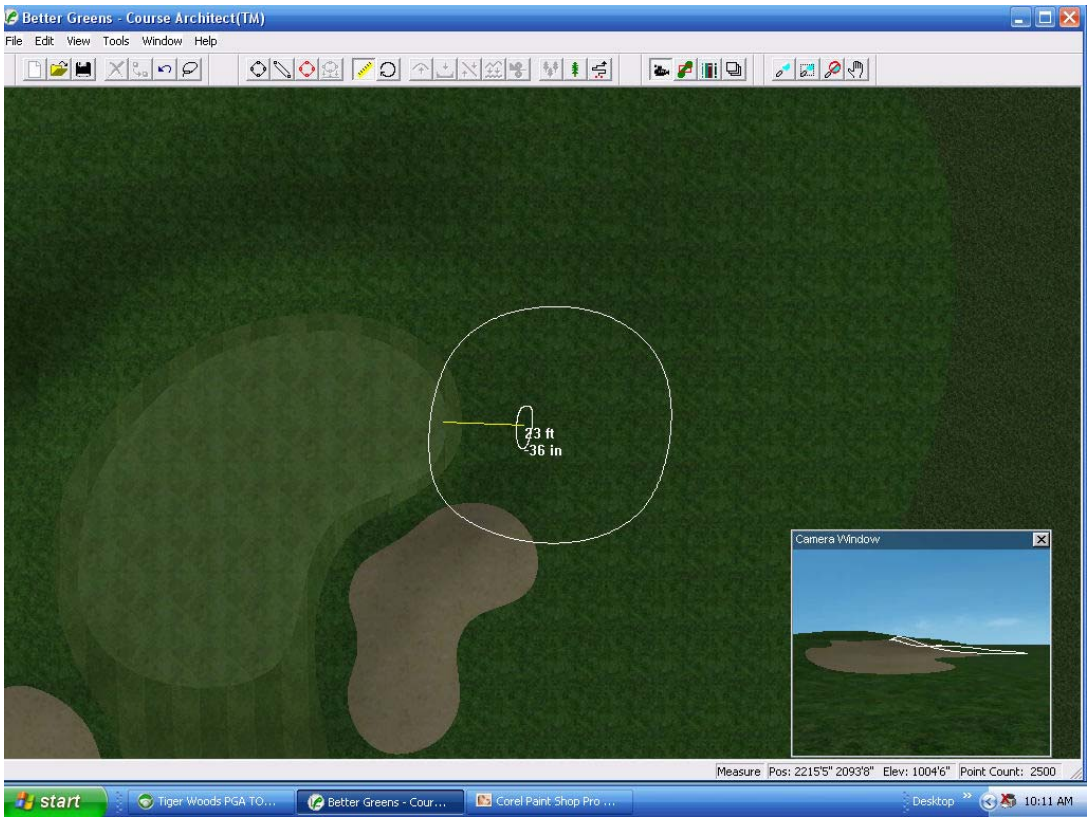
I then flare out the outer shape so that I have a sharp tier on the green, but a very gradual elevation change off the green. This is the key to making a realistic looking 2 tiered green. I then use the hill tool to raise both shapes 1 foot.



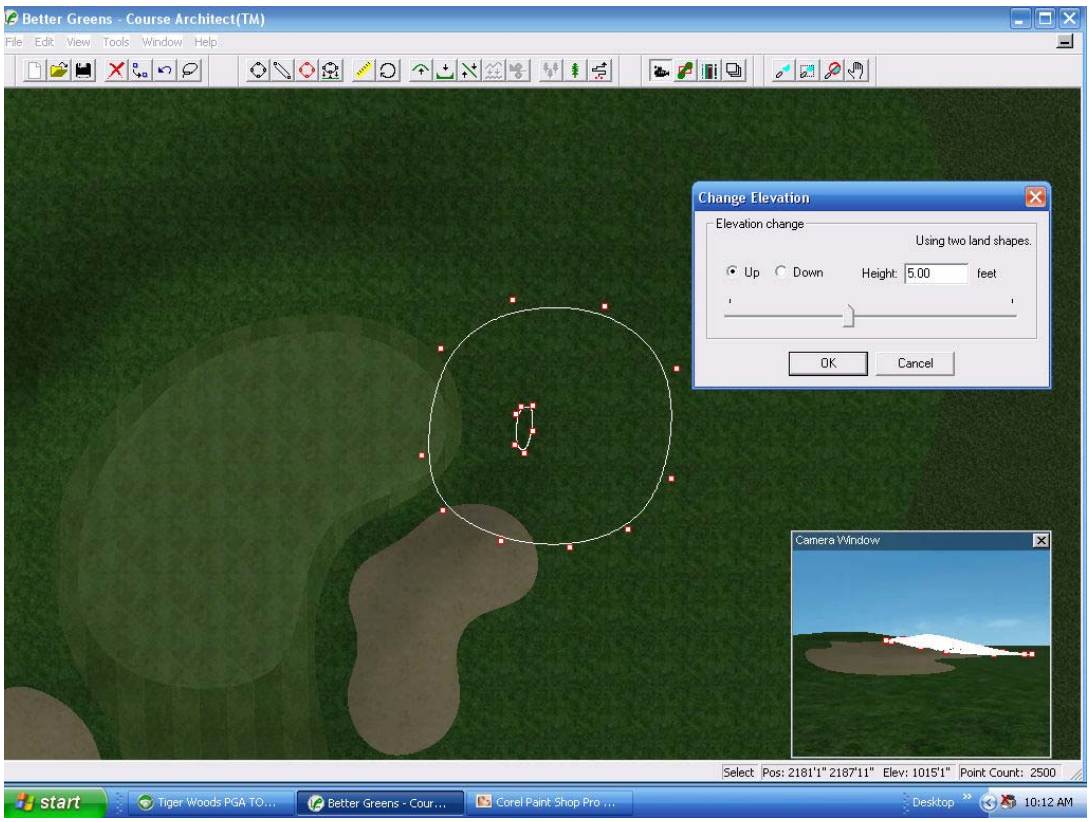
Using the Modeling Clay view, we can clearly see the tier on the green.



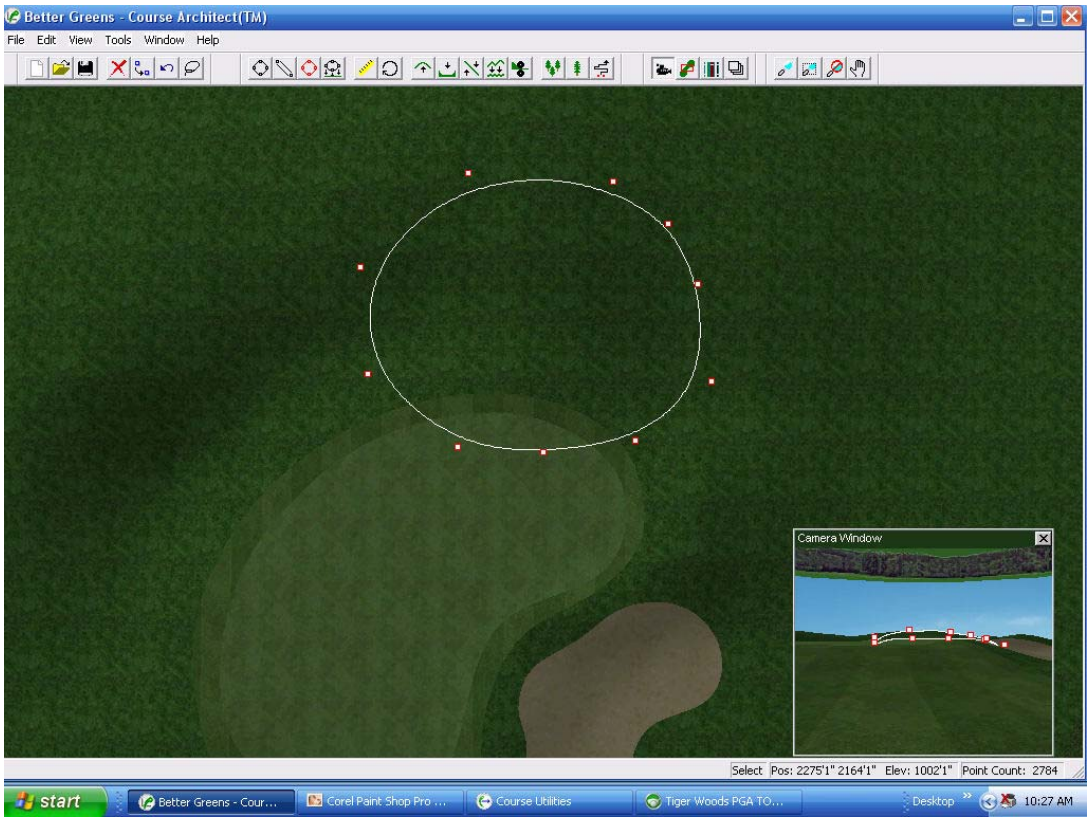
Next I want to add a mound at the rightside of the green. I use the 2 shape method and try to work the mound naturally into the bunker. Using the measuring tool, I can see that there is an existing 3 foot drop off from the green, so if I want a noticeable mound, I will need to raise it more than 3 feet.



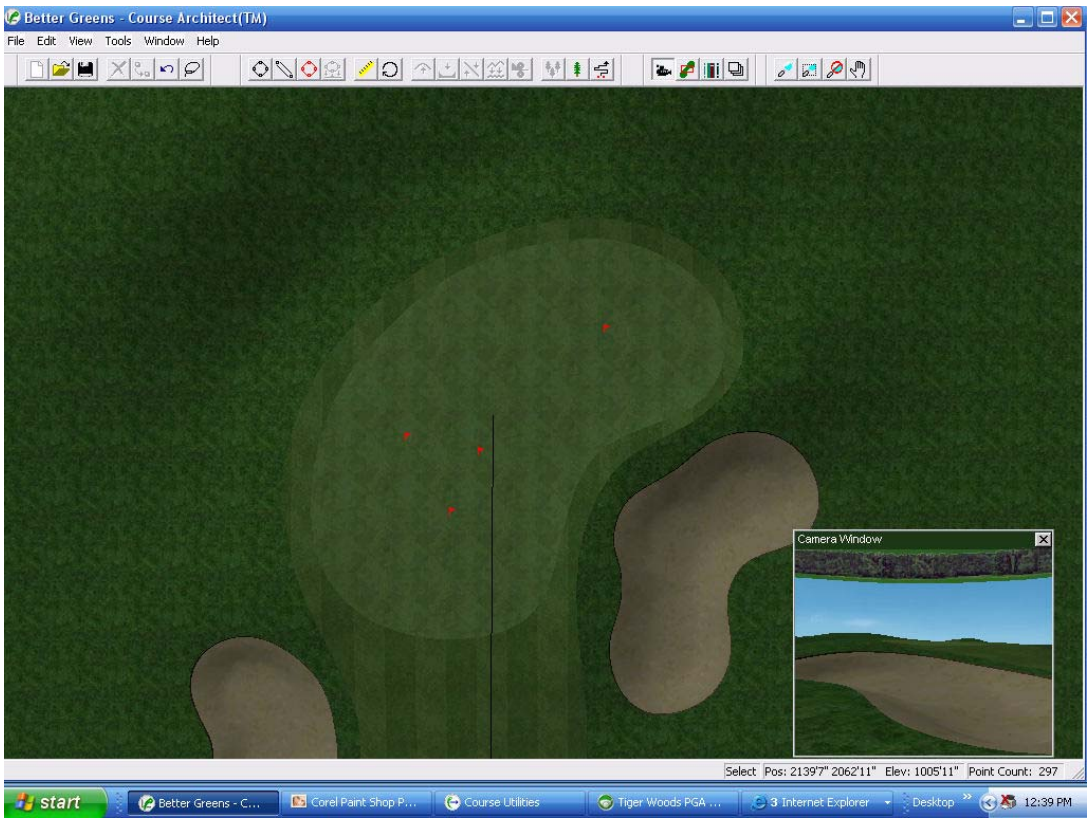
I raise both shapes 5 feet with the hill tool. Notice that part of the green is included in the outside shape. This will create a little bit of contouring to the second tier of the green.



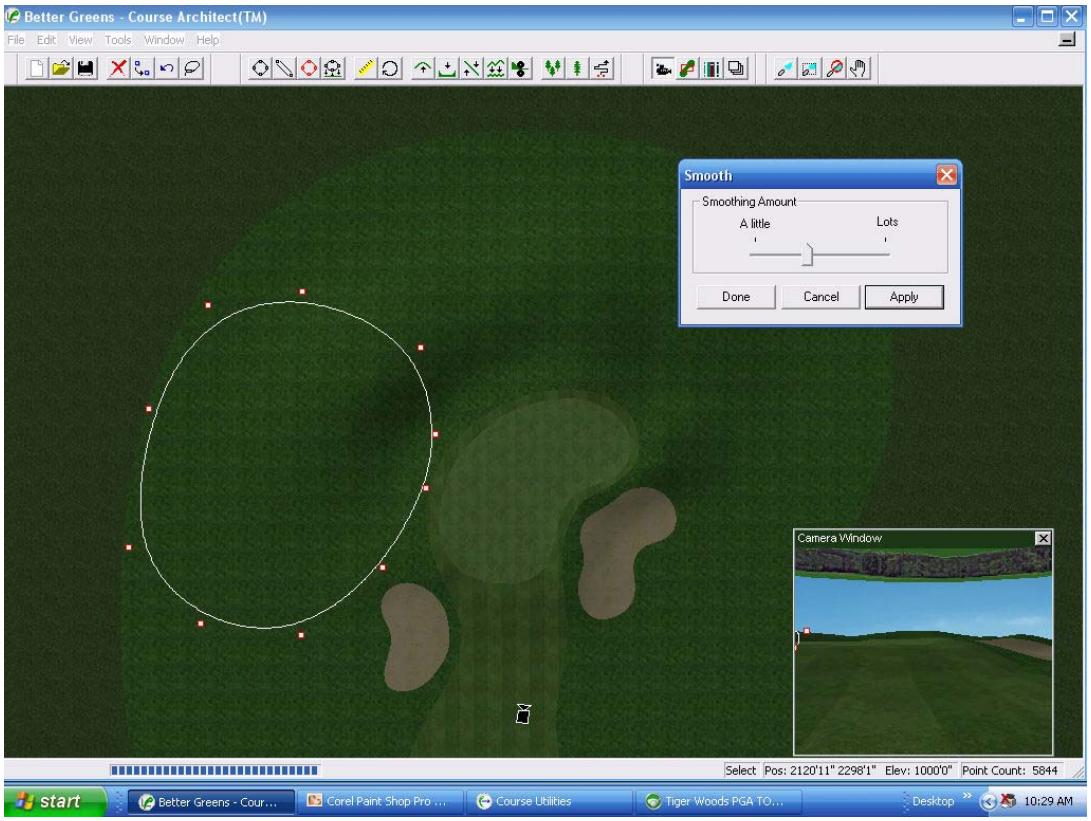
I add another mound behind the green that is 5 feet tall. Again part of the green is included in the shape, creating a little more interest to the second tier.



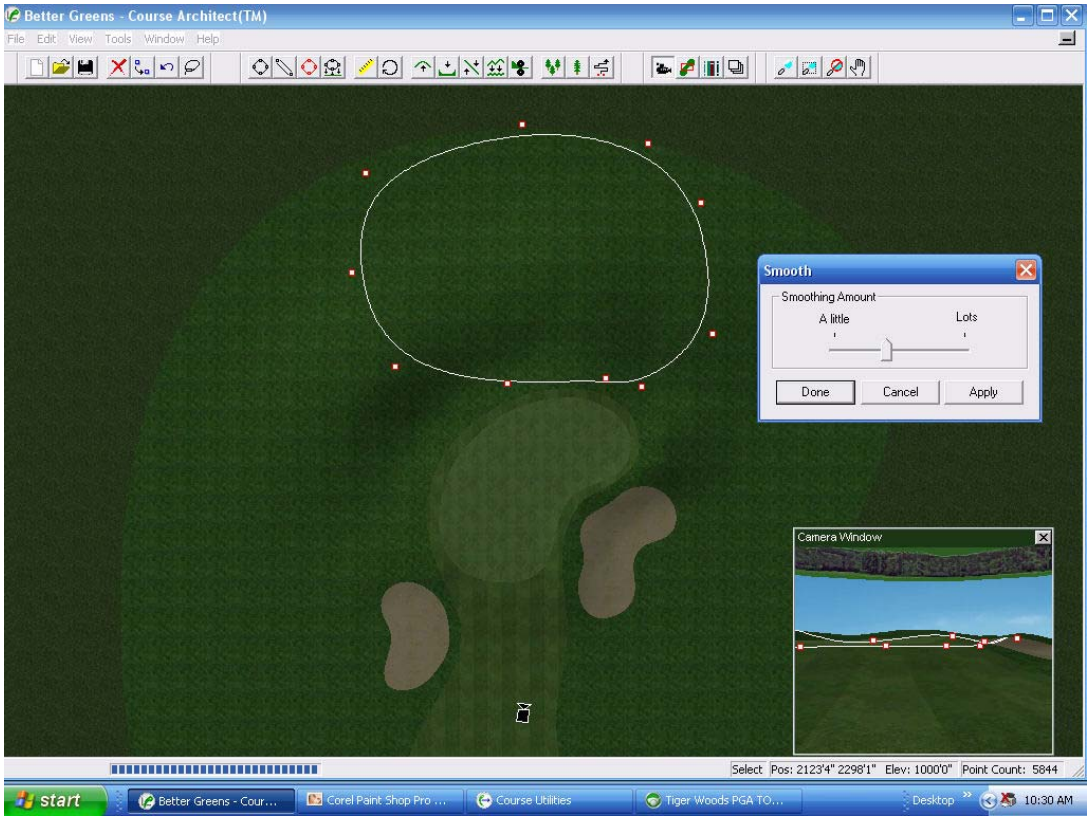
Now I have finished with the terrain work on the green complex. Here are the pins that I have set. The 2 easy pins are in the middle of the front portion of the green. I placed a difficult pin on the top tier at the back of the green and another one tucked close to the mound behind the left bunker and next to the swale behind the green.



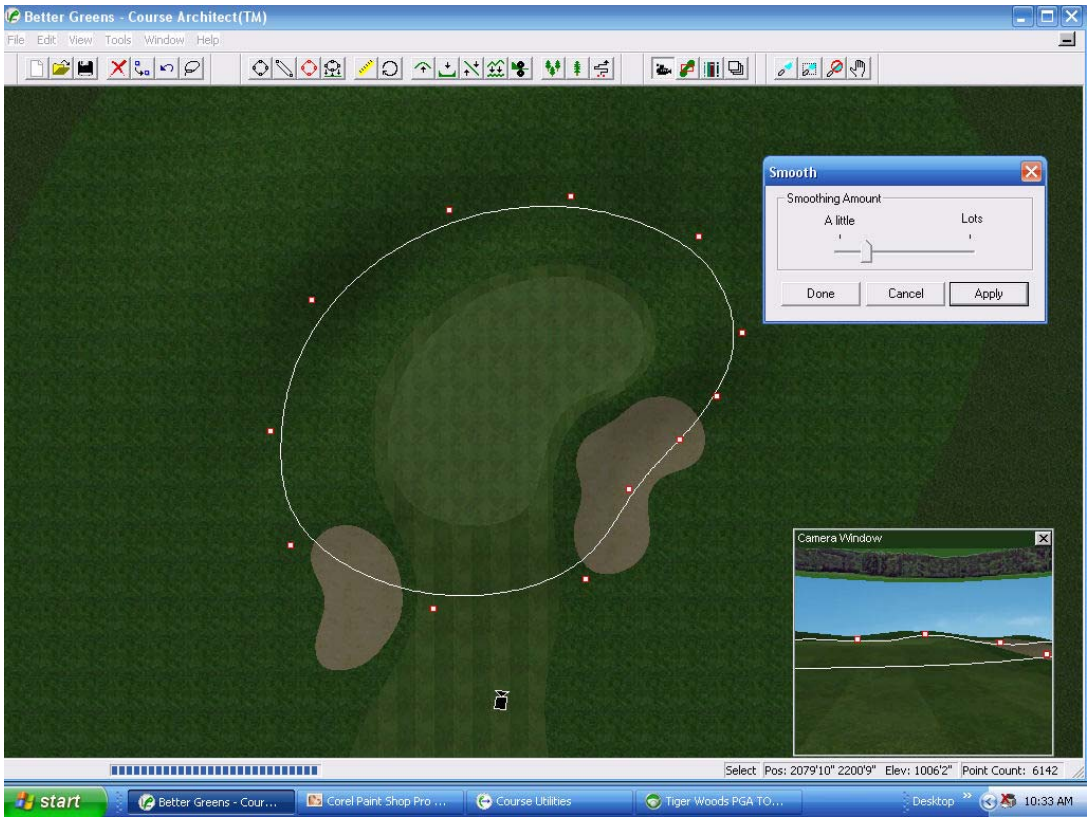
Now it is time for smoothing and optimizing. When I smooth, I always smooth a lot over a relatively large area. On my first pass, I include only areas in the rough and portions of the fairway away from the green. I smooth almost half-way across the slider and hit Apply twice each time. When I look at .tca files of other designers, I generally find that the designer has not smoothed enough.



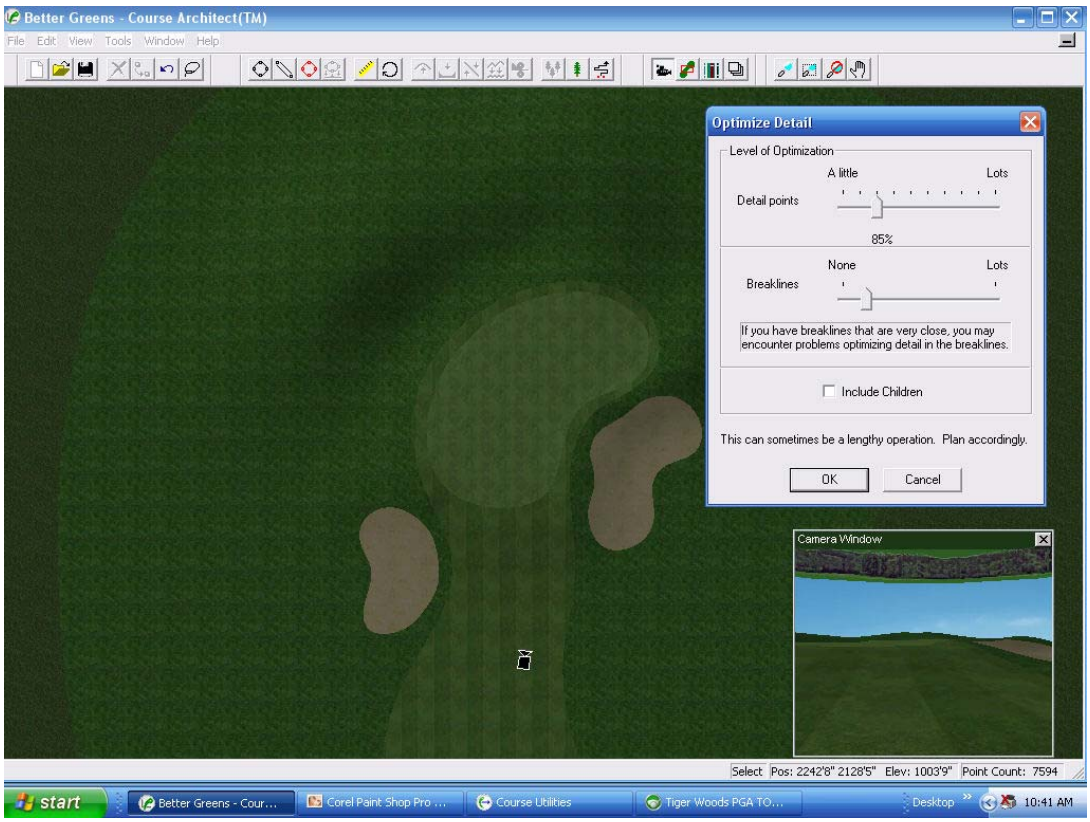
I continue to smooth around the outside areas.



Then I smooth the green area at a spot only a couple of notches across the slider bar. I do not want to over-smooth the green and lose my elevation work. I hit Apply only once here.



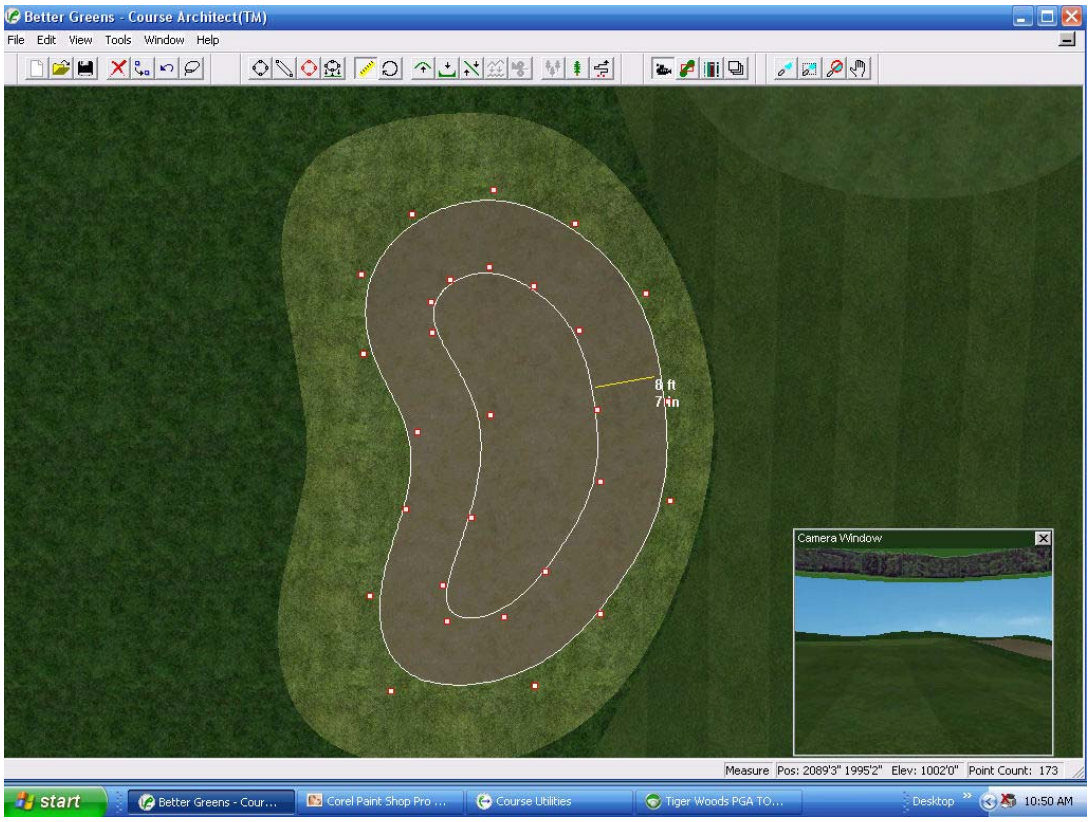
Now I optimize. I always do my bunkers after I have done my overall smoothing, so that the bunkers flow naturally into the surrounding terrain. Point count on the surrounding rough has climbed to 7594; green to 1041 and the fairway to 1257. I optimize the rough and the fairway at this setting twice.



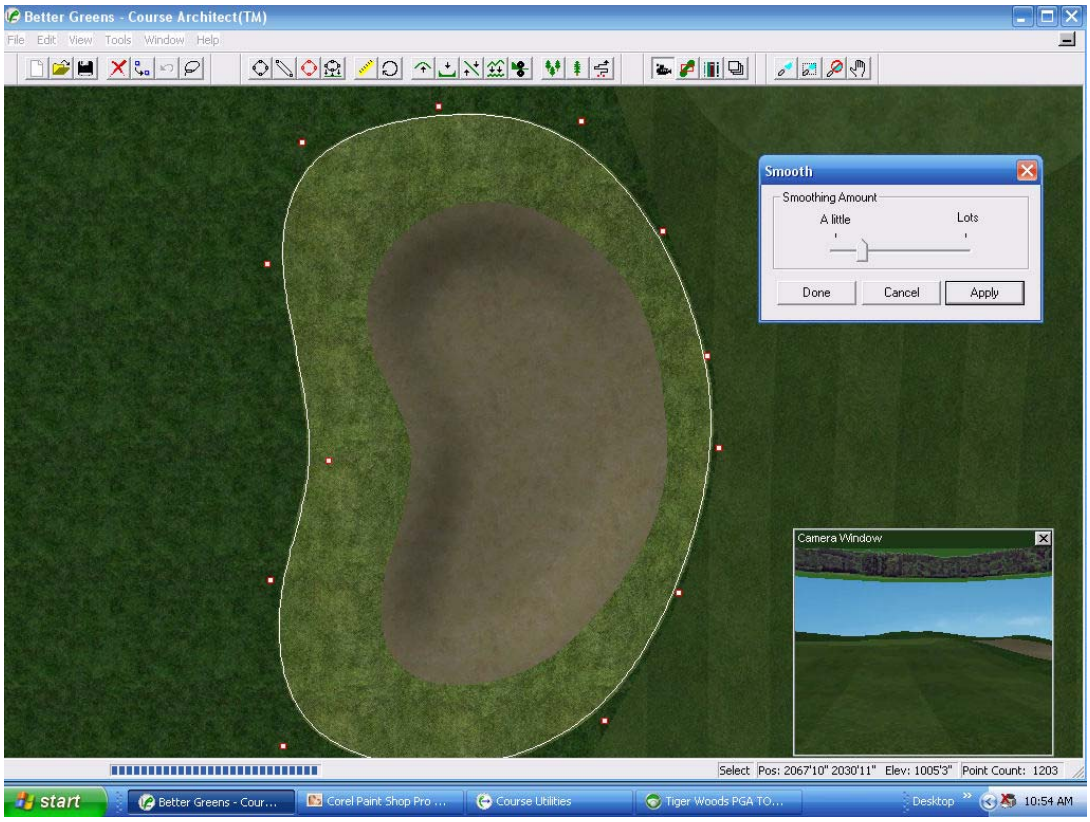
I then optimize the green only once at the minimum setting on the slider. Point count is then about 1100 on the rough, 300 on the green and 350 on the fairway.

Bunkers

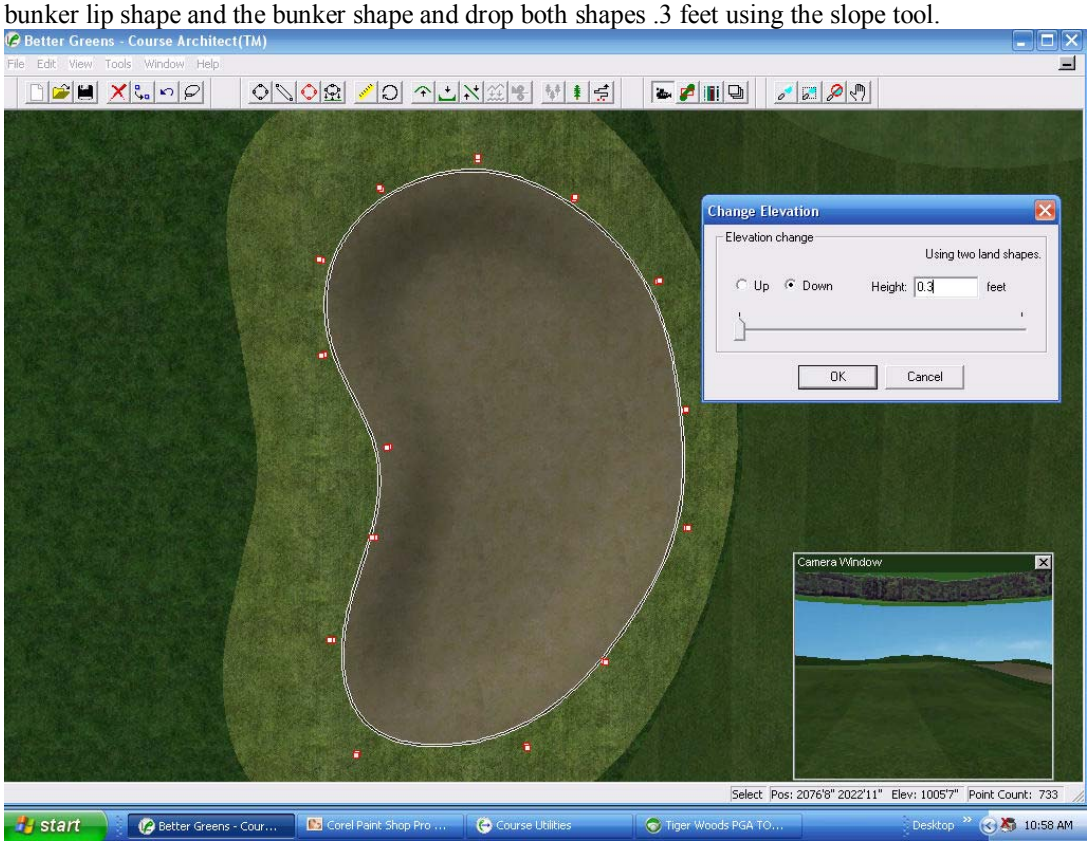
I always drop the bunkers last. I use different bunker syles on different courses, but here is the method I used on Sakurajima and Coeur d'Alene. First, I add a brightly-colored temporary buffer shape around the bunker. Select the bunker shape and "use as shape" and decrease the shape by 8 feet. Manipulate the inside shape to make sure that there are no control points crossing each other.



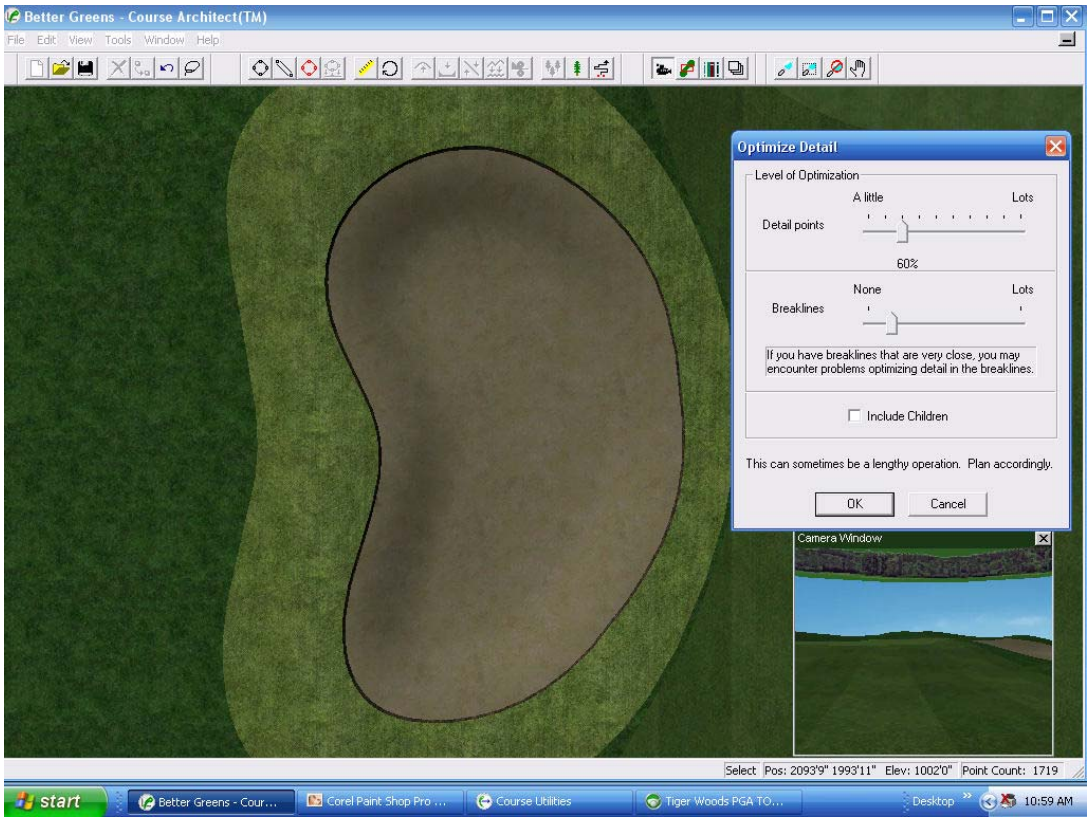
Select both shapes and drop with the hill tool 3 feet. (I rarely use the bunker tool.) Next I select the buffer shape and "use as shape" and decrease the shape by 4 inches. This will be the shape that I smooth with. Again, I never smooth using the exact same shape of the underlying shape so that I do not get holes, creases or other anomalies. I smooth twice at this setting.



Next I do the bunker lip. Note that I have smoothed before I do the bunker lip so that I don't lose my sharp bunker lip. I select the bunker shape and "use as shape" and increase .3 feet. Change to the desired bunker lip texture and drop. Then select the bunker lip shape and the bunker shape and drop both shapes .3 feet using the slope tool.



Then I optimize the temporary buffer shape and the bunker shape at this setting.



Be sure to fully optimize the bunker lip shape, which will have a huge point count. It will be reduced to about 400 points or so. I then delete the temporary bunker shape.

Here is the finished product. There should be nice rounded elevations with no “jaggies” or creases. I have optimized well so that the point count is within reason, but I haven’t lost my intended elevations. Note that, if I want to add a fringe or first cut, I always do those at the end of the hole design process. I find that if I drop them before optimizing, I tend to get the dreaded creases along the fringe or first cut shapes.