PERSONAL SOLIDWORKS PROJECT

1950 Chevy 3100

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I chose to build this truck in Solid Works because it is very difficult to build with the lack of straight lines and the fact that every panel has a radius on it, and also it is a model of a truck that I own in real life. It took a little under a year to restore and has a few more modifications than the model that I made but is the same general truck. This helped in my drawings because while I was home for break I could take some measurements on the leftover parts from building the actual truck and apply them in my modeling. Also, I knew about a few manuals that are online from when I was building that helped in my drawing. These were not always helpful however because many of the drawings were so poor that it was impossible to read the numbers and all I was left with was a picture of something that I already a picture of.

For each model, I created a block that had the same dimensions as the inside curves of each final part, then added curved shapes and extruded them until they were the same length and covered the corners. I then finished by adding in the fillets to round everything out. The bed was the easiest part, and also was one of the only parts that I did not use this method when creating. It was simply a box with holes cut into it. The holes were sometimes at weird angles and left other parts showing but was still easier than fitting curves together on other parts.

The most difficult part was the back of the cab and its corners. There were compound fillets leading into them that were difficult to make look natural. There
were a half dozen different radii to keep track of during that fillet process. Also, the tolerances back in 1950 made it difficult to get any accurate measurement off of any of the fenders. My truck back home had the fenders heavily worked on to bring them into an aesthetically pleasing shape, but lacked mathematical consistency. The manuals online did not show the dimensions of the fenders because the process that they used to produce them, an enormous stamping machine, did not need them and could not be accurate enough to follow them anyway. Some of the bends and rolls in the body turned out to be too complex for Solid Works to handle and I had to make a simpler sketch, or change some parts entirely, such as the hood. On the actual truck, there is a highly variable fillet that was hand-hammered in the original model. Solid Works was not able to process some of the radii of the fillets so I had to change the design of the hood. I ended up using a design that more represented a Ford from this time, so while it is a vintage truck, it is not exactly the same as the model I was building. Most of the other fillets I was able to use the variable fillet setting, a new tool that I learned to use for this project, and give an even change in the shape of the bend of each part. A good example of this is in the front fenders. The fillet on them changed from 12 in. radii down to 1 in radii and back up to 2 in. Assembling the back axel was also difficult as I had previously decided to not make the various mechanical components that make up the truck and so it hung in the air without the suspension system or the
drivetrain to give it a distance from the front of the truck. For the front, I used a concentric mate with the fender but the back fender has multiple curves for where the tire is cut out of the side and so the center was too high up to fit the wheels on. I could not mate it parallel with the front axle because there is a different elevation in relation to the truck frame that I built everything onto from the front to the back to account for a potential load in the bed. I ended up mating the wheels with the edge of the rear fenders and leaving the axel in the air. The grill ended up being much easier than I had anticipated. While we were assembling it in real life, there were so many parts inside that were at such odd angles that we couldn’t fit our hands inside to put them together. In the project, I made the bend chrome pieces using a sweep and then went through and put the supports on the inside. The supports look like they are in the wrong places and are too small to hold the grill, but that is actually how they are made, offset and with distance between them and the chrome with tiny supports that hold the chrome on. The large number of parts in my drawing made it difficult to get together in the necessary amount of time. My original estimate of 15 parts proved to not be enough, as the tires were too free-floating and so I had to make axels to hold them together. They are different sizes to account for the difference in width of the frame so it brought my total number of parts up to 17.
This project helped further develop my Solid Works skills and confirmed my ordinal thoughts on why we did not make a model of the truck in Solid Works as we were building it in real life, modeling with a radius is extremely difficult.

http://chevy.oldcarmanualproject.com/chevyresto/50index.htm