

# CAD Project - Piano Keyboard



A final render of my Piano Keyboard SOLIDWORKS model. ^

To demonstrate mastery in CAD fundamentals and SOLIDWORKS, I was tasked with measuring and modeling a real life item I had to the best of my ability. Looking around my room, I chose my piano keyboard, a project I knew was very involved and had lots of parts that would need to be modeled separately and put together.



A photo of my physical keyboard and stand. ^

I started off by modeling a single white key (the C key), paying close attention to all the fillets and minor details. I then made a configuration of the same part for the rest of the white keys (D, E, F, G, A, B) as the only difference was where the cutout was to make room for the black key. Next I modeled the black key, which used drafts and a special fillet on the top edge. Then I made an assembly of an octave, and from there I made an assembly of multiple octaves to make up the entire keyboard.



A render of a single octave assembly. ^

After the keys were done, I started making the plastic casing of the keyboard. This consisted of the top case and the bottom case. The top case is the part you see most of the time, which houses all of the buttons for volume and instrument selection, as well as the speakers. The bottom case lies underneath the keyboard and is much more complex to model. It contains many screw holes, drafts due to injection molding, houses two subwoofers, and houses the power and audio ports. This part took many hours to accurately measure and model, and is one of my proudest parts I've modeled.



An image of the bottom case. ^



A render of the completed CAD model of the bottom case. ^

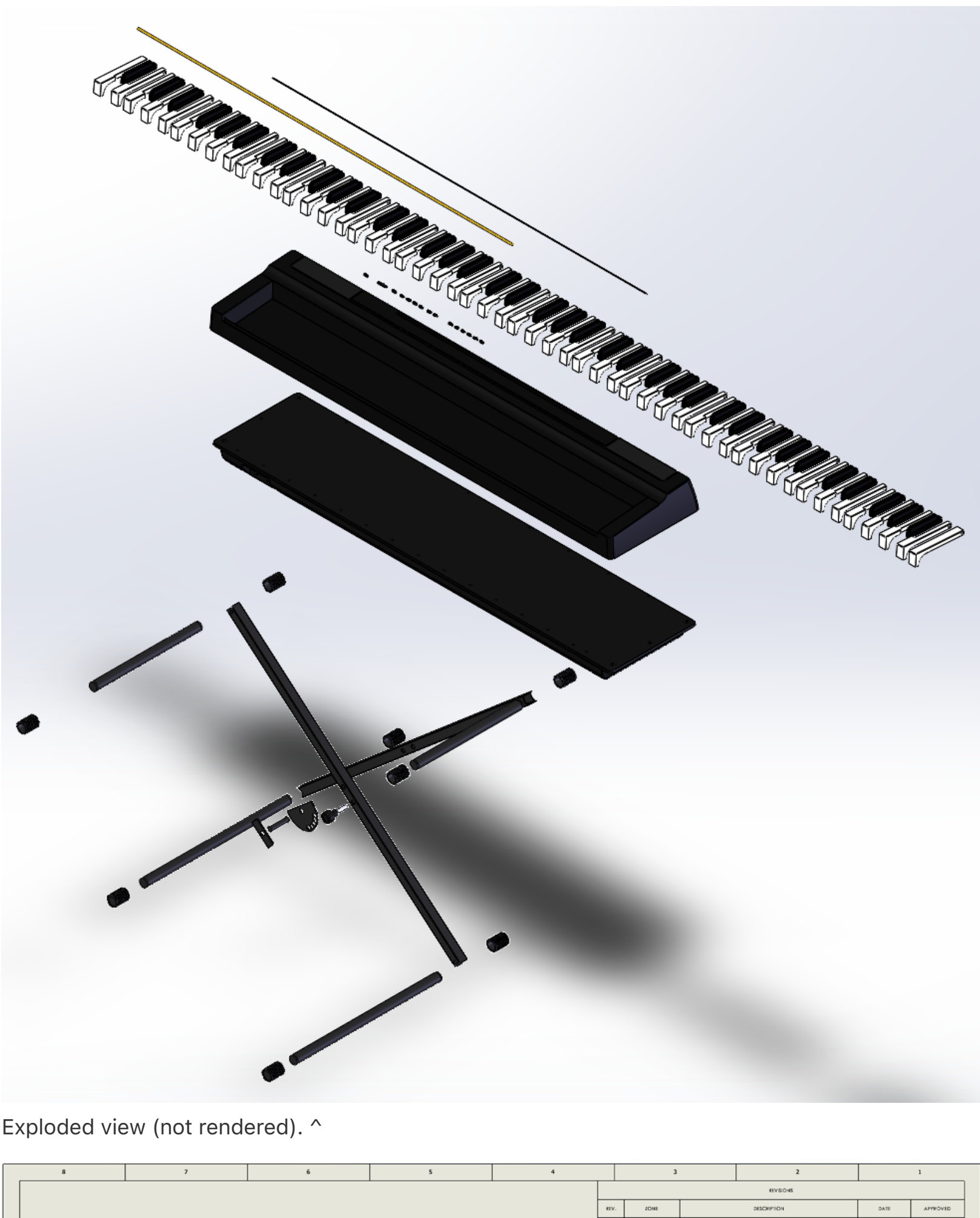
I also modeled the piano stand, which consisted of two metal beams, rubber grip sleeves, and a telephone-dial-looking height adjuster at the center. These were all separate components that I mated together to form a Stand assembly. After that, I assembled all of the sub-assemblies to form the full assembly, and made some awesome renders! I also made detailed engineering drawings of some of the most involved parts.



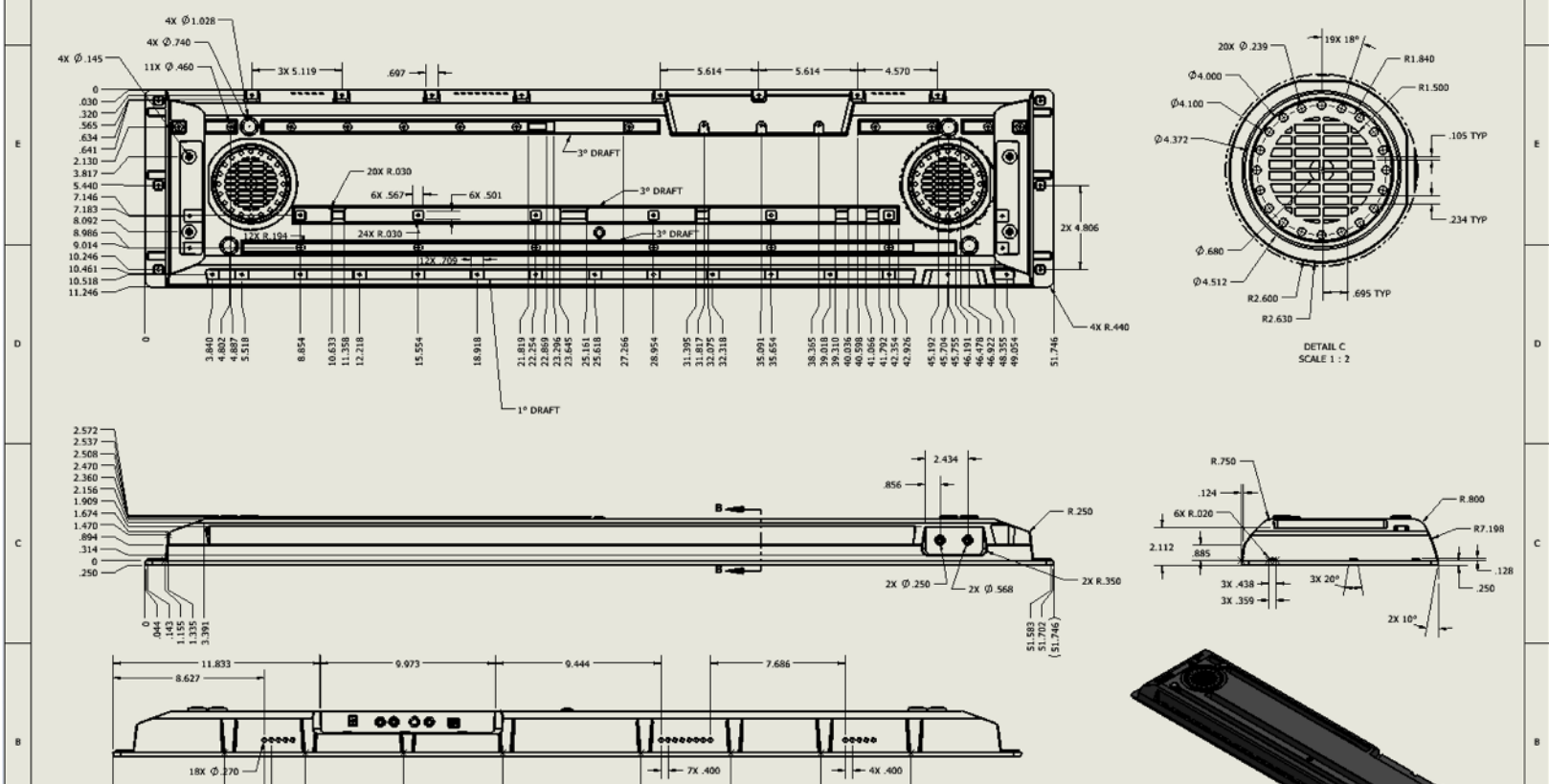
Back side of piano. ^



Render from top. ^



Exploded view (not rendered). ^



Drawing of bottom case. ^

I learned a lot about measuring and modeling during this project and it has made me even more comfortable with CAD. Additionally, it was really fun to work on and I'm proud of what I accomplished.