Personal CAD Project Summary

For my personal CAD project, I decided to create in SolidWorks a replica of the Torre del Oro, or The Golden Tower. Located in Seville, Spain, the Torre del Oro was built in the early 13th century, during the time when the city was ruled by Muslims. Its original purpose was to help defend the Guadalquivir River which gave access to the port of Seville. However, after the Spanish reconquered the city, it no longer was used as a defensive structure, instead slowly changing through miscellaneous functions over the years. For example, at one point it was a chapel, and at another point, it was a prison. The tower was originally just the dodecagonal (12-sided) base, but a turret was added by Sebastián van der Borcht circa 1760. Most recently, the tower went restoration in 2005. The Torre del Oro is believed to have gotten its name from the way the materials it was made of shine golden when exposed to sunlight.


This is a picture of the Torre del Oro. It is a dodecagonal base with another dodecagon and cylinder on top.

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I first became aware of the Torre del Oro, and other medieval buildings of impressive design, from a computer game I played when I was younger called *Age of Empires II*. The main point of the game was playing as civilizations that powerful during the Middle Ages and destroying other players through combat. I immensely joined the game—it's still one of my favorites, and every once in a while I resume playing it—and so when this CAD project, the game and the buildings I saw in game were one of the first things I thought of.

The most difficult process of building this was probably attempting to mate smaller parts onto larger parts. When I tried to make the very top piece of the turret above the dome, SolidWorks would not let me mate the square base and the cylindrical rod together because they did not have similar faces (i.e. square to square or circle to circle only). This required me to make an approximation by dragging the rod onto the base, which was very frustrating to accomplish because the rod would always be just off-center, and it took many, many attempts to properly align it. Similarly, the crenellations for both the tower base and the turret had issues. They could be fixed to an edge, but you couldn't guarantee they would sit neatly atop the bases. This further caused attempts at attempting to approximate them to correctness. In addition, I did not have enough time to add doors and windows. However, I greatly enjoyed building the parts that made up the whole. Seeing the tower slowly come together and then combining the parts into the assembly, minus the difficulty mating, was a great experience. It taught that as great as SolidWorks is alone, it can still be dumb sometimes, which is why it is so important for engineers to thoroughly learn how to use CAD and why EDSGN 100 is an important course any prospective Penn State engineer should take.
This is the SolidWorks image of the final result. It is lacking doors and windows, but is otherwise complete.

These are the dimensions for the Torre del Oro, for all three main view perspectives.
Works Cited


http://en.wikipedia.org/wiki/Torre_del_Oro