

## Breadth Topics

### Electrical

An electrical breadth topic will be investigated to determine the impact of the new mechanical system on electrical distribution. Because some of the equipment will be downsized or eliminated and other equipment added, a new inspection of the power distribution will need to be analyzed. Over current protection, feeder sizes, and feasibility issues will need to be examined and resolved. A revised single line diagram will be laid out to aid in the conceptual schematic of the new design.

### Structural

A structural breadth will also be scrutinized to determine the effects of the mechanical re-design on the structural support system. The (3) main rooftop air handlers will be greatly reduced in size, and perhaps even eliminated in some cases. Due to the reduced load on the roof, an analysis of the structural system will be performed to resize roofing members and distinguish any cost savings that may be a result of the re-design.

### MAE Breadth

Throughout the final report, a number of references will be made to items pertaining to the MAE curriculum. Calculating lifecycle costs and payback periods will be performed, which is a direct correlation to the material learned AE 558 Central Heating. Water-side free cooling is a topic discussed in AE 557 Central Cooling and will be an integral part of the final thesis presentation. Lastly, the improvements in indoor air quality as a result of the DOAS system ties in nicely with AE 552 Indoor Air Quality.