

Executive Summary

The Dorrance H. Hamilton Building is a 129,000 ft² medical education building, which is a portion of the Thomas Jefferson University (TJU) campus in Philadelphia, PA. The building is comprised of six stories above grade, plus a mechanical floor, and the roof. The 2 floors of the 215 space parking garage will be located underground.

The final report consists of the lighting depth, electrical depth, mechanical breadth, and the construction management breadth. The lighting depth is the lighting redesign of the following four spaces: plaza, lobby, auditorium, and 5th floor classroom.

The lighting redesign met all of the design criteria, while incorporating an intriguing design into the medical education building. In order to accomplish this task, AGI32 software was utilized in order to analyze luminaire layout, uniformity ratios, and horizontal illuminance calculations.

The electrical depth is comprised of a variety of different tasks, which include the redesign of branch circuits for the four re-lighted spaces, analysis of a central transformer versus distributed transformers, analysis of feeders versus a bus duct spanning to the penthouse, the analysis of a motor control center, and a protective device coordination study. The redesign of the electrical system was compared to the existing system regarding cost analysis, efficiency, and power consumption. The cost analysis is a part of the construction management breadth work.

The mechanical system of the different electrical rooms was analyzed in accordance with the distributed and central transformers. A comparison was done in order to determine the best design alternative between the two. The distributed transformers were once again the obvious choice.

The second breadth area of study was a cost analysis of the existing electrical system versus the redesigned portions of the electrical system. The cost analysis includes the following: central transformer versus distributed transformers and feeders running to each floor versus a main bus duct to penthouse. The cost analysis of the feeder vs. busduct system showed that the busduct was cheaper than the individual feeders. Also, the distributed transformers were cheaper than the central transformer.