



## Executive Summary

The Virginia Commonwealth University Life Sciences Building is a laboratory and classroom building that features a greenhouse, an animal facility, and an aquatics facility. There is a lot of research being performed here along with demonstrations, lectures, and guest speakers. The following explores lighting, electrical, and mechanical designs, and a construction management perspective of the mechanical design.

The lighting design was for the genetics laboratory, one of the auditoriums, the lobby, and the exterior area between the two buildings. Design criteria and goals were targeted and AGI 32 was used to analyze the design. All four of the spaces achieved their desired atmosphere from the lighting design.

The electrical design corresponded to designing the panel boards for these spaces and sizing the feeders for the panel boards. A protective device coordination study was also performed to check that the equipment had been properly sized to accommodate the lighting design. An analysis of central versus distributed transformers in The VCU Life Sciences Building was also performed. It was found that central transformers are the best option.

The mechanical design looked at cogeneration in The VCU Life Sciences Building. It involved placing all eight of the roof top units on a low-emissions generator. Initial costs and feasibility were analyzed. Overall, the need for the process was created; therefore, cogeneration is not a feasible system for The VCU Life Sciences Building. The construction management breadth examined the feasibility of a cogeneration system from that perspective. Initial labor costs, scheduling issues, and payback period were looked at to determine if these would make cogeneration more feasible. However, in the end, cogeneration was an inefficient system for The VCU Life Sciences Building.