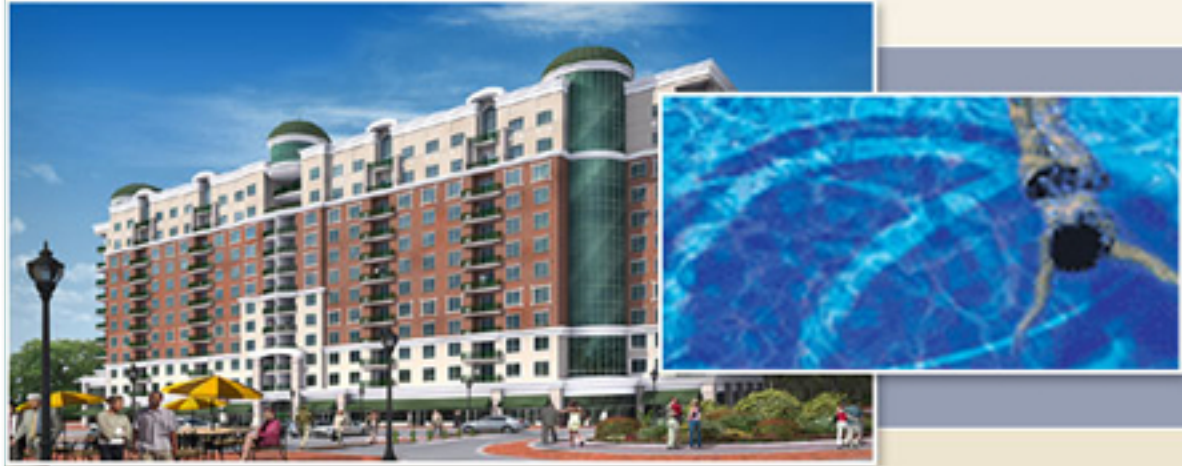


Breadth

**Breadth
Analysis
(revised)**



Grand View
AT ANNAPOLIS TOWNE CENTRE AT PAROLE

ANNAPOLIS, MD

Matthew Karle
Construction Management
Dr. Chimay Anumba
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Breadth Topics

Breadth 1: Mechanical/Electrical and Life Cycle Cost of PV Glass Panels

Solar panels are becoming thinner as well as more affordable. Implementation of such panels is the future of the building industry. A detailed analysis of the potential energy production that GrandView will yield with the addition of such PV panels on the roof of the building will be carried out. Hand calculations using square foot area and acquired energy production data will be the main source of the breadth. Hopefully, with the help of my peers and industry members, I may be able to use energy calculation software to achieve more specific data. Once the information is obtained, it will be used to calculate life cycle costs and potential savings for the building. The first idea was to implement PV glass panels on the façade of the building. Through interaction with industry members and answered emails, I have determined that this would be much more costly and time consuming than just installing them on the roof. GrandView provides almost perfect space for such panels. 80% of the roof is dead space with an extreme amount of insulation. If this space were converted into solar output square footage, the building would benefit greatly. This new location will hopefully provide more power generation and easier installation. Plus, new window calculations would not be needed. Overall, this is a better choice than PV glass panels on the existing windows. However, a small analysis may be done on the two large glass facades that comprise the corners of the building.

Breadth 2: Thermal Calculations Associated with Implemented Thermal Windows

In this breadth analysis thermal barriers will be analyzed in both the existing and proposed thermal windows. High end thermal glass will be substituted into the existing windows. Heat loss throughout a year will be determined and then applied to the cost of operation. It is the goal of this breadth analysis to determine how much more efficient high quality thermal glass windows are compared to the existing standard window system and what the operating costs drop to once this system is installed.