

RESIDENCE INN

BY MARRIOTT

2345 MILL RD, ALEXANDRIA, VA

JULIA E. PHILLIPS

CONSTRUCTION MANAGEMENT



Research Introduction

Three technical issues and one critical industry research area will be explored for possible improvements. Throughout these analysis and research areas I hope to add value to the building by implementing more green technologies and materials, as well as reducing the schedule and cost, and improving the constructability of the project.

Since this project has many unique aspects there are a number of areas that can be analyzed to add improvements to the building. The fan coil units in each guestroom are set to run 24 hours a day. This is due the high sound levels produced by the nearby metro tracks. This provides an area of research in finding better controls and sound attenuation system in the façade to reduce the amount of energy the fan coil units consume and increase the acoustical properties of the façade. While analyzing these areas, LEED rated and recycled materials will be investigated to add more value to the building.

Hotels produce a large amount of greywater everyday; this provides another area of research to institute a greywater system into this hotel. This should not add a great deal of design and construction coordination because the building already has separate supply risers to the water closets and shower as well as having the water closets in an easily separated location on the sanitary riser.

The underground structural system also provides an area for improvement because the underground garage is made entirely of cast in place concrete. The project is already behind schedule due to unexpected water issues, if the garage was made of pre-cast Filigree panels there is a possibility for schedule acceleration without taxing the ability of the tradesmen.

Analysis 1: Structural Design of Underground Garage

This analysis focuses on reducing the slab depth, schedule, and cost of constructing the underground garage by instituting the use of the flat plate pre-cast Filigree structural panels. The Filigree system will also be compared to a cast in place flat plate system that eliminates stud rails and drop panels to reduce concrete, steel, and formwork use.

Analysis 2: Mechanical System #1: Controls

This analysis focuses on reducing the energy consumption by the fan coil units in the guestrooms that are designed to run 24 hours a day. This analysis is intended to provide a superior system to save energy for a minimum cost and not increase complexity in construction.

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Analysis 3: Mechanical System #2: Greywater

This analysis focuses on implementing a constructed wetlands greywater system in to the building to reduce the water usage and add green value and aesthetic appeal to the building by recycling water.

Critical Industry Research: “Greening” of Hotels

The goal of this research is to investigate the sustainability or “Greening” of hotels by incorporating green design into the project and analyzing the corresponding cost. This research will compare typical building materials and systems to their green alternative. The analysis includes comparing upfront cost, installation cost, and life cost to determine which is most economical.

Weight Matrix

The table below shows a breakdown of how each analysis area will be weighted into the grading system and directly correlates to the efforts put forth while researching these areas for my senior thesis.

<i>Description</i>	<i>Research: Going "Green"</i>	<i>Value Engineering</i>	<i>Constructability Review</i>	<i>Schedule Reduction</i>	<i>Total</i>
<i>Research</i>	10%	10%			20%
<i>Controls</i>	5%	10%	5%		20%
<i>Greywater</i>	5%	5%	15%		25%
<i>Structural</i>		7%	10%	18%	35%
<i>Total</i>	20%	32%	30%	18%	100%

Figure 6: Detailed Weight Matrix