



Executive Summary

The following document is a collection of different analysis's that focuses on various industry issues and construction management techniques within the Voorhees Replacement Hospital. The Voorhees Replacement Hospital is a project being constructed for Virtua Health and is located in Voorhees, New Jersey. The hospital is 8 stories tall and 675,000 square feet including a 300 bed patient wing and supporting ancillary spaces. The analysis's performed for this document include a sustainability and LEED study, a LED lighting analysis, and an analysis of the fit-out schedule for the bed tower.

The first analysis attempts to analyze the hospital for LEED points it is already achieving and then determines the cost to reach each LEED certification through a point-by-point analysis. This analysis was chosen because the Voorhees Replacement Hospital is not currently attempting to achieve a LEED rating and sustainability is a big issue within the construction industry at the moment. After performing the point-by-point analysis it was determined that the Voorhees Replacement Hospital with its current design and specified systems would be obtaining 30 points out of 110 LEED points. To become LEED certified the minimum amount of points required is 40, to get a silver rating 50 points are needed, to get a gold rating 60 points are needed, and 80 to 110 points is a platinum rating. Through the point-by-point analysis costs were determined to achieve each point and then points were mixed and matched to find the cheapest path to each rating. The summary of the cost to obtain each rating can be seen in the table below.

TOTALS				
LEED Rating	Total Additional Cost	% Construction Cost Increase	Point Range	Point Total
Base Building	\$ -	-	-	30
Certified	\$ 99,888.00	0.031%	40-49	42
Silver	\$ 817,345.00	0.252%	50-59	51
Gold	\$ 8,736,182.00	2.633%	60-79	60
Platinum	-	-	80-110	-

The second analysis attempts to redesign the lighting in a typical patient room to utilize LED down lighting, determine the effect the lighting change has on the mechanical system, and then evaluate the life cycle of the newly designed room. The room could be designed to the required light levels using LED lighting and at a lower total room lighting wattage then the designed fluorescent room. After determining the new lighting wattage in a typical patient room the HVAC system was analyzed to determine if there were any cost savings due to the change in lighting. It was determined that the change in lighting would produce a energy savings of about \$1,427.00 a year and the mechanical equipment could not be resized due to the change in lighting. Through performing a life cycle and cash flow analysis it was determined that even though LED lights last longer, use less energy and produce a mechanical savings the initial cost of the LED lighting was to great to overcome throughout its lifetime and therefore should not be considered in the hospital.

The final analysis attempts to investigate and revise the current schedule for the rough-in and finish stages of the bed tower. The revision will break down the schedule of each floor into the processes for each patient room and develop a short interval schedule for the entire bed tower. After completing the short interval schedule for the bed tower it was determined that there would be a 35-day reduction in schedule. Because the bed tower fit-out is along the critical path of the project this schedule reduction would result in a general conditions savings that was calculated to be the amount of \$528,412.00.