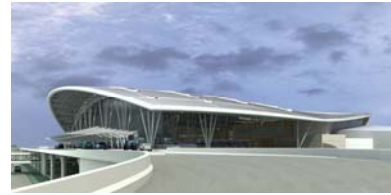


## Indianapolis International Airport – Midfield Terminal Indianapolis, IN



### Construction Management Breadth

#### Introduction

After a series of redesigning exercise, the Indianapolis International airport has essentially become a striped down version of itself relative to the Design Development stage. In compliance to the LEED lighting pollution criteria, a significant amount of outdoor lighting fixtures has been taken away. Meanwhile, additional lighting fixtures has been added to the Ticket Hall and Passenger Concourse, significant modification to the Civic Plaza has also taken place. In addition the all the modification of lighting fixtures the Civic Plaza is undergoing, a massive plantation scheme is carried out by my design alteration which suggest the replacement of ventilated tiles with natural soil, in order to provide “Green” or sustainable environment in the space. All this addition and subtraction yields savings at the same time can produce additional cost to the construction budget. In the following report, I will analyze the addition cost/saving associated with all the changes done to the existing system and design.

#### Design Goals

The goal of this cost analysis was to analyze if the retrofitted electrical system can be paid off by the reduction of luminaires throughout this thesis exercise. Second goal of this cost analysis was to analyze if massive plantation(foilage cost) in the Civic Plaza can be paid off by replacing ventilated floor tiles with soil.

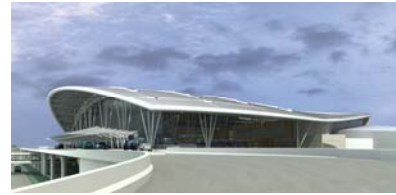
#### Cost Analysis

A summary of the cost analysis performed is summarized in the table below.

#### Electrical Equipment Cost

Equipment Type	Location	Quantity	Equipment cost	Manufacturers Retrofit cost	Total Cost
Distribution Panel	Civic Plaza	1	\$7,280	-\$4,040	\$3,240
Distribution Panel	Concourse	1	\$7,280	-\$4,040	\$3,240
Lighting Panel	Civic Plaza	1	\$7,280	-\$4,040	\$3,240
Lighting Panel	Concourse	1	\$7,280	-\$4,040	\$3,240
Step-down Transformer	Civic Plaza	1	\$6,480	\$0	\$6,480
Step-down Transformer	Concourse	1	\$6,480	\$0	\$6,480
#300 Wire	Concourse	1200	\$57	\$0	\$68,400
#2/0 Wire	Civic Plaza/Concourse	1520	\$35	\$0	\$53,200
#1 Wire	Civic Plaza	320	\$27	\$0	\$8,640
<b>Total Cost</b>					<b>\$156,160</b>

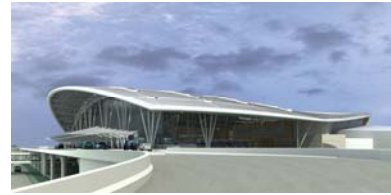
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**Luminaire Fixtures Cost/Saving Comparison**

Fixture Type	Location	Quantity	Cost per Fixture	Reduction Saving	Additional Cost
Asymmetric Uplight	Outdoor	104	\$1,200	\$124,800	----
Asymmetric Downlight	Outdoor	22	\$830	\$18,260	----
Semi-Recessed Uplight	Outdoor	78	\$800	\$62,400	----
Asymmetric Uplight	Indoor	20	\$1,200	\$24,000	----
Compact Florescent Decorative Glowing Fixture	Civic Plaza	16	\$650	\$10,400	----
20' Proposed Custom Light Pole	Civic Plaza	32	\$7,200	230400	----
26' Existing Custom Light Pole	Civic Plaza	16	\$10,000	----	\$160,000
LED Fixtures	Civic Plaza	1570	\$118	----	\$185,260
LED Fixtures	Concouse	720	\$132	----	\$95,040
LED Fixtures	Ticket Hall	170	\$162	----	\$27,540
<b>Total Reduction Savings</b>				<b>\$470,260</b>	
<b>Total Additional Cost</b>				<b>\$467,840</b>	
<b>Total Difference</b>				<b>\$2,420</b>	

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**Foliage Price List**

Tree Type	Location	Quantity	Cost Per Tree (Harvest + Labor Installation)	Total Cost
<b>Oak</b>	Civic Plaza	18	\$275	\$4,950
<b>Red Oak</b>	Civic Plaza	9	\$175	\$1,575
<b>Honey Locust</b>	Civic Plaza	9	\$175	\$1,575
<b>Juniper</b>	Civic Plaza	1	\$190	\$190
<b>Barberry</b>	Civic Plaza	18	\$80	\$1,440
<b>Pearl Bush</b>	Civic Plaza	18	\$45	\$810
<b>Forsythia</b>	Civic Plaza	18	\$64	\$1,152
<b>Boxwood</b>	Civic Plaza	18	\$46	\$828
<b>Total Cost</b>				<b>\$12,520</b>

**Flooring Removal Saving**

<b>Flooring</b>	Ventilated Floor Tile
<b>Total Area</b>	45240 sq-ft
<b>Area Removed</b>	11310 sq-ft
<b>Area Removed %</b>	25%
<b>Cost per Sq-ft (+ labor &amp; installation)</b>	\$155/sq-ft
<b>Total Saving</b>	\$1,753,050

**Conclusion**

Based on the cost analysis from above, the money I saved from luminaire reduction is only sufficient for the purchase of the LED fixtures for my new lighting systems installed in the Ticket Hall, Civic Plaza as well as the Passenger Concourse. When we taken the electrical system into account, even with the manufacturers’ retrofit discount, the modified electrical system will cost an additional of:

Electrical System Cost (\$156,150) – Fixture Reduction Saving (\$2,420) = \$153,740.

However, with the removal of a significant amount of the ventilated floor tiles, we have just given ourselves a large sum of surplus that will cover the electrical system as well as the massive plantation cost.

**Flooring Removal Saving = \$1,753,050 - \$12,520 - \$153,740 = \$1,586,790**