

## SUMMARY AND CONCLUSIONS

After a thorough analysis of the owner's construction expenditures, construction schedule, and existing revenue, it is recommended that the project execution plan that involves maintaining schedule durations with less of an overlap be utilized given poor economical conditions. This option provides a 6 month shorter construction schedule and \$33,251,400 of additional revenue while remaining above the suspension point. Most importantly, it provides an opportunity to continue with future development.

The recommended alternative concrete construction process involves utilizing the continuous slab system. In comparison to the trench design, it is easier to construct, quicker by 15 days, and saves the owner \$1,170,828.

The implementation and use of a thin-film photovoltaic system has both positive and negative aspects of the design.

- Installing the system would cost \$2,608,900 with no schedule impact. This system would save \$46,770 with a payback period of 55.8 years.
- Not installing the system would save the owner the design costs, but would continue to add carbon emissions into the environment, an ever-growing concern for the earth.

Based on the above analysis, the owner would need to make the ultimate decision depending on what is more important, saving money or reducing the impact of this building on the environment.

Water side economizers are highly recommended as a means of reducing energy consumption within the mechanical system. Though initially costing the owner \$376,000, the device would ultimately pay for itself within 2 years, which is worth the initial investment.

In the end, by implementing three\* of the four above plans, designs, and systems, it would save the owner \$794,828 and 6.5 months of construction. On the other hand, if the owner chose to implement all options it would cost \$1,814,072, but would have zero schedule impacts and save 967,618 lbs. of CO<sub>2</sub> annually. Plus, with the additional revenue from the new execution plan, the cost of the PV system is irrelevant. Table 25 found below details the total cost savings to implement all of the systems.

Table 25 - Final Cost Savings

Analysis	Cost Savings	Schedule Savings	Additional Savings
<b>New Execution Plan*</b>	-	6 mo.	\$33,251,400 Additional Revenue in 6 months
<b>Continuous Slab Design*</b>	\$1,170,828	0.5 mo.	65 days for the concrete subcontractor
<b>Thin-Film PV's</b>	(\$2,608,900)	No effect	\$183,472 in electricity cost & 962,914 lb of CO <sub>2</sub> saved annually
<b>Water side Economizers*</b>	(\$376,000)	No effect	\$46,770 in electricity cost & 4,704 lb of CO <sub>2</sub> saved annually
* Savings - 3 systems	\$794,828	6.5 mos.	
<b>Total Savings</b>	<b>(-1,814,072)</b>	<b>6.5 mo.</b>	