



Conclusions and Final Remarks

Throughout this report, the theme of adding value to Crystal Plaza II through energy savings and sustainability can be seen. Even in the case of the slab penetrations, the elimination of CFRP and the labor needed for the additional core drilling and slab cuts provide constructability benefits, as well as a more sustainable design (the most sustainable product is one never used). In each analysis it is present how the owner could take advantage of the new or existing systems to create more value for the project.

Consolidation of Slab Penetrations

This depth study into the constructability at Crystal Plaza II produced positive results from the analysis. Using the structural analysis method presented it was able to show how during preconstruction the issue of structural reinforcement could be evaluated. The ability to mitigate the risk of the do first, check second method is shown in large savings by avoiding rework, nearly \$55,000. With this information now available to design engineers, steps could be taken to lessen the effect of the penetrations, even though this is extremely limited by layout and requirements. However, with little modification, another \$3,000 in CFRP material could be saved with additional savings in labor and coordination requirements with other trades.

Building Integrated Solar Energy Systems

This analysis provides a breadth look at the schematic electrical layout for a BIPV system. Following the calculation of production for three scenarios using one, three, and all facades, each scenario was evaluated in terms of potential output, cost, and efficiency. With the cost ranging from \$750,000 to over \$2.3 million, the production capacity was not adequate to create a good return on investment. However, later research in the Financing Projects section showed that with available rebates and incentives, the implementation is much more obtainable and profitable to the owner.

Peak Demand Shift and Demand Response Programs

The results of this analysis show positive signs in utilizing the emergency generator already installed as a means to shave peak demand or for use in a demand response program. With the respective analysis results it seems that the peak demand shift would be more financially beneficial to the owner, with a positive cash flow of approximately \$186,000 per year under the conditions proposed. These conditions would vary but the primary finding was the ability to cover the depreciation and cost of fuel for the generator in the energy savings. As for demand response, one local program could allow the facility to generate revenue of about \$8,000 by participating in a program.

Financing Projects through Energy Savings and Sustainability

The final analysis section has highlighted the programs and incentives available to projects seeking to implement sustainable or energy savings features. The focus was on Crystal Plaza II, however, a few programs that do not apply are also mentioned. Programs range from local to federal sponsorship with key findings in tax credits that would allow for implementation of the BIPV system at minimal cost to the owner.