Bechtel Power - Heliostat Assembly Waste Management

Overview
Bechtel Power Corporation has partnered with BrightSource Energy to design and build the Ivanpah Solar Electric Generating Facility, located in the Mojave Desert in California. The Ivanpah Solar Electric Generating Facility is the first major solar energy complex of this size that Bechtel has constructed in its 112 years of existence. As such, there is a lack of established processes for various job functions. One of the major challenges Bechtel Power faces is learning how to dispose of their waste in the most efficient and environmentally-friendly manner.

Objectives
The objective of this project was to recommend to Bechtel Power a set of plans for a heliostat assembly waste management system. The waste management system includes information regarding the equipment needed to compact waste, transportation and recycling logistics, and a recommended physical layout of the waste laydown site.

Approach
- Became familiar with the Ivanpah site plans and project background through a visit to Bechtel Power’s site in Frederick, Maryland
- Calculated total amount of cardboard, wood, stainless steel, and hazardous waste generated over the course of the project
- Developed concept screening matrix so the needs of Bechtel Power could be reflected in project deliverables
- Researched 20 different recycling companies, 3 different transportation firms, and 3 landfill facilities
- Evaluated best combination of recycling center and transportation company based on location and revenues generated from recycling
- Conducted sensitivity analysis to determine the possible trade-offs between amounts recycled and transportation cost
- Determined best possible waste containment methods for the laydown area
- Created a waste laydown design using systematic layout planning and modelled laydown using a CAD model

Outcomes
- 96% waste material recycled
- Total cost: $934,673.88
- Total cost w/o labor: $29,268.64
- 13,005 ft² for the recommended layout space