Abstract

The receiving warehouse at Diablo Canyon Power Plant, owned by Pacific Gas and Electric, serves as a place to recognize the receiving of items into an ERP system, repackage and label items for long-term storage, and organize items for delivery inside the secured area. The warehouse managers would like to redesign the layout and procedures of the warehouse. Currently items are not received, scanned, or shipped in a timely manner. The flow of people and items in the receiving and shipping area is chaotic and space is limited especially during plant outages. The objective of this project is to:

- Redesign the current layout to promote flow of items and people and better utilize space.
- Create work procedures that standardize processes and save time.
- Calculate costs and benefits of proposed solutions.
- Suggest ways to implement the solutions.

The objectives of the project were met by following the facility design methodology of:

1. Define the problem.
2. Make observations to understand the environment.
3. Collect data.
4. Design alternatives.
5. Evaluate and select alternatives.

11 solutions were found relating to changes in the areas of workstation and layout design, loading and unloading delivery trucks, and employee training and priorities. 3 larger scope options for implementing layout changes were proposed: No Changes, Slight Modifications, and New Layout. The Slight Modifications option suggests combining label printers, computers, and work table space to make one workstation area and moving the current item being received as close to the workstation as possible. The New Layout option suggests implementing moveable workstations on carts and keeping an item in one location between the receiving and security screening processes. Both options reduce travel time for material handlers.

Option Slight Modification increased space utilization by 8%, decreased average travel distance by 154 feet per item, and costs $6,960. Option New Layout increased space utilization by 21%, decreased average travel distance by 148 feet per item, and costs $28,275. Because of the lower costs and apparent greater decrease of travel distance, Solution Slight Modifications was suggested. The net present value of the project option is $6,500 with a payback period of 3.89 years.

Diablo Canyon was recommended to phase in the changes of Slight Modifications, focusing on the changes that could be implemented without making layout changes. It was also suggested to do further and more accurate analysis on implementation costs and reduced travel time for both options.