ABSTRACT

Design of Process Improvements to Increase Field Work Efficiency at Webcor Concrete Group

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This study set out to analyze and improve field work efficiency at Webcor Concrete Group, a subcontractor working on a new housing project at the Cal Poly, San Luis Obispo campus. Specifically, they would like to access their performance in regards to end-of-break to back-to-work time and the 30-30 rule, which states that everything a field worker needs should be accessible within 30 seconds or 30 feet. The problem statement is that Webcor wishes to utilize their field hours 5% more efficiently through a study of current shortcomings and recommended improvements. A review of the literature generated process improvement ideas and helped to determine the optimal data collection method. A combination of activity sampling and worker surveys was used to assess the current state. One observer studied the deck setting and deck stripping crews to gather data, and surveys were administered to these same crews. An analysis of the data collected identified the following six primary issues:

- The most unproductive section of the day is between Break 1 and Break 2
- The highest "End-of-break to back-to-work" time is at the start of the day
- The common 30-30 rule violations on both crews are saws and ladders
- The largest 30-30 rule violation for the setting crew is shoring posts
- The largest 30-30 rule violation for the stripping crew is the forklift
- Site-wide safety meetings are inefficient

Process improvement designs were then developed to address these issues. Webcor management and the crews participating in the study scored the designs based on their perceived feasibility and effectiveness in improving field work efficiency. The top four process improvement designs were:

- Always return safety flags to the job box at the end of the day
- Purchase one extra saw and ladder for setting & stripping crews
- Include the forklift driver in scheduling meetings
- 1 person announces all weekly work at the safety meetings

An economic analysis was performed to further assess these ideas and all four were found to be profitable changes. These recommendations will not reach the goal of utilizing field hours 5% more efficiently, however they will allow for cost savings through an improvement in field work efficiency. Therefore, the final recommendation to Webcor is to implement these four improvements as a pilot program at the Cal Poly site, and expand them to other sites if they are proven to be successful.