



Construction Site Management and Labor Productivity Improvement

How to Improve the Bottom Line and Shorten the Project Schedule



H. Randolph Thomas, Ph.D., P.E.
Ralph D. Ellis Jr., Ph.D., P.E.

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Preface

This text is based on the collective 70-plus years of experience the authors have in monitoring and managing construction projects. During this time, the authors have monitored more than 200 active construction projects. On most of these projects, the labor productivity was measured, loss of productivity was noted, and the deficient events leading to productivity degradation were documented.

The authors have observed that these events can be organized in a relatively few broad categories, such as material management and sequencing. Furthermore, the authors have also observed that whenever these deficient events (conditions) are present, the consequences are always the same: inefficient productivity and extended schedules. It follows that the management practices to improve productivity and shorten schedules should strive to ensure that deficient events are not present on one's project. The principles cited in this book focus on managing site operations to improve construction labor productivity and shorten schedules. The management practices to avoid deficient events are simple and are based on common sense, not theory. The principles are things managers can readily and easily implement to manage site operations. This book is written primarily for practicing engineers and contractors. The management actions are labeled "fundamental principles." An example illustrating a fundamental principle is to "minimize the number of times a crane has to be moved." The fundamental principles can be easily organized into checklists.

Fundamental principles are different from best practices because with fundamental principles there is documented evidence that the application of the principle will lead to positive results. Best practices are simply that. They are things contractors do, and there may be no evidence to show that their application will lead to improvements.

This text is divided into four parts. The first part states the commonly reoccurring causes of inefficiency and examines what has been said by researchers and practitioners about these causes. Part II pertains to planning. A comprehensive, but straightforward, planning procedure is given, and a simple heuristic procedure is illustrated for developing an efficient site layout plan. Part III details fundamental principles for weather mitigation, material management, workforce management, activity and trade sequencing, avoiding congestion, and subcontractor management.