

APPLICATION OF METHODS ANALYSIS TO STEEL ERECTION TASKS: IDENTIFICATION OF FACTORS AFFECTING LABOR PERFORMANCE

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Abstract

Work methods play an important role in the performance of a task. When a worker is required to perform additional movements, use several tools and carry additional materials to perform a task, his/her performance can be affected. An analysis of task durations in the steel beam installation process showed that factors such as the use of personal protective equipment (PPE) can affect task durations. It is of interest to determine what aspects of the tasks are different (i.e. handling of tools and materials and difference in required motions, etc.) and can affect performance. An analysis of these differences provides valuable information that can be used to improve steel erection performance without adversely affecting the safety of the worker. This paper presents results of analysis of the method of the steel beam installation process considering the tasks involved in the process. The results show that factors such as the use of PPE and the length of steel beams play a role in differences in task performance.

Keywords

Performance, tasks, methods, safety, measurement.

INTRODUCTION

In 2005, construction accounted for 4.9% of the total Gross Domestic Product (GDP) of the USA (CPWR, 2007). One of the main concerns in such a large industry is labor productivity. Productivity is one aspect that can dictate the success or failure of a project. Better productivity means shorter performance time and lower costs. However, sometimes productivity can be influenced by factors inherent to the construction site and the construction process. Hence, it is important to understand how the characteristics of construction projects can impact productivity.

Productivity can be affected by many factors, such as weather, fabrication errors, material delivery methods and others (Thomas et al. 1999). A great deal of research has been conducted in the area of productivity assessment under different conditions (NECA, 1974; Grimm and Wagner, 1974; U.S. Army Cold Weather Regions Research and Engineering Laboratories, 1986; Kohen and Brown, 1985; Thomas and Napolitan, 1995; Thomas et al., 1999).

Productivity in the steel erection process involves a number of factors, such as the type of equipment used, fabrication and delivery of material and labor resources.